



**Asia-Pacific  
Economic Cooperation**

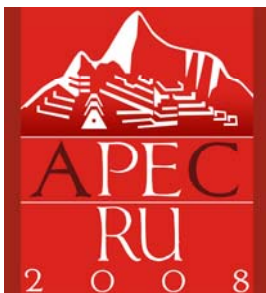
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**2008/SMEWG/SYM/019**

Agenda Item: 9.1

## **Marketing Policy for Crafter in SMEs**

Purpose: Information  
Submitted by: Indonesia



**APEC Symposium on Improving Market  
Access for ICT Outsource SMEs  
Hanoi, Vietnam  
27–29 October 2008**

## MARKETING POLICY FOR CRAFTER IN SMALL AND MEDIUM ENTERPRISES (SME's)

BY : HARTONO

### I. INTRODUCTION

To create more innovative and competitive handicraft products in addition to market compatibility, it is necessary to have improvement and environmental care by the government and large sized business to the crafters.

Main duties on Crafter in Small and Medium Enterprises improvement are:

1. To improve Crafter in Small and Medium Enterprises market capacity and orientation;
2. To build and develop marketing infrastructure;
3. To create business or conducive business of Crafter in Small and Medium Enterprises.

The purpose of Crafter in SME improvement is to increase awareness, understanding, skill of small and medium enterprises throughout innovative aspects of product design, product quality, marketing, competitive effort and product compatibility in the middle of rapid market, also influenced by marketing infrastructure so that the process of Crafter in Small and Medium Enterprises' products marketing are guaranteed, marketable.

SME Crafting generally resists to natural resources crisis. The skills of art and traditional taste have been acknowledged by domestic and international market as state of the art products, but the technology, management science and ability of fast and right order deliveries are still limited.

The support of government and domestic market are extensive, the business opportunity is attractive, natural resources availability and rich variety of traditional culture.

The rapid competition of similar products and large sized business expansion are limiting the space of SME.

### II. CONDUCTIVE ATMOSPHERE CONCEPTION

In order to protect Crafter in SME from mass craft production by modern and foreign businesses that can make a shift to the products of the SME, government should make a space order for the SME.

Protection for the Crafter in SME shall be made in the form of:

Placement zone for Crafter in SME' products in modern market, for example placement zone especially on Sarinah Thamrin Jakarta, Pasar Raya Blok M Jakarta, Pasar Sukowati Gianyar, Pasar Seni Kuta Bali, etc.

1. The location where art or souvenir shops are gathered can potentially be an interesting and strategic souvenir shopping tourism as one of local government asset that should be preserved.
2. Promotion of the Crafter in SME' products shall become visualization of domestic products' sense of belonging and public's pride to the domestic products.
3. Eliminating terms of trade that could harm SME as modern retail supplier (hypermarket).
4. Controlling hypermarket on private labeling for the Crafter in SME' improvement. This case may cause SME do not have bargain value if the brands are owned by hypermarket.

Protection of Crafter in SME products is national commitment and the culture of Crafter in SME products as domestic products' sense of belonging, for example fabric from Minang's embroidery. Some of handicraft products as one of local icon are the traditional food packing from plaited bamboo. Local farming product such as coffee from Toraja packed in a wooden handicraft with typical design from Toraja. Traditional snacks, honey or syrup that are packed in plaited material will have different value.

### III. INFORMATION AND PRODUCT PROMOTION

Information and product promotion are inseparable market opportunity from business world, especially for the Crafter in SME, to increase their product's innovation, quality and quantity. Information opportunity can be created in digital world or printed out in special magazine for Indonesian's handicraft products, or in a periodic exhibition rapidly held by government of private company. Some product information as follows:

- a. Trading board is a media on the Internet, which can be accessed by the Crafter in SME through [www.indonesian-products.biz](http://www.indonesian-products.biz), this site consists of  $\pm 2.500$  SME with  $\pm 10.000$  handicraft photos from 11 provinces. The goal of Trading Board is to help the Crafter in SME to receive and distribute buyer's demand through e-mails, telephone or fax. There have been around 150.000 visitors in 2007 from America, England, Australia, Europe and Asia since it's been created in 2005. The Crafter in SME product database shall be continuously updated by their product innovation.

- b. Trading House by Institution of Marketing Service Coops and SME, known as Gallery UKM, is an activity to improve Crafter in SME in marketing regularly, permanent display showcase, financing facilitation, marketing training, consultation center, virtual office. In Trading house, the buyer can visit the gallery to see physically the desired products. Generally, the products that have been showed until today are furniture, home furnishing, accessories and handicraft. In order to support export activity, the Gallery UKM is connecting to the Trading House in Plovdiv, Bulgaria to enable access in Europe and the Trading House in Jeddah, Saudi Arabia as the gateway to the Middle East countries and Africa.
- c. The role of Trading Councils to concentrate on promoting Crafter in SME Products in the world as promotion representative thus business intelligence on delivering market information. The Introduction promotion with adequate explanation from the trading councils is the reference for the tourists, visitors or buyers that come to Indonesia.
- d. Publishing Crafter in SME in-flight catalogue periodically to easier the tourists and buyers on their flight to have information regarding small medium businesses products. This promotion is one of effective off line form and buyer can directly connect to the Crafter in SME. The placement target of the in-flight catalogue is international and domestic flights to tourism areas.
- e. Kriya magazine publishes specifically for potential handicraft products from beginners to advance crafters from Indonesia and has quite good selling value, this monthly magazine consists of detailed information about the crafter existence with their production process. This magazine initiated by National Handicraft Council (DEKRANAS) and always presents in every handicraft exhibition.
- f. Handicraft magazine is also focused on handicraft and to deliver information regarding exhibition events periodically, this magazine provides additional information on potential handicraft world, which has not been touched by the developer or handicraft designer to promote and develop their products.
- g. The prestigious exhibition events that have handicraft icons, periodic, and focused on handicraft innovation are INACRAFT, ICRAFT, INDOCRAFT, Pekan Produk Ekspor/PPE (Trade Expo), Pekan Produk Budaya Indonesia (PPBI), Pekan Produk Indonesia (PPI), SME'sCO Festival, SME'sCO Tematik (Craft, Fashion, Food and Packing, Home Furnishing), IFFINA, Pameran Mutumanikam, Bali Fashion Week, Jogja Fashion Week, Adhiwastra Nusantara, Gelar Batik, Gelar Kerajinan, Gelar Tenun, etc.

