

# **SYSTEM AND METHOD FOR FACILITATING REFUNDS**

## **FIELD OF THE INVENTION**

The present invention relates to a system and method for facilitating refunds, such as but not limited to a tax refund for purchases made by tourists while  
5 travelling within their destination countries ("tourist refund").

## **BACKGROUND ART**

The following discussion of the background to the invention is intended to facilitate an understanding of the present invention only. It should be appreciated that the discussion is not an acknowledgement or admission that  
10 any of the material referred to was published, known or part of the common general knowledge of the person skilled in the art in any jurisdiction as at the priority date of the invention.

In line with tax principle while at the same time attracting tourists, jurisdictions that levy a Value-Added Tax (VAT) or Goods and Services Tax (GST) or  
15 similar would allow individuals such as tourists to claim a tax refund on the goods purchased within a country. This tax refund would be administered upon the departure of the tourists from the country; provided certain criteria are met such as the goods are unopened, unused and exported out of the country.

20 The Revenue/Customs authorities of the country can administer tourist refund scheme(s), although it is increasingly popular for commercial contractors to be appointed to administer on their behalf. These commercial contractors typically work in cooperation with the Revenue/Customs authorities to ensure that the appropriate amount of tax refunds is paid out to the tourist(s). A  
25 service or commission fee will be charged which would form the bulk of the revenue model for the commercial contractor.

Two methods of administration of tourist refund schemes are currently being operated in the world. One is based on the authentication of paper forms and mandatory checks including physical checks at the point of departure by

Revenue/Customs officials, and the other that is based on the electronic capture of transaction data by static devices at a participating retailer's shop and the use of this data to perform a risk-based selection of transactions for physical checks at the point of departure by Revenue/Customs officials.

5 For example, in Singapore the GST paid for purchases at the shops can be refunded via an electronic Tourist Refund Scheme (eTRS). The eTRS scheme starts when a tourist makes a purchase at a participating retailer and shows his passport at the point of purchase to prove his eligibility. Some non-exhaustive examples of the criteria that the tourist must fulfill in order to be  
10 eligible for the GST tax refund include:

- i. the tourist is not a Singapore citizen or permanent resident of Singapore;
- ii. the tourist had not spent more than 365 days in Singapore in the past twenty-four (24) months before the date of purchase;
- iii. the tourist has not been employed in Singapore at any time in the past six  
15 (6) months before the date of purchase;
- iv. the tourist is sixteen (16) years old or above at the time of purchase; and
- v. the tourist is not a crew member of any aircraft or international cruise departing Singapore.

When paying for the purchases, the tourist would typically utilize a credit/debit  
20 card. Information such as the sixteen-digit primary account number (PAN) related the credit/debit card may be used as an identifier or token for tagging the purchases entitled for refund. The participating retailer (merchant) may also issue a paper eTRS Ticket to the tourist. The eTRS Ticket can also be used as a token instead of the credit/debit card.

25 With this token, the tourist can apply for a GST refund at the eTRS self-help kiosk before checking in at an airport or other immigration departure points such as, but not limited to, an airport or a cruise centre. If approved, the eTRS self-help kiosk would generate a Notification Slip indicating "Approved". Depending on the mode of refund selected by the tourist, the tourist can

obtain the refund (minus a service fee) by a direct credit into a designated refund account, such as credit card account, by a bank cheque or in cash at a central refund counter using the approved Notification Slip. If not approved, the eTRS self-help kiosk would generate a Notification Slip indicating that the refund is “Not Approved”. The tourist then brings his purchases to the Customs counter for physical inspection. If the goods pass Customs inspection, a Customs officer would generate a Notification Slip indicating “Approved” to replace the “Not Approved” Notification Slip. During peak hours, these could become bottlenecks in processing the departing tourists as the customs counter is limited by manpower while the self-help kiosks may be overwhelmed by the number of tourists applying for refunds. Departing tourists typically have to arrive at the immigration departure points earlier to locate these static self-help kiosks in anticipation of a queue.

