SME Development Fund
Final Report of Approved Project

Project Title : Development of a web-based platform for SME in freight forwarding
(Reference No.) business to optimize cargo loading operations (An enhancement of
Intelligent Logistics Optimizer D02 002 078) – D09 001 006

Period covered : From   01/04/10   to   31/03/11
                 (dd/mm/yy)   (dd/mm/yy)

1.	Project Details

Please mark with "*" if any of the following project details is different from that in the project proposal appended to the project agreement.

Project Reference and Title

Development of a web-based platform for SME in freight forwarding business to optimize cargo loading operations (An enhancement of Intelligent Logistics Optimizer D02 002 078) – D09 001 006

Project Summary (in not more than 150 words)

This project is to enhance the current Intelligent Logistics Optimizer (ILO), which was funded by TID in 2003. ILO is a software package that is used for the optimization of container palletization. With the help of ILO, forwarders can maximize the usage of pallet space and hence, maximize the profit. ILO has been widely reported in different newspapers and it has won a silver medal in the 33rd International Exhibition of Inventions, New Techniques and Product, Geneva, 2005. The technology used in ILO was patented in March 2005 (HK1067934) and it is definitely a breakthrough in forwarders' daily operations. However, ILO is not widely spread in the industry, it is approximately 300 users. It is found that most logistics industrialists do not have the required knowledge and skill to maintain the software and therefore, there is a strong demand on the team to upgrade the current standalone version ILO to the Internet version so that users can access it at anytime in anywhere and they don't need to worry about the compatibility of the software with their current operation system. In conclusion, the PolyU project team would like to migrate the old ILO to the Internet platform and enhance its functions, such as a more user friendly interface with graphical representation, to achieve a better performance. With this enhancement, more SMEs in freight forwarding business can benefit from this TID funded project and enjoying the advantages on saving both operation costs and lead-time, and hence, their competitiveness would be improved.

Project Objective(s) (in not more than 80 words)

This project concerns with the enhancement and the implementation of new features on the basis of the successfully in-house developed application named Intelligent Logistics Optimizer (ILO). The key upgrading items include the migration to web platform and to support the decision of cargo loading for air, sea and land transports by taking into consideration of all constraints such as sizes of pallets, flight schedule, weight and size of cargoes to maximize the profit.

Recipient/Collaborating/Implementation Organisation

Recipient Organisation   : The Hong Kong Polytechnic University

Collaborating Organisation(s) : Hong Kong Logistics Association

Implementation Agent(s)   : _____

Key Personnel

	Name	Company/Organisation	Tel No. & Fax No.
Project Co-ordinator :	Cham Wah HENRY LAU	The Hong Kong Polytechnic University	2766 6628 2362 5267
Deputy Project Co-ordinator :	Ching Yuen CHAN	The Hong Kong Polytechnic University	2766 4980 2362 5267

Project Period

	Commencement Date (day/month/year)	Completion Date (day/month/year)	Project Duration (No. of months)
As stated in project agreement	01/04/2010	31/03/2011	12
Revised (if applicable)			

Methodology Employed

The applicant of this project has solicited HKLA to provide the latest requirements, trend of freight forwarding operations. Furthermore, the current ILO version will be used as a jumpstart for the enhancement of the web-based solution and we divide the implementation of the new system into three stages:

1. Development Stage

In this stage, an implementation team with exclusive knowledge in the areas of Genetic Algorithm, Fuzzy Logic and optimization is formed. This is the base unit to support the web-based ILO. The current ILO functions have been improved with regard to suggestions from the Hong Kong Logistics Association (HKLA) in order to bridge to the practical operation issues in the logic industry. It is known that most of the logistics companies are still using low end computer meaning that the processing speed is low. Due to their job nature, speedy computer is not necessary. However when using the standalone ILO, it involves heavy calculation which their computer is not capable to handle the job. After migrating the standalone ILO to web platform, high end computer has been adopted as server which can process complicated calculation efficiently. Consequently, the user enjoys faster response in their daily operation. Even though user is using low end computer, it will not affect the speed of using the proposed platform because speed of computer is not directly related to the speed of accessing internet. Professors with expertise and researchers were involved in this area to ensure that the best techniques will be equipped in the new system. For the security of the new platform, first, it incorporates with SSL (Secure Socket Layer) as basic security layer. Second, each user has their own password to access the application. User management console controls the access right of each user to ensure that they cannot cross read/write/modify other users information without permission. Information sharing is another important factor considered in the project; hence, reporting function has been built for both internal and external use. For external use: User generated load plan report can be sent to consignee before shipment, it is very important that the consignee will know whether their goods are loaded into the container and ensure that they are in right position. Furthermore, they can comment on whether the loaded cargoes position is acceptable or not. And it is also useful for airline to check the position of each loaded cargo, especially when they found there is any problem of specific loaded cargo, they can tackle the problem at once. The current practice doesn't have this feature and it is proposed for future use so that different parties can work closer and information can be exchanged faster. For internal use: The other reports help the company to streamline their internal process. Through the information of different reports, the company can further integrate their job flow among departments. The P/L report can also provide a nearly real time profit and loss for upper management. Upper management and managers can share the information on it so as to improve the company efficiency. This feature is built due to the comments from the pilot users from the old ILO. They have mentioned that the old ILO cannot streamline the process as it is only a middleware and they requested to have a more complete one stop solution.