- h. Handicraft workshop and technical guidance is one of consideration form in developing handicraft to deliver concept and knowledge in order to increase trend, quality and market information.
- i. The competition of souvenir product designs, leather products and other handicraft will make the activity as an event to show the skills in creating new competitive and artistic designs. These competitions shall be promoted and to grant more incentive to the winners to join international and domestic handicraft exhibition.
- j. Design power which targeting 200 good design products made in Indonesia is a national program that absolutely builds creative industry to have healthy competition and Indonesian can have their own identity towards domestic product design.

#### IV. BUSINESS FACILITY AND INFRASTRUCTURE

The product swift and development by marketing needs to be supported by adequate and competitive business facility and infrastructure for the Crafter in SME products, therefore the government is providing incentive in the form of promotion center as follows:

- a. Souvenirs outlet in airports and tourism area are one of effective facility to invite buyers in a short time.
- b. Art shop/souvenirs gallery for Crafter in SME products is the marketing area allocation as tourism area in marketing Crafter in Small Medium Business' products,
- c. The usage of display room in Indonesian representative office around the world as replica that Crafter in SME products can be bought and known by buyers who haven't had time to visit Indonesia.
- d. Permanent Display in UKM DKI Mall building in Jakarta is a permanent display for UKM DKI Jakarta handicraft products and where exhibitions held periodically to attract visitors and tourists in Jakarta.
- e. SME'sCO Promotion Center (SPC) in Jakarta is a Coops and SME (KUKM) products marketing center in Jakarta facilitating export oriented Crafter in SME and becomes KUKM products Trading House nationally.
- f. Borneo Convention Center (BCC) in Pontianak, West Kalimantan, is a Coops and SME (KUKM) Kalimantan region convention and promotion center which promotion target are the neighboring countries such as Malaysia, Singapore and Brunei Darussalam.

- g. Celebes Convention Center (CCC) in Makassar, South Sulawesi is a KUKM Sulawesi and other east region convention and promotion center, had been used for routine exhibition events until today.
- h. Sriwijaya Convention Center (SCC) in Palembang, South Sumatra is a KUKM Sumatra region that promotes potential Crafter in Small Medium Business' products periodically and the place where exhibitions held.
- i. Paradise Convention Centre (PCC) in Manado, North Sulawesi is a exhibition center facility in north region to capture visiting domestic and foreign tourists.
- j. Sentra Business Coops and SME (KUKM) in Bandung, West Java, is a KUKM products marketing center in West Java region focusing the potential producer KUKM. It has mission to improve the KUKM to market their products by open business and to make the products ready to compete with other products.
- k. Exhibition event facility by government or private/event organizer, government facilitates the Crafter in SME to join the events as a stimulus in obtaining market and market information.

#### V. PARTNERSHIP SYNERGY

The partnership mandated by Act Num. 20/2008 regarding Micro, SME article (1) is a cooperation in business both directly and indirectly in a dependence basic, trustworthy, mutual strengthen and beneficial involving micro and medium businesses with large business.

The growth of business atmosphere by local government depends on partnership aspect as follows:

- 1. To create partnership between micro, SME;
- 2. To create partnership between micro, small, medium and large enterprises;
  - a. To support mutual relation in business transaction between micro, small and medium enterprises;
  - b. To support mutual relation in business transaction between micro, small, medium and large enterprises;
- 3. To develop partnership to increase bargain position of micro, small and medium enterprise;
- 4. To support market structure, guarantees the growth of healthy business competition and to protect consumer.

- 3. To prevent market domination and centralized business by individual or group that could harm small and medium enterprises.

Partnership with company owned by government in the form of partnership program and environmental care (PKBL) as Corporate Social Responsibility (CSR). This program has been running quite long as one of government involvement.

Partnership with reference to mutual sustainability and benefit, there should be modern retail support in providing certain estate for SME.

#### VI. MAINTAINING DOMESTIC TRADE EVENT MOMENTUM

To maintain momentum in domestic trade event generally is a business opportunity for Crafter in SME to join the marketing events periodically.

Facilitations provided by the exhibition events make business opportunity has to be maintained and preserved by Crafter in SME and to open wide network. Domestic trade generally influenced by increasing local/domestic market demand especially to the most favorite products in the market. Trade event momentum in general promotion is more to the exhibition that's not just showing the products, but also seeking and keeping the network as marketing.