Further, in order to qualify for the GST refund in Singapore, the tourist must meet certain criteria. These criteria include spending at least S\$100 (including GST) that can be accumulated in up to three (3) same-day invoices or receipts from retailers bearing the same GST registration number. Also, the tourist has to depart with the goods via the airport or cruise centre within a predetermined period, such as two (2) months from the date of purchase. The tourist must also depart with the goods within twelve (12) hours after obtaining approval of the GST refund. If the tourist is departing on an international cruise (excluding cruises-to-nowhere, round-trip cruise and regional ferry) from the cruise terminal, he must declare that he is exiting Singapore and will not return via the same voyage on the same ship, using his cruise itinerary as documentary proof of departure, and commit that he will not be returning to Singapore within forty-eight (48) hours. Further additional criteria may be imposed on student pass holders.

The authorities typically require that the purchases are verified against the invoices or receipts, and the goods are unused, unopened and exported out of the country and this is done at a counter either before check in (for goods that are to be checked in) or after immigration, to ensure that the goods are exported. However, the authorities at times do a targeted check instead.

With the proliferation of mobile devices, it is common for tourists to travel with at least one personal mobile device that may be used to connect to the internet either via a wireless fidelity (Wi-Fi) networks or mobile telecommunications networks. Hence, it is envisaged that the functions of the mobile device, in particular smartphones, can be better utilized in allowing electronic tax refunds to be facilitated through the use of a dedicated software application residing on this mobile device together with its onboard camera, geo-location module, wireless communication module (Bluetooth and Wi-Fi), alarm notifications, internet connectivity etc.

- 10 The present invention seeks to provide a system and method that alleviates the above-mentioned drawbacks or meet the above needs at least in part.

## **SUMMARY OF THE INVENTION**

Throughout the document, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Furthermore, throughout the specification, unless the context requires otherwise, the word "include" or variations such as "includes" or "including", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

The present invention seeks to meet the needs of a tax refund system that does not rely on self-help kiosks, and enables users such as tourists to access their tax refunds efficiently and accurately. The invention proposes a system and method of administration by way of an application software installable on mobile devices to verify user identity, facilitate a completely paperless tourist tax refund experience, and enable more types of transaction data to be captured for a more complete risk-based selection.

A technical problem the invention seeks to solve relates to the bottlenecks faced by customs at peak hour. Another technical problem is associated with

the need to verify identities of tourists and transactions, such as purchases against the invoices and receipts in a more effective and efficient manner to reduce identity and transaction frauds.

The above and other problems are alleviated at least in part and an improvement in the art is made by a system in accordance with this invention.

A first advantage of the system in accordance with this invention is that the tourist refund process is completely electronic, thereby eliminating the need to deal with paper refund tickets and paper receipts. A second advantage of the system in accordance with this invention is that the tourist is able to register in

their own time and convenience on their mobile devices and after logging into the system, the tourist is able to view a consolidated list of all the refund claims they have made via the system, the additional spending required in order to fulfil the minimum spending requirement, as well as the amount of intermediate value accumulated and used. Such intermediate value may be

translated into a form of 'rewards points' or the like. An associated third advantage of the system in accordance with this invention is that by having an intermediate value system (in the form of rewards point or the like) that is currency agnostic, there is no need to convert currencies. This mitigates any fluctuations in the exchange rates. Such an arrangement provides more

certainty to the tourist in terms of the amount of tax refund obtainable, which can be spent even before the refund was actually approved. In accordance with an aspect of the invention there comprises a system for facilitating refund to a user comprising: a mobile device having means to communicate with a central processor for the generation of a refund account and a unique

identifier; the unique identifier associated with the user; a computer device operable to access the unique identifier for verification upon receipt of a refund qualifying transaction associated with the user, the computer device further operable to receive and send information relating to the refund qualifying transaction and generate a refund request upon successful verification; and the central processor operable to be in data communication with the computer device to receive or send information relating to verification of the unique identification and the refund qualifying transaction and process

the verification or refund request, the central processor further configured to generate an electronic ticket to be sent to the mobile device for the generation of a refund upon successful process of the refund request.

- 5 In some embodiments, the refund may be a tax refund, and be in the form of an intermediate value. The intermediate value may be derived from the actual value of refund based on a conversion rate.

- 10 In some embodiments, the computer device may be a point-of-sale device, such that the point-of-sale device may be configured to directly send information relating to the refund qualifying transaction to the central processor.

- 15 In some embodiments, the generated unique identifier may be encoded as a quick response (QR) code and the computer device accesses the unique identifier by scanning the QR code displayed on the mobile device.

