CREATING A NEW TOURISM WORKFORCE THROUGH ICT

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ABSTRACT

The *Internet of Things* (IoT) is the interconnection of everyday computing devices, enabling them to send and receive data. IoT is re-shaping the way organizations operate, in addition to changing how people live and work. In Malaysia, the population is categorized into three income groups: Top 20% (T20), Middle 40% (M40), and Bottom 40% (B40). Though the income levels for each group has improved, the escalating costs of living from inflation and slower wage growth has affected the disposable income especially for the B40 group. The Government has drawn up several strategies under the 11th Malaysian Plan to increase the household income of the B40 group in an effort to create better quality of life and enhance wellbeing. One industry that can promote and contribute to this initiative is tourism. In 2016, Malaysia recorded an arrival of 27 million tourists, translated to MYR 82 billion receipts. We have developed *e-Tourist*, an App where tourist and guide can meet and create the perfect holiday or day out. Based on the concepts of Uber and GrabCar, this App extends the privacy and safety of tourists through security checks with various government agencies. A small sample of tourist and guides from Terengganu was chosen to assess the App before releasing it to the public and initial responses from both groups are encouraging. The idea of e-Tourist can be extended to other industries and benefit not only individuals, but also the Federal and State agencies in promoting tourism.

Keywords: Information Technology, Internet of Things, Tourism Industry

1.0   INTRODUCTION

The *Internet of Things* (IoT) is the interconnection of everyday computing devices, enabling them to send and receive data. IoT is re-shaping the way organizations operate, in addition to changing how people live and work. In Malaysia, the population is categorized into three income groups: Top 20% (T20), Middle 40% (M40), and Bottom 40% (B40). Though the income levels for each group has improved, the escalating costs of living from inflation and slower wage growth has affected the disposable income especially for the B40 group.

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This paper reports the works and results of a *Computing* undergraduate project at *University College TATI* under the *Software Engineering Research Group*. The conceptual idea was presented at the *Research and Innovation Week 2018* and was awarded the silver medal [1]. This work is the materialization of the concept presented. This project is a collaborative effort between academic and government agency to promote tourism to Terengganu and Malaysia. This paper is organized as follows: Section 2.0 presents the requirement analysis phase of the project, entailing review of similar systems; Section 3.0 presents the design and development of e-*Tourist*, a mobile App where tourist and guide can meet and create the perfect holiday or day out; Section 4.0 presents the testing phase of the App; and finally, Section 5.0 presents the conclusion of this project.

2.0   REQUIREMENT ANALYSIS

A number of similar systems was surveyed to identify critical features of the proposed App. This is to ensure uniformity across systems and applications used by tourist and guides. Among the systems reviewed include:

2.1   Showaround

Showaround [2] is a web-based application where tourist can hire local guides for private tours as (Figure 1). Tourists can discover local *Point of Interests* (PoIs) from an insider's perspective and guide. *Showaround* enables tourist to create personalized tour, plan vacation activities in advance, and make online payment. It is available on Android and filters guides according price, language spoken, services offered and others.
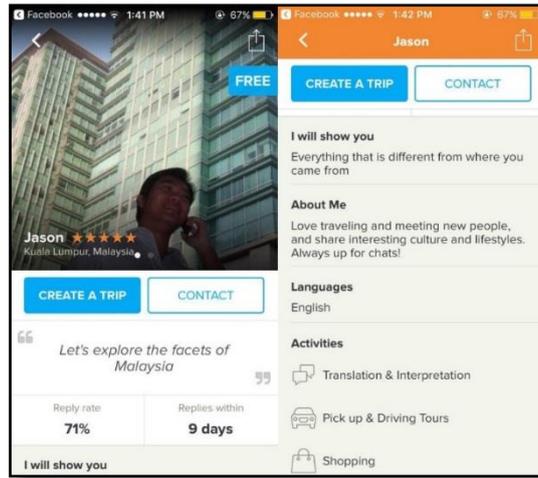
Figure 1: Screen shot of *Showaround*