The big domestic trade potencies is an opportunity for Crafter in SME in capturing the market, but still difficult to obtain as local/domestic necessity because of the following:

- 1. The weak market access by Crafter in SME.
- 2. Crafter in SME product continuity.
- 3. Financial source in growing the products.
- 4. Market assurance as result of less market information.
- 5. Periodically marketing

Financial supports for Crafter in SME were to strengthen raw material financing, but considering the financial distribution was performed by banks, the governmental institution was the financial facilitator. Financial support is the factor in maintaining the domestic products, i.e. capital assurance/Crafter in SME financing.

## **VII. ACCESSING EXPORT MARKET**

Most of domestically marketed SME products are potentially marketed foreign market, considering the quite large volume of export value and the unstoppable world trade globalization. As an illustration, SME export value in 2004 was Rp 95.5 trillions, increasing up to 14% to Rp 109.1 trillions. And in 2006, small medium business product export raised to 10.3% in to Rp 120.4 trillions as result from export product competition to China, Vietnam and Thailand.

The government therefore, always supports by giving the Crafter in SME market opportunity to Saudi Arabia, Uni Arab Emirate, Bulgaria, West Germany, South Africa, Hong Kong, Malaysia, Singapore and Vietnam.

There are still opportunities in East Europe as doorway to other European market, specifically in Abente and tendentious lifestyle in Messe-Frankfurt, West Germany, even Hong Kong for fashion products and accessories.

## **VIII. CLOSING**

To strengthen marketing access for varied small medium business products is the pillar of success Crafter in SME improvement to increase the product, quality and innovation, which directly impacts on economic improvement, which directed to 4 targets as follows:

1. Creating conducive, efficient and healthy business climate for small medium businesses;
2. To contribute as much as possible to create new occupation opportunity or highly deploy manpower;
3. To increase the wealth of Crafter in SME;
4. To support real sector, the productive business sector by the SME.

**THANK YOU**



**Asia-Pacific  
Economic Cooperation**

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**2008/SMEWG/SYM/020**

Agenda Item: 9.2

## **How to get a Freelance Job?**

Purpose: Information  
Submitted by: Singapore



**APEC Symposium on Improving Market  
Access for ICT Outsource SMEs  
Hanoi, Vietnam  
27–29 October 2008**

# How to get a freelance job?



<b>CodeMonkey</b>

[free-and-happy.com](http://free-and-happy.com)

## Contents

- About me
- Why freelance?
- Where to find a freelance job?
- How to build your profile?
- How to deal with customers?
- You and your customer are a **team**
- Get **5 star ratings**
- More trustworthy, more well known, **more jobs**

## About me

Nguyen Tien Dung



Code Monkey  
Singapore

I got Master of Computing degree at National University of Singapore and become a Passionately Remarkable Programmer at Spiragram.com

I Refactor Code



I Work with Ruby on Rails



Open Source Projects  
(tiendung)

- acts\_as\_dictionary
- mars
- ruby-nlp
- javascript-utils
- rhunspell
- voice-command
- mutiple-f0-estimation
- voice-changer
- dict.vn
- thinking-sphinx
- railroad
- ajax-rdoc
- vinova

## Why freelance?

# Choose the job you want

Browse Jobs [View All Jobs](#)

Categories	Skills
<b>Web Development</b> Web Design (653) <b>Web Programming (1113)</b> Web Applications (397) Ecommerce (150) Streaming Media (25) User Interface Design (44) Marketing (SEO/SEM) (169) Website QA (21) Website Project Management (44) Other - Web Development (169)	<b>Software Development</b> Desktop Applications (121) Client-Server Applications (102) Game Development (26) Scripts & Utilities (51) Software Plug-ins (23) Mobile Applications (110) Application Interface Design (23) Software Project Management (8) Software QA (6) VOIP (14) Other - Software Development (124)
<b>Audio / Video &amp; Multimedia</b> Audio Production & Engineering (11) Video Production & Editing (28) Voice Talent (11) Animation (15) Other - Audio / Video & Multimedia (28)	<b>Graphic Arts &amp; Design</b> Graphic Design (168) Logo Design (81) Illustration (34) Print Design (33) 3D Modeling/CAD (38) Other - Graphic Arts & Design (85)
	<b>Networking &amp; Information Systems</b> Network Administration (21) Firewalls & Security (10) Database Administration (DBA) (18) Server Administration (40) Other - Networking (26)
	<b>Administrative Support</b> Data Entry (141) Personal Assistant (97) Research (109) Email Response Handling (6) Accounting/Bookkeeping (21) Online Order Processing (14) Other - Administrative Support (138)