- 20 In some embodiments, the central processor may be operable to send the electronic ticket to a third party server for further verification of the refund qualifying transaction and confirmation of the refund.

- 25 In some embodiments, the central processor stores the information relating to the refund qualifying transaction in a database before the electronic ticket is generated and sent to the third party server.

- In some embodiments, the mobile device may be operable to send an electronic notification related to a requirement being met. The requirement may be a confirmation of departure, or a Declaration of Eligibility.

- 30 In some embodiments, the mobile device may be operable to receive a notification of refund issued by a third party server once the electronic ticket is processed successfully.

In some embodiments, the central processor is operable to receive a notification of refund issued by a third party server once the at least one electronic ticket is processed successfully and the central processor is operable to send a notification of refund to the mobile device.

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In some embodiments, the unique identifier associated with the user is generated based on a passport information of the user.

10 In some embodiments, the unique identifier is generated after a registration process.

In some embodiments, the unique identifier is further associated with an image capture of the passport.

15 In some embodiments, the mobile device is integrated with the computing device.

In some embodiments, the central processor is operable to send a notification to the mobile device indicating the success or failure of the refund request.

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In some embodiments, there comprises another unique identifier associated with a retailer using the computer device.

25 In some embodiments, the another unique identifier is generated after a registration process by the retailer.

In some embodiments, the another unique identifier is further associated with an image capture of one or more account information associated with the retailer.

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In some embodiments, if the unique identifier is not accessible by the computer device, the computer device is operable to obtain an alternative identifier for verification and send the alternative identifier to the central

processor.

5 In some embodiments, upon receipt of the alternative identifier, the central processor is operable to determine whether a corresponding refund account associated with the user is present and if not, the central processor is operable to generate the refund account and the unique identifier based on the alternative identifier.

10 In some embodiments, the central processor comprises or is in data communication with a database for storing at least one retailer list of goods and services eligible for tax refund.

15 In some embodiments, the central processor is operable to receive a wish-list of goods and services from the mobile device and upon receipt of the wish-list, compare the wish-list with the at least one retailer list of goods and services.

20 In some embodiments, when there is a match between the wish-list and the at least one retailer list, the central processor is operable to provide a matched list to the mobile device.

25 In some embodiments, where the electronic ticket is a provisional electronic ticket, the provisional electronic ticket comprises a plurality of electronic receipts.

In some embodiments, the provisional electronic ticket is converted to a final electronic ticket at an approved departure point.

30 In some embodiments, the central processor arranged in data communication with at least one third party server to retrieve information related to the identity of the user, and sends the information related to the identity of the user to the computer device.

In some embodiments, if the refund request is not successfully processed, the central processor is arranged in data communication with another computer device provided to an authorized personnel to perform further processing.

- 5 In accordance with another aspect of the invention there is a method for facilitating a refund to a user comprising the steps of: communicating via a mobile device with a central processor for the generation of a refund account and a unique identifier, the unique identifier associated with the user; via a computer device, accessing the unique identifier for verification on receipt of a  
10 refund qualifying transaction associated with the user; generating a refund request upon successful verification; sending information relating to the refund qualifying transaction via a central processor; receiving and processing the refund request; wherein the central processor is further configured to generate an electronic ticket to be sent to the mobile device for the generation of a  
15 refund upon successful process of the refund request.

In some embodiments, the method further includes the step of converting the refund to an intermediate value after the generation of the refund.

- 20 In some embodiments, the intermediate value is derived from the actual value of refund based on a conversion rate.

- In some embodiments, the method further comprises the step of exporting the information relating to the refund qualifying transaction via a point-of-sale  
25 (POS) device in data communication with the computer device, the point-of-sale device is configured to directly send information relating to the refund qualifying transaction to the central processor.

- In some embodiments, the computer device accesses the unique identifier by  
30 scanning an image shown on the mobile device.

In some embodiments, the method further comprises the step of sending the electronic ticket to a government server for further verification of the refund

qualifying transaction and confirmation of the refund.

5 In some embodiments, the mobile device is operable to send an electronic notification related to a requirement being met. The requirement may be a confirmation of departure. The requirement may alternatively, or in conjunction, be a Declaration of Eligibility.

In some embodiments, the generation of electronic ticket is based upon one or more requirements being met.