To speed up the development stage, the core module is developed by the applicants while the coding is going to be done by software house through the standard university tendering process.

During the course of implementation, HKLA provided sea and air freight shipment data (without company and monetary terms) from their members for the need of system design. The HKLA also assisted in monitoring the progress, ensuring that the requirements of the logistics industry are well catered. The project applicants are well understood that the logistics requirements may be changing from time to time, and the web-based ILO is developed in a flexible manner.

2. Beta Testing Stage

The implementation team has test-drive the web-based ILO with the selected forwarders during this stage. The implementation agent also uses the beta versions to perform necessary tests in both reliability and accuracy of web-based ILO before it is finally released.

3. Finalizing Stage and Afterward

The intellectual property (IP) rights of the web-based ILO will be managed according to the SDF Guidebook Section 6.4 (March 2008). For logistics SMEs who would like to use the web-based ILO, the HKLA and PolyU team will take care of maintaining to satisfy the ever-changing logistics industry requirements. After the project completion, the team (PolyU and HKLA) will offer free service in the first year and PolyU will charge $100 per user per year after the one year trial period no matter he/she is the HKLA member or not. The $100 will be used to maintain the service of the proposed software including software update, debug, internet service and the running cost of the hardware server.

2. Summary of Project Results

Project Deliverables

Please list out the targeted project deliverables as stated in the project proposal appended to the project agreement and provide details of actual result achieved, including beneficiaries, for each of them.

The proposed enhancement to the current ILO includes state-of-the-art technologies and optimisation algorithms generated from researches at The Hong Kong Polytechnic University. The following is the detailed description on the functionalities/features of the proposed system.

Functionalities:
1. Pallet space optimization – select appropriate cargoes to create optimize load plan.
2. Cost optimization – select the most cost effective cargo and pallet for each shipment.
3. User management - multiple accounts can be created within a company so that different users can be assigned for different tasks.
4. Reports – P/L report, company list, graph of business pattern, etc...
5. Load plan sharing - consignee is able to track their cargo location in the pallet through web browser.

Features:
1. Web-based operation - no additional software is needed.
2. Job Monitor - the system keeps track of the tasks of each user being handled
3. Central upgrade - any upgrade will only take place in the server side and it will not affect the daily operation of users with their PC.
4. Speed – enhanced algorithm to speed up the calculation of the optimized load plan.
5. Support of different pallet type – pallet from rectangular shape to irregular shape is supported and is able to customize the size.

After the completion of the project, the new ILO further enhances the palletization in terms of space utilization. We anticipate to speed-up the cargo planning processes and it supports wider pallets and containers spectrums. The new ILO allows forwarders to share relevant information (e.g. load plan) with their shippers and consignees all over the world. The new ILO now running on a web-based platform so that forwarder with limited IT knowledge can also be benefited from this application.

Two seminars and workshops were conducted on 16-March 2011 and 30-March 2011 in The Hong Kong Polytechnic University. A total number of 140 head counts were participated in these events. The new ILO was introduced during the event, interactive demonstrations, hands on training and group discussions of ILO were provided in order to help logistics SMEs to understand the new ILO and enhance their knowledge on how new ILO can improve their operational efficiency in different logistics activities. Leaflet and training manuals were distributed to the participants of training workshops.

An official website is built so that Logistics SMEs can access any update of the project and access the new ILO after registration. The website URL is: http://www.ise.polyu.edu.hk/ilo2.

Actual Benefits to SMEs

Please indicate *in clear, specific, tangible and quantifiable terms* the benefits of the project and its contribution to enhancing the competitiveness of Hong Kong's SMEs in general or SMEs in specific sectors, in not more than 400 words.

1) The web based ILO enhances freight forwarder's working efficiency in cargo planning.