Source: <http://www.odesk.com/jobs/>

# Very good payment rate (USD per hours)

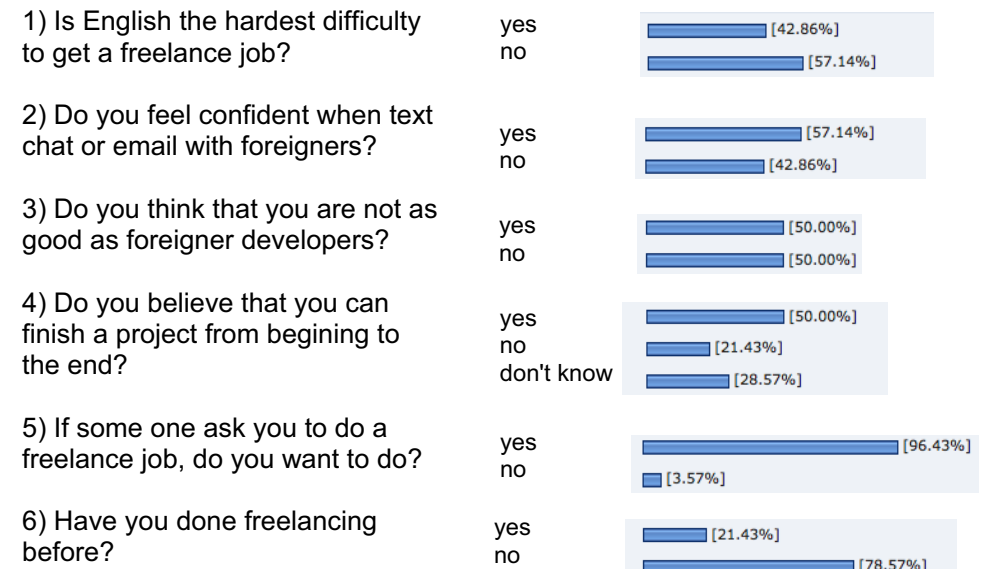
Skill	Avg	High
Access (2,521)	\$16	\$65
AJAX (5,280)	\$16	\$60
Application Design (2,275)	\$20	\$60
ASP (2,998)	\$16	\$50
ASP.NET (5,063)	\$16	\$60
C#/.NET (5,460)	\$17	\$60
C/C++/Unix (2,053)	\$17	\$67
C/C++/Win32SDK (2,243)	\$18	\$60
CSS (5,452)	\$16	\$67
Design/Flash (2,048)	\$15	\$42
Drupal (467)	\$14	\$25
Flash/Actionscript (1,822)	\$16	\$36
Graphics (2,663)	\$18	\$60
HTML/DHTML (8,402)	\$16	\$67
J2EE (3,156)	\$18	\$56
JavaScript (4,154)	\$16	\$60
Joomla (1,694)	\$14	\$50
LAMP Administration (1,063)	\$17	\$60
MySQL (4,628)	\$17	\$60
OsCommerce (1,169)	\$13	\$25
Perl (1,339)	\$18	\$36
Photoshop (5,877)	\$15	\$60
PHP (3,692)	\$16	\$50
Project Management (2,691)	\$18	\$67
Python (578)	\$19	\$56
QA (1,014)	\$16	\$60
Ruby (625)	\$20	\$44
SEO (1,646)	\$13	\$33
Tech Writer (1,242)	\$16	\$60
Visual Basic (2,314)	\$17	\$65

Source: <http://www.odesk.com/>

# Better working skills

- You are a whole company
  - You are a salesman
  - You are a programmer
  - You are a customer supporter
  - You are the boss of yourself
  - You play every role in an IT company

# Do you want do to freelancing? What are difficulties?



(a survey among 30 Vietnamese IT students)



# Where to find a freelance job?

- [odesk.com](http://odesk.com)

- [elance.com](http://elance.com)

(a comparison between odesk.com and elance.com)

- [getafreelancer.com](http://getafreelancer.com)

- [getacoder.com](http://getacoder.com)

- [rentacoder.com](http://rentacoder.com)

- [vnfreelance.com](http://vnfreelance.com)

- [lamthem.vn](http://lamthem.vn)

# How to build your profile

- Be an expert in your professional

- Be well known in the Internet

- Blog about your professional

- Join programmers' communities

- Take skill tests

- Get skill certificates

# Mastering programming & communication tools

- Source Code Version Controller

- SVN

- GIT

- Software Project Management

- TRAC

- [Lighthouse](#)

- Communication Tools

- Text Chat

- Voice Chat

- Screen Sharing Tool (iChat)

The screenshot shows a web browser window with the URL <http://www.assembla.com/user/start>. The page header includes the Assembla logo, the user name 'Dung Nguyen', and navigation links for 'My Start Page', 'Logout', 'Search site', 'Go', and 'Help'. Below the header is a navigation menu with buttons for 'Start', 'Profile', 'Skills', 'Spaces', 'Time', 'Money', 'Jobs', and 'Orientation'. A yellow banner indicates 'Login successful'. The main content area is divided into several sections: 'Assembla Instant Messaging', 'My spaces' (listing 'Be Happy', 'IDM', 'thieu ngu team (Trac tickets)', and 'tiendung (Trac tickets)' with a 'Manage spaces' link), 'Recently visited spaces', 'Milestones', 'Tasks and Issues assigned to me', and 'Responses to my messages'. On the right side, there are 'Assembla Announcements' with two entries: 'Time for Genetic Programming?' and 'Time to Vanquish the Mythical Man Month', each with a 'Continue reading' link.

Assembla home Assembla project page My Start Page

# " Do, or do not. There is no 'try' "

logged in as dungtn | [Track time](#) | [Logout](#) | [Settings](#) | [Help/Guide](#) | [About Trac](#)

Wiki | Timeline | Roadmap | Browse Source | View Tickets | New Ticket | Search

[Start Page](#) | [Index by Title](#) | [Index by Date](#) | [Last Change](#)

We work in HARMONY, utilize our youth energy and open-mind power to build web 2.0 apps to serve people.