2.2   Nuflit

Nuflit [3] is an open platform where tourist can chat with guides without revealing personal information until the guide is booked and hired (Figure 2). It adds another layer of security where the identities of the guide is verified by Nutfit and peer reviews are displayed to tourist. Advanced payment to Nutfit is required and will only be released upon services rendered. Tourist can hire a local or private guide for city tour or show arounds.
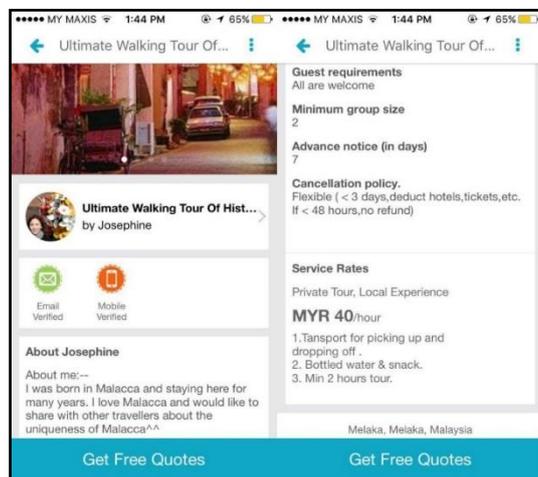

Figure 2: Screen shot of *Nuflit*

2.3   Toorest

Toorest is an integrated platform where a local (guide) becomes a host during a trip to provide insider tips and complete local experience (Figure 3). Tourist can book local experts as guide on the go and chat with them using *Toorest* in-app messaging features.

Guides give insider tips on local PoIs and make extra income. Tourist can also sign up as a physical guide and provide different services; or as virtual guide to help other tourists through in-app messaging service. Guides can schedule the calendar and set the days they want to work.
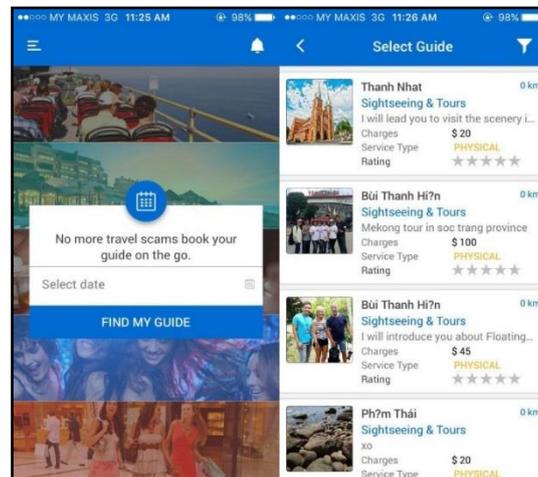

Figure 3: Screen shot of *Toorest*

2.4   Other Systems

Other systems reviewed worth mentioning include *TourGuide*, *Alphlex*, *Wogogo*, *Toorso*, *Localz*, *Zarco*, and *Tourist*.

TourGuide [4] is a mobile application where tourists can find local guides who are willing to help them discover the local and interesting PoIs. It is available on iOS and Android. *Alphlex* [5] connects user with experienced, knowledgeable and friendly guides who offer a wide variety of private tours that can be tailored to needs, schedule and budget. *Alphlex* provides many features such as search by keywords, location or category, read reviews of the tour and guide area before booking, chat directly with guides to plan and customize tour in real-time before booking, secure online payment system and built-in features to manage appointments, post feedback, and track payment. *Alphlex* supports four different languages (English, Spanish, Chinese, Japanese) and available on both iOS and Android.

Wogogo [6] is a tour guide matching platform between tourists and local guides that uphold the concept of "*Global Tour Guides with Local Service*". It is available on both iOS and Android. *Toorso* [7] is a travel, tourism and entertainment guide with local business listing platform. It offers tourists access to the information of their choice. *Toorso* lists

numerous information including name, phone number, keywords, location, category, customized map, facilities and guide rating. *Toorso* is available on iOS and android.