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In some embodiments, the method further comprises a step of sending an electronic notification to the mobile device indicating the success or failure of the refund request.

15 In some embodiments, the method further comprises a step of obtaining an alternative identifier for verification and sending the alternative identifier to the central processor if the unique identifier is not accessible by the computer device.

20 In some embodiments, upon receipt of the alternative identifier, the central processor is operable to determine whether a corresponding refund account associated with the user is present and if not, the central processor is operable to generate the refund account and the unique identifier based on the alternative identifier.

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In some embodiments, the central processor comprises a database for storing at least one retailer list of goods eligible for tax refund.

30 In some embodiments, the central processor is operable to receive a wish-list of goods from the mobile device and upon receipt of the wish-list, compare the wish-list with the at least one retailer list of goods or services.

In some embodiments, when there is a match between the wish-list and the at

least one retailer list, the central processor is operable to provide a matched list to the mobile device.

5 In some embodiments, the electronic ticket is a provisional electronic ticket, the provisional electronic ticket comprises a plurality of electronic receipts. The provisional electronic ticket may be converted to a final electronic ticket at an approved departure point.

10 In accordance with another aspect of the invention there is a non-transitory computer readable medium containing executable software instructions thereon wherein when executed on a mobile device and/or a computer device performs the method of facilitating a refund to a user comprising the steps of: communicating via the mobile device with a central processor for the generation of a refund account and a unique identifier, the unique identifier  
15 associated with the user; accessing the unique identifier for verification via a computer device on receipt of a refund qualifying transaction associated with the user; sending information relating to the refund qualifying transaction; generating a refund request upon successful verification; and receiving and processing the refund request by a central processor, wherein the central  
20 processor is further configured to generate an electronic ticket to be sent to the mobile device for the generation of a refund upon successful process of the refund request.

The non-transitory computer readable medium may further comprises a software instruction to send an electronic notification to the mobile device  
25 indicating the success or failure of the refund request.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

30 Fig. 1 is the overall architecture of an embodiment of the invention showing how the various parts of the system interact;

Fig. 2 is a flowchart of an embodiment of the invention showing how a user is taken through the system when the application is launched;

Fig. 3 is a state machine diagram of an embodiment of the invention; and

Fig. 4 and Fig. 5 show how a single MDCC device may be used for the deployment of tourist refund in accordance with other embodiments of the invention.

Other arrangements of the invention are possible and, consequently, the accompanying drawing is not to be understood as superseding the generality of the preceding description of the invention.

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## **PREFERRED EMBODIMENTS OF THE INVENTION**

Particular embodiments of the present invention will now be described with reference to the accompanying drawings. The terminology used herein is for the purpose of describing particular embodiments only and is not intended to limit the scope of the present invention. Additionally, unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art to which this invention belongs.

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In accordance with an embodiment of the present invention and with reference to Fig. 1, there is a system 10 for facilitating refunds. The refund may be in the form of tax refund provided to a tourist and will be described in such a context. It is to be appreciated that the system 10 may be adapted for other types of refunds and not limited to a tax refund. The term 'refunds' include refund in an electronic medium.

The system 10 comprises a central processor 110. Central processor 110 may be in the form of one or more processors and/or servers 110 belonging to an organisation administering the tourist refunds. An example of such an organisation is the Central Refund Agency (CRA). The CRA may be a private organisation, a government organisation, or a quasi-government organisation.

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The CRA may further be in data communication with a Central Clearing House (CCH) 170 for the purpose of settlement and crediting of refund value.

The one or more servers 110 can include a cloud server or a conventional server with data communications capability. For the ease of discussion, the

5 one or more server will hereinafter be referred to as 'server' or 'servers'. Server 110 may be connected to one or more databases (not shown). Such database(s) are operable to contain records and information relating to the tourist refunds such as name, addresses and/or pre-generated or generated unique identifiers associated with the users seeking refunds. Server 110 is  
10 also operable to generate and update refund accounts for facilitating, processing and crediting refunds.