- [Thieungu Team Members](#)

## Meeting Agenda

- 20071103
- 20070811
- 20070804
- 20070714
- 20070708
- 20070630
- 20070623
- 20070616
- 20070609
- 20070526
- 20070519
- 20070512
- 20070501

**Meeting Agenda**  
[Projects](#)  
[Wishing Lists](#)  
[Guidelines](#)  
[Documents](#)  
[References](#)  
[Code::XtremeApps:: 22-23/09/2007](#)

## TRAC

software project management system

## Projects

- Dictionary**
  - Keywords: meaning-is-king, bi-language, no-options, type-&-see, click-&-see
  - [Unified Lookup Interface](#)
  - [Ajax Front End](#)
  - [Ruby On Rails Server](#)

Assembla home Assembla project page My Start Page

# " Do, or do not. There is no 'try' "

logged in as dungtn | [Track time](#) | [Logout](#) | [Settings](#) | [Help/Guide](#) | [About Trac](#)

Wiki | Timeline | Roadmap | Browse Source | **View Tickets** | New Ticket | Search

[Available Reports](#) | [Custom Query](#)

## {3} Active Tickets by Milestone (16 matches)

This report shows how to color results by priority, while grouping results by milestone.

Last modification time, description and reporter are included as hidden fields for useful RSS export.

[Edit report](#) | [Copy report](#) | [Delete report](#)

## Release

Ticket	Summary	Component	Version	Type	Owner	Created
#87	Poll - list all dicts or just request user to choose type of dict to display	Dictionary		defect		11/03/07
#83	use raspell for error suggestion	Dictionary	2.0	task	tiendung	10/30/07
#30	design blank, failure, main page	Dictionary		task		06/30/07

## Dictionary 1.1 Release

Ticket	Summary	Component	Version	Type	Owner	Created
#86	Get stats - which dict is most used?	Dictionary	1.0	defect		11/03/07
#20	Click & See in Web	Dictionary	1.0	task	dangkhoa	06/18/07

Dashboard Basic functionality Add new ticket

Overview Tickets Messages Milestones

New message New milestone New page

**Tien Dung**  
You have 1 open ticket for Property Directory

Completed 21 of 23 tickets

PAGES  
Home

TAGS  
api security

Wednesday Oct 01  
"Request an Image for a Property" was updated by dhf (at f8technologies) #25 / new ticket

Tuesday Sep 30  
"Request an Image for a Property" was updated by Tien Dung #25 / new ticket

09:37 PM  
"Request filtered property list" was updated by dhf (at f8technologies) #12 / resolved ticket

05:45 PM  
"Request a property by name" was updated by dhf (at f8technologies) #11 / invalid ticket

04:46 PM  
"Request filtered property list" was updated by Tien Dung #12 / open ticket

<http://lighthouseapp.com/>  
Bug tracking and timeline management

github SOCIAL CODE HOSTING

tiendung account | profile | guides | log out  
0 repositories: all | search

## News Feed

for you | from you

- dhf0820 committed to dhf0820/maui\_index about 1 hour ago  
203d64f0c1b36f76f620814b662e6e7ece1b8597  
Added fields to property show. modified photo to S M L
- Irbalt committed to bsag/tracks about 3 hours ago  
eae4d0f6f164af2ff1629f06fee1e9e1eecb6b8c  
add test to check if a new recurring todo ends up in the tickler
- Irbalt committed to bsag/tracks about 3 hours ago  
0f4a80d839d0092ead30c1591db41c93b659811b  
fix recurring todos where new todos were not placed in tickler
- Tony Arcleri committed to tarcleri/reia about 6 hours ago  
5871bca715fa5b0cd8f4240308ad863d8a1a54c  
Improve Reia greeting
- Tony Arcleri committed to tarcleri/reia about 6 hours ago  
0b626c7c11107e38772764c627170be7f73e06dd  
Flatten out the Reia source code into src/ from under src/reia
- Tony Arcleri committed to tarcleri/reia about 6 hours ago  
1b3b4c9bc0d78c438495affc47d5a6a496e47dc  
Remove remaining core files under core

## Your Repositories (create a new one)

all | public | private | sources | forks

- acts\_as\_dictionary
- ajax-rdoc
- config
- dict.vn
- javascript-utils
- mars
- multiple-f0-estimation
- properties
- railroad
- rhunspell
- ruby-nlp
- thinking-sphinx
- vinova
- voice-changer
- voice-command

## More Examples

- Blogs of
  - [Lawrence Salberg](#)
  - [Sarah Lewis](#)
- Programmer communities
  - [refactormycode.com](http://refactormycode.com)

## My case

- Created [a blog](#)
- Published a Ruby gem
- Published a Rails plugin
- Get high ranks on programmer communities
  - Top 2% (#15 out of 1,025 people) on [refactormycode.com](http://refactormycode.com)
  - Top 8% (#935 out of 12,768 people) on [workingwithrails.com](http://workingwithrails.com)

## Difficulties

- English communication
- Work alone
- Discipline

## How to deal with customers?

- Give customer a reasonable price
- Be confident during the interview
- Show them projects you are already done
- Be flexible on price, working hours / week

## You and your customer are a TEAM

- Treat customer as your teammate
- You work with him, not work for him
- Have fun while talking or working with him
- Be understanding, be passionate
- Respect deadlines

## Get 5 star ratings

If everything go well. After the project is finished. Ask the customer give you a 5 star rating and you can do the same for him.

More trustworthy, more well known,  
more jobs

Questions, please

# Instant Memory

<http://www.youtube.com/watch?v=hQQHCai3yUk>

In following items, which one is not a software? :D

- GreaseMonkey
- IronMonkey
- CodeMonkey
- TraceMonkey
- SpiderMonkey



**Asia-Pacific  
Economic Cooperation**

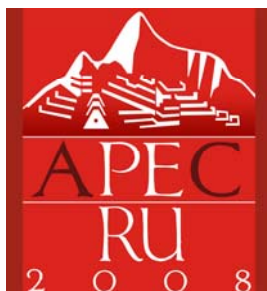
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**2008/SMEWG/SYM/021**

Agenda Item: 9.3

## **Refinement Of The Vision System Development Platform (VSDP) For Commercialization And Its Application**

Purpose: Information  
Submitted by: Malaysia



**APEC Symposium on Improving Market  
Access for ICT Outsource SMEs  
Hanoi, Vietnam  
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**PROJECT TITLE / PROGRAM TITLE:**

Refinement of the Vision System Development Platform (VSDP) for Commercialization and its Application.