2) The web based ILO eliminates the cost of IT support of the company thus lower overall operation cost.

3) The web based ILO provides a better communication platform between company and customer, thus increasing the competitiveness of HK freight forwarding industry.

4) A new operation concept with ILO has been deployed to large number of SMEs through seminars, Workshops as well as media thereby update their logistics knowledge in Hi-Tec areas.

5) Official website is built in order to share update information of the new ILO.

6) A total number of 70 trail accounts were created of the new ILO after the seminars/workshops.

After the 2 seminars and workshops for introducing the new ILO, a total of 132 questionnaires were collected. From the results, over 90% of the respondents agreed the project is useful to their companies. In addition, over 75% of them were very satisfied or satisfied with the overall performance of the project.

Milestones (in chronological order)

Please indicate if the milestone is completed (C), deferred (D) or not achieved (N). If it is deferred, please indicate the revised completion date. For those milestones which are deferred or not achieved, please also provide the reasons under item 2.4.

	Milestone (as set out in the project proposal appended to the project agreement)	Original target completion date	Revised target completion date (if applicable)	Status (C/D/N) #
(a)	Requirements Gathering	31 May 2010		C
(b)	Development Stage	31 Aug 2010		C
(c)	Beta Testing Stage	30 Nov 2010		C
(d)	Finalizing Stage	28 Feb 2011		C
(e)	Project Dissemination	31 Mar 2011		C

	Details of Implementation:			
(f)	Materials will be collected and be used to generate the system requirement document.	01 Apr 2010		C
(g)	Final version of the tender document and release tender following the university tender process.	15 Apr 2010		C
(h)	Vendor submits scope of consultancy report.	1 May 2010		C
(i)	Vendor submits first consultancy report (scope).	15 May 2010		C
(j)	Vendor submits "Requirement Reports".	1 Jun 2010		C
(k)	Vendor submits "Software Specifications".	1 Jun 2010		C
(l)	Software Specification finalizes.	1 Jun 2010		C
(m)	Vendor starts software implementation.	1 Jun 2010		C
(n)	Vendor submits finalized data structure of Web-based IIO.	1 Jul 2010		C
(o)	Vendor submit preliminary prototype of Web-based ILO with working demonstration.	1 Jul 2010		C
(p)	Vendor submits working copy of Web-based ILO.	1 Aug 2010		C
(q)	The Applicant tests drive Web-based ILO.	1 Sep 2010		C
(r)	Web-based ILO must be installed on web server for selected users testing.	1 Dec 2010		C
(s)	Working model of Web-based ILO releases for public testing.	1 Jan 2011		C
(t)	Stable version of Web-based ILO releases	15 Feb 2011		C
(u)	Seminar	1 Mar 2011		C
(v)	Workshop	15 Mar 2011		C
(w)	The Applicant submits "Final Report"	31 Mar 2011		C

Marketing/Dissemination Activities (in chronological order)

Please provide details of all completed and on-going promotional and/or dissemination activities for each of the project deliverables. Such activities may include advertisements, seminars, workshops, etc.

Date/ Period	Description	No. of beneficiaries (Please specify whether they are SMEs or not)
8-Mar-2011	Email Ad. via Shipper Council (Shipper's Today)	5000 SME
10-Mar-2011	Ad. on Hong Kong Economic Journal(信報)	Estimate: SME – 10000/Non SME - 20000
15-Mar-2011	Ad. on Hong Kong Economic Journal(信報)	Estimate: SME – 10000/Non SME - 20000
16-Mar-2011	Seminar on Intelligent Logistics Optimizer Ver. 2	39 SME
16-Mar-2011	Workshop on Intelligent Logistics Optimizer Ver. 2	39 SME
30-Mar-2011	Seminar on Intelligent Logistics Optimizer Ver. 2	31 SME
30-Mar-2011	Workshop on Intelligent Logistics Optimizer Ver. 2	31 SME
30-Mar-2011	Website Promotion on Intelligent Logistics Optimizer Ver. 2	Estimate: SME - 10000
	Total no. of beneficiaries - no. of SMEs	: 35140+
	no. of companies which are not SMEs	: 40000+

Future Plan for Promoting the Project Deliverables

The proposed system is to enhance the freight forwarder operations in the planning for cargo loading with various cargo types. To raise the popularity, it is web enabled and with proper maintenance, it can last for more than 5 years. PolyU team will host the service for at least 5 years and responsible in maintaining the web based ILO. Furthermore, a web site detailing the project has been built and promotion leaflet has been printed in order to promote the concept of this web based ILO in different events.