Localz offers tourists the experience of a local guide in discovering their destination PoIs. Localz provides large and diverse group of tours, starting from simple sightseeing to once in a lifetime experience for example going deep into the world's oldest caves. Localz is available on iOS and Android. *Zarco* is a mobile app that was built over a strong desire to bring tourists and cities together and designed to allow tourists to to book a local guide within a few taps. Zarco is available on iOS and Android. *Tourist* [8] democratizes the tourism industry by providing a marketplace for tourists and guides to connect on demand and in real time using their geolocation and instant mobile payments. It uses notifications and voice-enabled chat for tourist and guide. *Tourist* is available on both iOS and Android.

Based on the survey and analysis of existing systems, a conceptual model of the proposed App was designed (Figure 4).
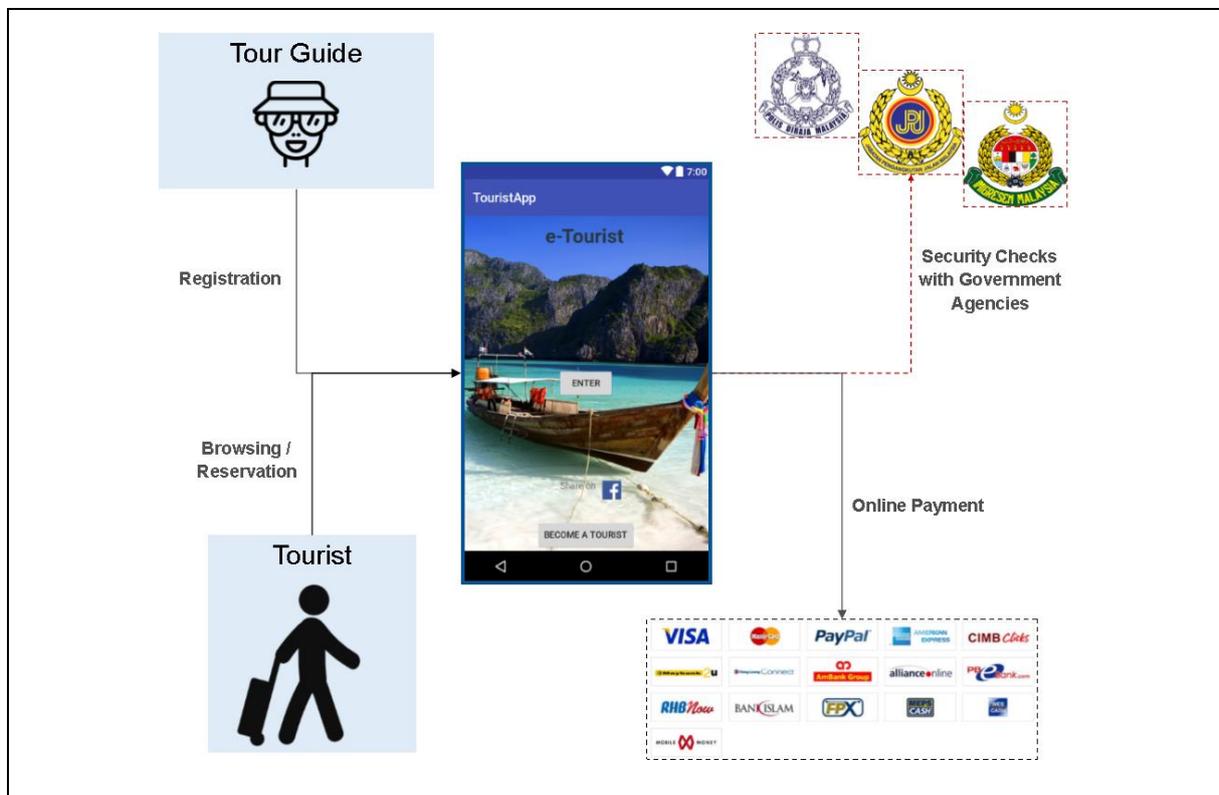