**ABSTRACT**

The objectives of this module are as follows:

- To develop a powerful image processing software library, that will consist of a comprehensive functions and modules. The library also can process colour images. The library will be developed using C# language.
- To develop a graphical user interface to demonstrate how to use the software library.
- To commercialize VSDP as an image processing library and a software development kit (SDK) which can be used by software and system developers.

The architecture of VSDP library will cover several major fields in image processing, artificial intelligence, mathematic, statistic, automation and integration. Main VSDP component blocks are as shown in Figure 1.

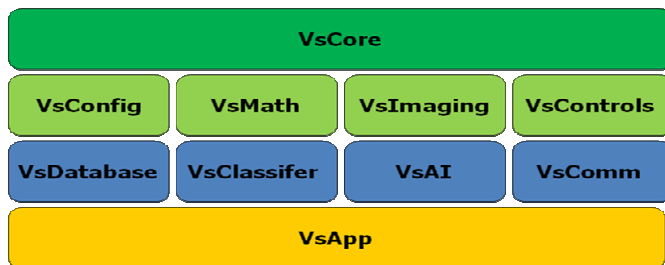


Figure 1: VSDP Architecture

The entire project will be developed in C# languages for quick, easy and stable development. The processing library will be developed in C# language (for performance) as a class library which can be used in other projects and all the testing program will be developed also C# language. The deliverable will be an intellectual, technical, and/or specialized application of

knowledge and/or know how in the area of algorithms and techniques of Vision System Development Platform, and all incidental and necessary process in the development of a successfully commercialized product using VSDP as an essential component of its unit. The delivery format will be a completed source-code (in C# Language) that can be implemented on any PC and also embedded system, together with the complete set of documentation on the source-code, the algorithms and techniques, and the hardware design.

Generally, all libraries that are being developed can be used in a lot of applications such as:

- Face Recognition
- Lead detection
- OCR
- Crack detection



# Refinement Of The Vision System Development Platform (VSDP) For Commercialization And Its Application

APEC SYMPOSIUM ON IMPROVING MARKET ACCESS  
FOR ICT OUTSOURCE SMEs

27 – 29 OCT 2008

SOFITEL PLAZA HANOI HOTEL,  
HANOI, VIETNAM

By: Azwan Ramli  
CAIRO UTM KL, Malaysia

## Some images of Malaysia



## About UTM



- Premier university in technological fields in Malaysia
- Has 29,000 students and 2,400 Academics
- Two Campuses: Johor and Kuala Lumpur
- 10 Faculties (EE, Mechanical, Civil, Science, Computer Science, Chemical Eng., etc.)
- 20 Centers of Excellence

## About UTM



Kuala Lumpur  
UTM Branch Campus  
(CAIRO)

UTM Skudai  
(Johor)

Singapore



## Brief Overview About CAIRO

- Set up on 1<sup>st</sup> January 1997
- Involves in Process Automation, Robotics, Vision Systems, Data Analysis and Variety of AI Applications
- One of 20 Centers of Excellence in UTM
- One of the Most Active Research Centers in Malaysia
- Grants totaling more than RM11 million (>US\$3 million) over 11-year period
- Have published over 500 papers and engaging in the Commercialization of Products



## Facilities in CAIRO UTM KL



## VSDP for Commercialization And Its Application

This presentation consists of 2 parts which are:

- VSDP Library Discussion
- VSDP Applications



## Part 1: VSDP Library Discussion

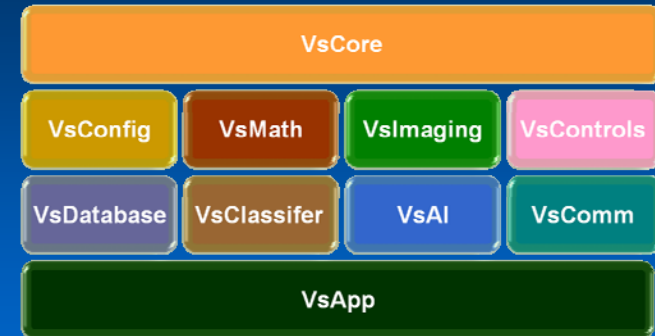


# VSDP for Commercialization And Its Application

- The objectives of this module are as follows:
  - To develop an image processing software library, that consists of a comprehensive functions and modules which can also process colour images. The library is currently being developed using C# language.
  - To develop a graphical user interface to provide user friendly control of the software library.



# VSDP Library



# VsCore

- Consists of a set of functions for basic processing like matrix processing, numeric objects, arrays and others.