In one embodiment, the system 10 comprises a mobile device 120, preferably endowed with communications and computing capabilities and hereinafter referred to as MDCC 120, and computing device 130 (hereinafter referred to  
15 as 'Retailer Device' 130). The Retailer Device 130 can also be an MDCC or other computing device like a desktop/laptop computer. A Point-of-Sale (POS) device/system may be in data communication with the Retailer Device 130, the data communication in wired or wireless, remotely or otherwise. Alternatively, the POS device or its associated function may be  
20 incorporated/integrated with the Retailer device 130 as a module.

To facilitate the refund process, the mobile device 120 and computing device 130 may be installed with dedicated software applications (colloquially known as 'apps'). Such dedicated software applications may be operating system (OS) such as iOS<sup>TM</sup> or Android<sup>TM</sup> specific, and/or device specific.

25 The software application installable on mobile device 120 provides a user interface for user registration and for retrieving or providing information for the refund process. Once installed, the software application is operable to perform at least the following functions:-

- a. receive registration details entered by the user;
- 30 b. communicate with the server 110 to send the registration details;
- c. receive from the server 110 a unique identifier associated with the user (tourist);
- d. receive from the server 110 information related to the refund process;

- e. display notifications/alerts on the MDCC 120 relating to refund process;
- f. provide user interface for user to browse or view account details;
- g. search for necessary communication networks for data communication with the server 110 and the computing device 130 (if necessary); and

5 h. store, organise and retrieve information received from various parties.

The MDCC 120 and the Retailer Device 130 can be any mobile electronic device(s) that can connect wirelessly to Wi-Fi networks or conventional telecommunications networks such as 2G, 3G, 4G, or LTE based networks.

10 The mobile electronic devices include, but are not limited to mobile devices like smartphones, personal digital assistant (PDA) phones and tablets. The devices include mobile devices running on iOS platforms such as the iPhone and the iPad.

The invention will next be described in the context where a user of MDCC 120 (presumably a tourist) downloads a dedicated software application  
15 (hereinafter 'software application') onto the MDCC 120 for registration with the system 10; and usage of the MDCC 120 with the installed software application for facilitating refunds.

During the first usage after downloading the dedicated software application, a registration process is initiated where the tourist is prompted to register by  
20 entering his or her registration details into the application. The tourist may enter the necessary details for registration via manual entry or via imaging the identification documents associated with the tourist, if the MDCC 120 comprises an imaging device or module such as an on-board camera. The identification documents may include passport or other approved identification  
25 papers identifying the user as a tourist. In the case of a passport that comprises a machine readable zone (for example barcode), the MDCC 120 may also be used for reading the readable zone on the passport using the on-board camera or if the MDCC 120 is installed with the necessary hardware and/or software for doing the same.

30 The registration process can further integrate a verification of the authenticity of passports. The registration process can also include a check against records or entries in one or more authorized databases (for example government immigration records) to ascertain the eligibility of the tourist for a

tax refund. Such authorized databases may be public or private databases. With these verifications, the tourist may not need to carry his passport in order for the retailer to verify his tourist status, subject to regulatory acceptance of such method of verifications.

- 5 Upon receiving the registration information, the MDCC 120 next sends the registration information to the server 110 for the creation of a user account. Once the user account is created, the server 110 then replies to the MDCC 120 with a unique identifier associated with the user account, for the tourist. The unique identifier can be in the form of an assigned account number  
10 and/or encoded into a QR or Quick Response code by the server 110 or software application installed on MDCC 120. The QR code is a type of matrix barcode that is machine readable and can contain information that can quickly be translated into usable data.

- Once the unique identifier is generated, the unique identifier can be accessed  
15 on the same MDCC 120 used to register the user or on any other mobile devices 120 that is compatible with the form or physical medium that the unique identifier is encoded. In this regard, the unique identifier is therefore device agnostic. Other types of machine readable codes like barcodes can also be used in place of QR codes, although these may hold less data. This  
20 QR code is tied/tagged to each and every tax refund qualifying transaction made by the tourist.

It is to be appreciated that the unique identifier may include a simple account number, and/or a combination/hybrid of one or more of the above described codes.

- 25 Once registered and a user account is in place, the tourist user may then make tax refund qualifying transactions such as tax refund qualifying purchases at one or more participating retailers.