Figure 4: Conceptual Model of the *e-Tourist* App

e-Tourist would serve two categories of users namely *Guide* and *Tourist*. The registration of *Guides* will be subjected to security checks with relevant government agencies such as the police (PDRM), immigration, and the *Road and Transport Department* (JPJ). This would be an added feature for *Tourists*, which is lacking in some of the existing systems. *Tourists* need to register before using the system as *e-Tourist* collects upfront payments prior to the start of any activities or services. This is to safeguard the interest of *Guides*. An online payment mechanism would be an advantage to the App as it would make *e-Tourist* a one-stop-center for all planning, booking and payment activities for both *Tourists* and *Guides*.

3.0   SYSTEM DESIGN AND IMPLEMENTATION

The design and development of *e-Tourist* adopted the traditional waterfall model approach for system development. For the purpose of this project, the scope was set to the state of Terengganu in Malaysia and limited to the registration of *Guides* and *Tourists*. Security checks and online payment mechanism were not included due to time restrictions and will be pursued in future projects. Tools used include *Android Studio* and *Adobe Dreamweaver* for interface design and *HTML* and *JAVA* as scripting languages, and *PhPmyAdmin* as the database. Figures 5(a) and 5(b) illustrate the flowcharts for *Guides* and *Tourists* respectively.
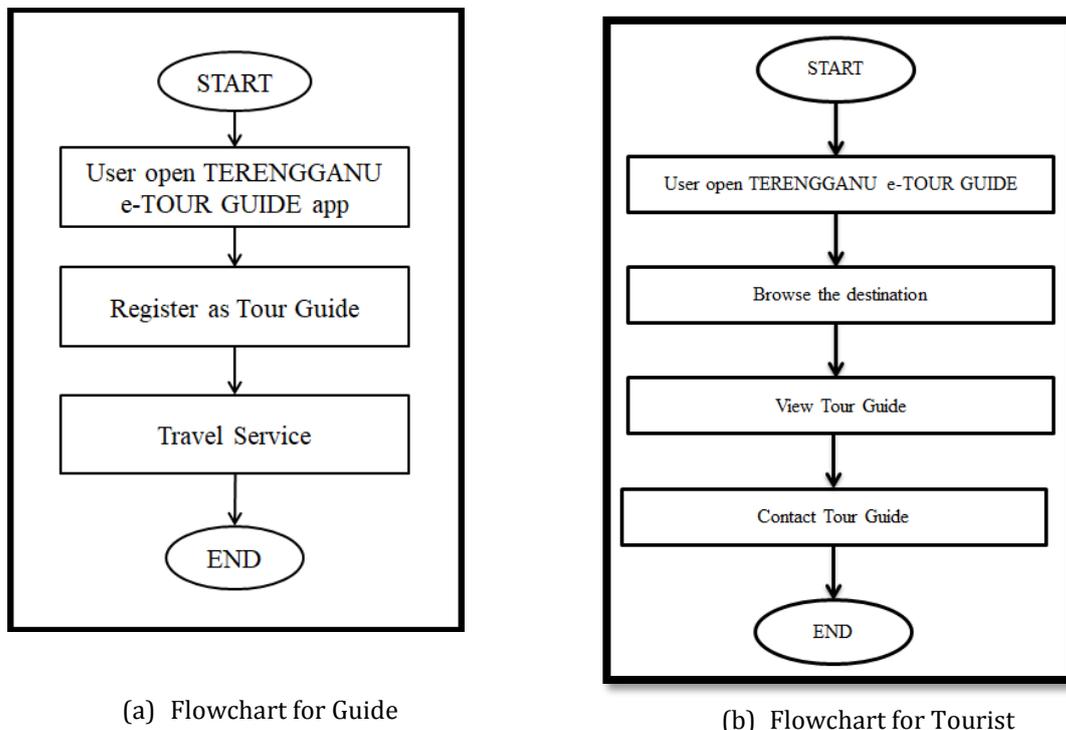