COMPONENTS	DETAILS
VsPixel	This class is the generic object that contains the pixel value for R,G and B channels.
VsMatrix	This function is used to apply matrix processing
VsWin32	This function is used to connect with Win32. Win32 is the 32-bit Application Programming Interface (API) for modern versions of Windows.
VsUtils	This class contains generic utility function for read image, array processing, matrix, number conversion

# VsImaging

- A set of functions consisting image processing algorithms.
- More than 80 different classes (algorithms)
- Divided into 10 main groups



# VsImaging : Example

Example of within one group :  
Color Filters Class Group

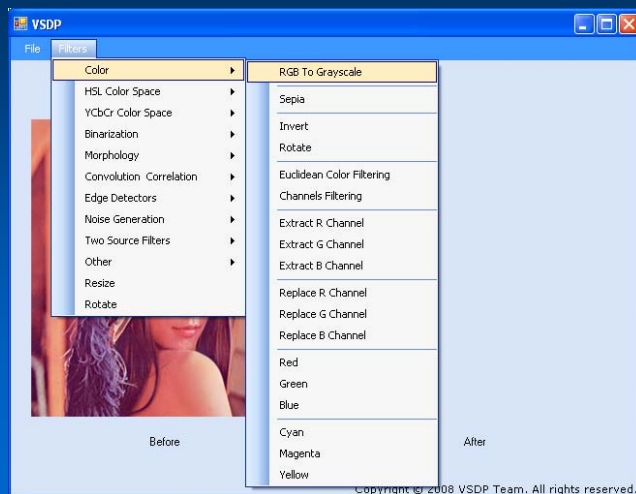
- Grayscale
- Invert
- Channel Filtering
- Sepia
- Rotate Channel
- Extract Channel
- Gamma Correction
- Cyan



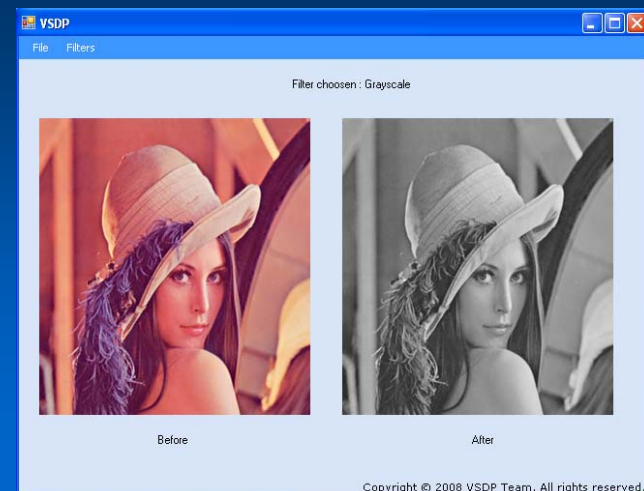
# VsImaging: Test Program



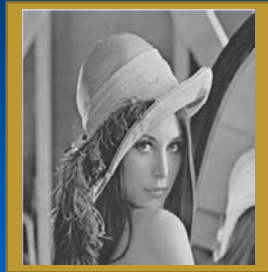
# VsImaging: Test Program



# VsImaging: Test Program



# Comparison with Other Commercial Software



VSDP Processed Image using Grayscale Technique

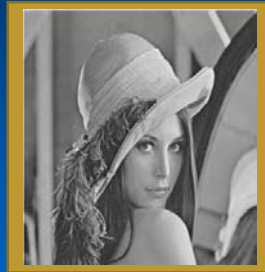


Image from Adobe Photoshop Using Grayscale Technique



# VsMath

- Set of functions for mathematical functions

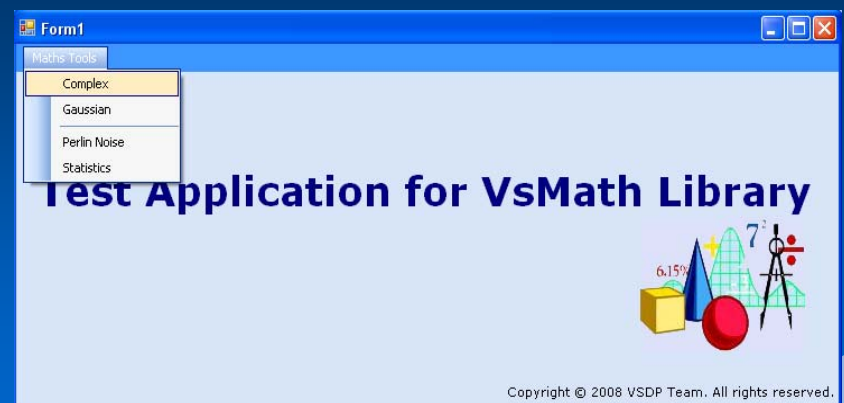
TYPE	DESCRIPTION
Complex	Complex number
ContinuousHistogram	Histogram for continuous random values
Direction	Fourier transformation direction
Fourier Transform	Fourier transformation
Gaussian	Gaussian function
Histogram	Histogram for discrete random values
PerlinNoise	Perlin Noise function
Statistics	Set of statistics functions
Tools	Set of tool functions
AffineTransformation2D	2D affine transformation



# VsMath: Test Program



# VsMath: Test Program



# VsMath: Test Program

ComplexTest

Maths Tools

Enter Values

Enter the first complex  
Real: 3 Imaginary: 1

Enter the second complex  
Real: 3 Imaginary: 2

Mode  
 Cartesian  
 Degree  
 Radian

Operations  
 Addition  
 Subtraction  
 Multiplication  
 Division  
 Calculate with power factor  
 Calculate Conjugate

Result: 6 + 3i



# VsAI

- Contains set of artificial intelligence algorithms.