- After the tax refund qualifying purchase is made at the participating retailer,  
30 the tourist retrieves his or her unique identifier, in the form of a QR code, for display on the MDCC 120. The participating retailer uses the Retailer Device 130 to scan the QR code (s140) for verification on the eligibility for a tax refund by checking against the server 110 to ascertain if the tourist has a

registered account and is eligible for a refund. As an example, the check will include comparing and matching entries with the server 110 and/or its associated processor(s) or database(s) to determine if the passport is a foreign passport and if the tourist is at an age eligible for refund (e.g. 16 years or older). The server 110 can also perform a check against government immigration records via the government server 170 to ascertain the eligibility of the tourist for a tax refund. Alternative ways of unique identifier accessing technology or combinations may be used. Examples of such technologies may include Near Field Communications (NFC), Bluetooth, Wi-Fi, etc. as known to a skilled person. The identification may also be manually entered into the Retailer Device 130. Such a step of verification may include checking the physical passport and the passport information/details submitted, subject to compliance with the necessary regulatory requirements.

Upon scanning of the unique identifier, the participating retailer may enter the purchase/transaction details related to the purchase made by the tourist into the Retailer Device 130. The transaction details may be manually or automatically transmitted. In the latter, the transaction details may be transmitted automatically via a cable or wirelessly from a Point-of-Sale ("POS") system and/or POS device, the POS device configured to send the information relating to the refund qualifying transaction, i.e. purchase/transaction details to the Retailer Device 130 and/or server 110. For example, to facilitate the transmission, a software driver may be installed on the POS system for detecting the Retailer Device 130 as a printer, so that the POS device can print the transaction details to the Retailer Device 130. Alternatively, software may be installed on the POS device or system to capture the transaction details from a payment screen via an Optical Character Recognition (OCR) module. In the case of an Internet-enabled POS system or device, the purchase or transaction details can be directly transmitted to the server 110 via one or more wired or wireless communication means. The transaction details may then be accessible via a web resource locator or link, such as a Uniform Resource Locator (URL).

If a paper receipt is issued for the transaction, the Retailer Device 130 may also be used to image or scan the paper receipt associated with the

transaction for the transaction details to be extracted by an image conversion and/or recognition module, such as, for example the OCR module. Once the retailer has verified the transaction details thus captured, he can transmit the transaction details to the server 110 via the Retailer Device 130. In another embodiment, the MDCC 120 may be used in place of the Retailer Device 130 to image or scan the paper receipt associated with the transaction. Once the retailer has verified the transaction details thus captured, he can present the tourist with a retailer identifier, which can be another QR code, unique to the retailer, for scanning by the MDCC 120, as a form of retailer confirmation/receipt.

In another embodiment, if a user is unable to present his unique identifier in the form of a QR code (for example because the user has not yet registered with the server 110), the retailer may scan an alternative identifier, such as but not limited to the Tourist's passport to retrieve his account information. The scanning device may be the Retailer Device 130 or in the form of a barcode scanner or other imaging device and once the passport has been scanned, the server 110 checks if the tourist has a registered account and eligible for a refund, e.g. if passport is a foreign passport and if tourist is at an age eligible for refund (e.g. 16 years or older). The server 110 can also perform a check against third party servers or databases, such as government immigration records via the government server 170 to ascertain the eligibility of the tourist for a tax refund. If the tourist is not eligible, the server 110 prompts an authorized personnel (e.g. a cashier) to inform the tourist that he is not eligible for tourist refund. If the tourist is eligible, the server 110 checks for an existing account by comparing the scanned details with one or more databases of the server 110. If a user account already exists, the app installed on the retailer device 130 is operable to display the user profile or details for validation by the cashier. If the tourist before the cashier matches the user profile, then the cashier confirms the user (customer) identity via a user interface and proceeds to enter receipt details. If a user account does not exist for the tourist, the server 110 creates a user account and the cashier proceeds to enter receipt details.