(a) Flowchart for Guide

(b) Flowchart for Tourist

Figure 5: Flowchart of the *e-Tourist* App

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Guides register with the system and indicates the vicinity he/ she will be offering services, types of service offered, costs, and contact details. *Tourists* register with the system, can browse popular destination in Terengganu, search local *Guides* registered in the area, and contact *Guides* for planning activities. Figures 6(a) – 6(e) illustrate screen shots of the App.
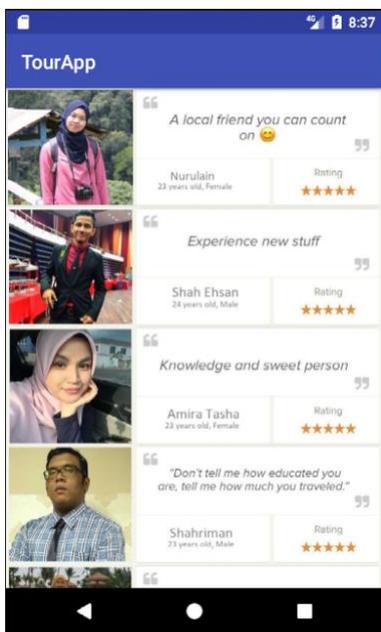

(a) Main Interface

(b) Destination Selection Page

(c) Island Selection Page

(d) List of Guides Page

(e) Details of Specific Guide Page

Figure 6: Screen shots of the *e-Tourist* App

Figure 6(a) illustrates the main page of *e-Tourist* where registered *Tourists* and *Guides* access the App. Other users (or existing *Tourists*) can register to be a *Guide* by clicking the button at the bottom of the page. Figure 6(b) illustrates the destination selection page. As Terengganu is renown for its islands and beautiful beaches and based on the data from the *Tourist Information Center* in Kemaman; the destination is divided into two namely *Island* and *Nature*.

Figure 6(c) illustrates further division of *Island* into *Pulau Kapas*, *Pulau Redang* and *Pulau Perhentian.* The Nature selection is further divided into *La Hot Spring*, *Sekayu Waterfall* and *Cemerong Waterfall*. Figure 6(d) illustrates the *Guides* that serves a particular PoI and ratings by previous *Tourists* are displayed to assist in the selection of a suitable *Guide*.

Finally figure 6(e) illustrates the details of a particular *Guide*, entailing language spoken, service offered and contact details. Interested *Tourist* can contact *Guides* to plan their holiday and discuss additional services required.

4.0   TESTING

The App was tested by a group of 30 students and 20 lecturers from *University College TATI* to confirm its functionality and feasibility as a tool for the tourism industry. Each were given copy of the App where they register as *Guides* and *Tourists*. They were given a time of one month to use the system, adding (new) PoIs in their area. Few technical glitches were noted on the first week of testing such as page resolution and page referrals, mainly due to the various phone operating systems used (Android versions and iOS). All bugs were fixed by the second week and the App was running smoothly by week 3.

One advantage of the test was the inclusion of new PoIs as the students and lecturers were from various parts of Terengganu, and this has led to newfound PoIs that can be developed by the authority. Overall, all users expressed satisfaction with the system and hoped the overall idea of *e-Tourist* could be materialized as they could start their own "travel agency" using this App.

5.0 CONCLUSION

This paper has presented the design and development of *e-Tourist*, a virtual platform where tourist and guides can meet and create the perfect holiday or day out based on the concepts of *Uber* and *Grab*. The basic idea and underlying technology can be extended to other industries and benefit not only individuals, but also government agencies and the private sector. The B40 group could benefit through low startup cost and flexible working hours, with no or little training needed. To the industry, e-Tourist could promote a more competitive pricing scheme and new tourist attractions. Future directions of research and work would be in the extension of *e-Tourist* to include security checks and online payment mechanism.

ACKNOWLEDGEMENTS

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