TYPE
Backpropagation Neural Network (BPNN)
Expert System
Fuzzy Logic
Genetic Algorithm
Fuzzy Artmap



# VsClassifier

- Contains set of classifiers and feature extraction algorithms

TYPE	DESCRIPTION
PCA	Principan Function Analysis functions
LDA	Linear Discriminant Analysis functions
CSLDA	Client SpecificicLDA functions
BayesianPCA	Bayesian PCA functions
Euclidean Distance	Euclidean Distance function
GLCM	Grey Level Co-occurent Matrix feature extraction
Haar	Haar functions
Adaboost	Adaboost functions
Mahalanobis	Mahalanobis function



# VsConfig

- Set of functions to ease users to read and write the configuration files in XML or INI format.

TYPE	DESCRIPTION
XML	Extensible Markup Language format
INI	.INI format



## VsControl

- Set of automated functions to enable users to interface with hardware such as controllers, I/O module, camera and etc via RS232, RS485, Ethernet.

TYPE	DESCRIPTION
ADAM 6050	Control Digital I/O (Ethernet)
ADAM 6017	Control Analog I/O (Ethernet)
ICP CON	Control Digital I/O (Serial)
WEBCAM	Capture Image using Webcam
FRAMEGRABBER	Capture Image using CCD Camera
GSM	GSM module



## VsDatabase

- Set of functions to ease users to connect, read and write data to the RDBMS databases

TYPE
MySQL
SQLite
FireBird
MsAccess
MSSQL Server



## VsComm

- Set of communication functions between the software and other communication protocols such as

TYPE	DESCRIPTION
SSH Tunneling Client	Secure Shell (SSH) protocol
Socket Server	Socket server computer communications
Socket Client	Socket client communication at the client site
FTP Client	File Transfer Protocol network
HTTP Client	Hypertext Transfer Protocol network
XML-RPC Server	XML Remote Procedure Call Server
XML-RPC Client	XML Remote Procedure Call Client



## Part 2: VSDP Applications (VsApp)



# VsApp

- Set of applications libraries for specific usage to ease the user to use pattern recognition and other preprocessing algorithms.
- All the applications will be developed using C# language
- Using all library that has been developed in VSDP
- All applications is stand alone (do not have any dependencies)

TYPE
Lead detection (outsorce)
OCR (outsorce)
Face recognition(outsorce)
Needle counter
Digital Watermarking
Wood Recognition

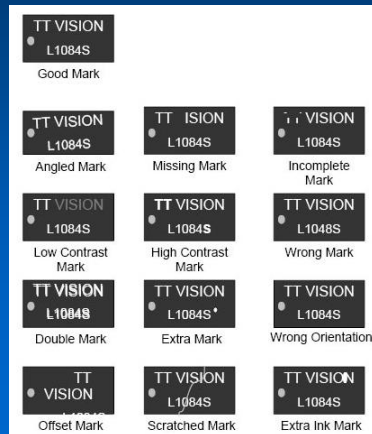


# VsApp : Lead Inspection

- Used in machine vision system
- Largely used in factory such as Texas Instruments, Microchip, Motorola.
- Manage to detect defect leads such as IC.
- Manage to sort IC by their types, serial number, etc.

# VsApp : Lead Inspection

Example of Application: Lead Inspection

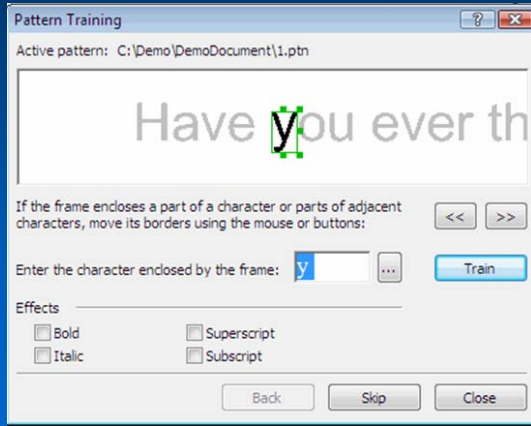


# VsApp : OCR

- Optical Character Recognition
- Field of research in pattern recognition, artificial intelligence and machine vision
- Convert handwritten, typewritten, or scanned text to machine- editable text.
- Largely used in hand phones, touch screen, etc
- The accurate recognition of Roman Alphabet, typewritten text currently exceed 99%
- Hand printing, cursive handwriting, and printed text in other scripts (especially those with a very large number of characters still the subject of active research.

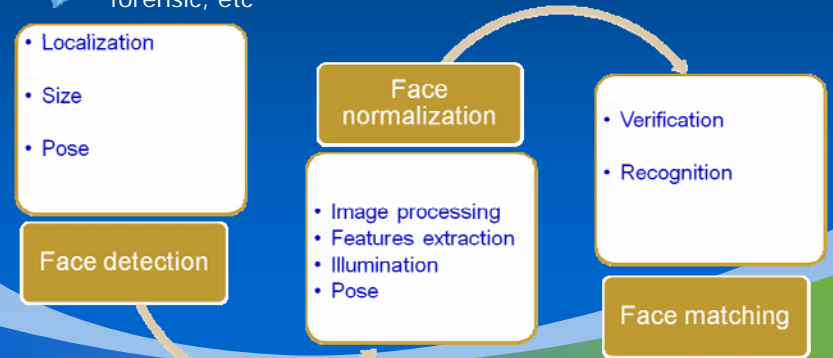
# VsApp : OCR

Example of Application: OCR



# VsApp : Face Recognition

- Neuroscientists and Psychologists also interested in this application
- Used in commercial industries for security purpose, forensic, etc



# VsApp : Face Recogniton

Example of Application: Face Recognition