The Retailer Device 130 (or the MDCC 120) is operable to send the unique

identifier, as well as the transaction details like the cost, the receipt number, the date and time of the transaction, etc. (see s150) to the server 110. No transaction details can be transmitted without the necessary information associated with the unique identifier (in the form of the QR code) on the MDCC 120 (or on the Retailer Device 130). To minimize fraud, the the Retailer Device 130 can be configured (by the retailer or otherwise) to halt all communications outside of the retailer's opening hours. This would prevent unauthorised tax refunds claims from being entered into the system. The security of the system 10 can be further enhanced by a password management system that requires the cashier to log into the retailer account and may require the password to be changed regularly. Sub-accounts may also be created for individual employees of the retailer who are responsible for collecting payment and their supervisors to create a system of checks-and-balances for approving unusual tax refund claims. Prior to use, the retailer account may undergo a similar registration process as described earlier for the user (tourist) account. In some embodiments, the registration process entails the server 110 assigning or issuing retailers with user identifiers (IDs) and passwords. A manager of the retailer may create sub-accounts. Alternatively the server 110 may assign subaccounts to the retailers, who in turn have administrative rights to manage the sub-accounts. Similar to the registration of the user account, another retailer unique identifier such as a QR code may be generated and assigned to each retailer who registers for an account to participate in the system.

Based on the details sent by the participating retailer, the server 110 sends an electronic ticket for the notification of transaction. Such a notification may be in the form of an eTRS Ticket (containing the details mandated by the Revenue/Customs authorities such as a documentary ID or DOC-ID that uniquely identifies the transaction) directly to the MDCC 120, thus recording the purchase as an eTRS Transaction. The server 110 would also notify the participating retailer via the dedicated software application installed on the Retailer Device 130 of the eTRS Ticket (see s150).

The MDCC 120 is operable to image, store and organise the purchase receipts and invoices issued by the participating retailer, and link these with

the eTRS Transaction for ease of subsequent retrieval by the tourist or by an inspector of the Revenue/Customs authorities. The server 110 will transmit the transaction details as required by the Revenue/Customs authorities to a Central Clearing House (CCH) 170 for lodgement as an eTRS Transaction  
5 180. In another embodiment of the present invention, the server 110 can also request the CCH 170 to perform an instance of risk assessment after each transaction, and communicate 180 the risk assessment results to the server 110. If the result is such that the tourist is selected to present his or her purchases for inspection by an officer of the Revenue/Customs authorities at  
10 the point of departure from the country, the server 110 would then notify the tourist of this requirement via the software application installed on the MDCC 120 either shortly after the transaction itself and/or at the point of departure from the country (s160). This early deterrence would assist to deter potential fraudsters from trying to obtain a tax refund through fraudulent means.

15 With additional tax refund qualifying purchases, multiple eTRS Tickets can be sent to the MDCC 120 in the same direct way (s160).

When the tourist is leaving the country, the MDCC 120 or the dedicated software application installed on the MDCC 120 would request for confirmation of departure from the tourist. Once the tourist confirms his  
20 departure from the country, the tourist can request for a refund together with a Declaration of Eligibility (a requirement by the Singapore Revenue/Customs authorities) or other declarations as required by the Revenue/Customs authorities (s160). The tourist may be guided through the Declaration of Eligibility process by the application on the MDCC 120, which also displays  
25 the passport details of the tourist for his or her confirmation as the person making the Declaration. Purchases recorded as eTRS Transactions are also displayed for the tourist to select those for which he or she would like to submit a claim for tax refund. For those tax refundable purchases made through retailers that do not operate the application, the application on MDCC  
30 120 can scan the paper copy of the eTRS Tickets issued by these retailers so that all the transactions are consolidated. Alternatively, the CCH 170 can also transmit electronically, the details contained in the paper eTRS Tickets, to MDCC 120, upon request by the MDCC 120 or the dedicated software

application installed on the MDCC 120. The tourist would also confirm the preferred refund option – whether in cash or credited back to a credit/debit card or a bank account or even an electronic wallet account – and the application guides the tourist to confirm the relevant details accordingly. The preferred refund option and details may have already been entered at the point of user registration, otherwise the tourist will be prompted to do so. The tourist may also enter the necessary details via manual entry or via imaging the credit card via the on-board camera on MDCC 120, for example.

Once the various fields are completed, the application can allow the tourist to confirm the details one last time before submitting them to the server 110.

In addition to the tourist proactively initiating a request for refund, one way of reminding the tourist to submit the request for refund would be to use a location-based service, such as Global Positioning System (GPS), geo-fencing, navigation systems etc, to alert the MDCC 120 when the MDCC 120 is detected within range of a departure point installed with a location-based service device, examples of such departure points including an airport or a cruise centre. This would notify and remind the tourist to submit the request for refund. Alternatively, the application on the tourist MDCC 120 can also rely on Wi-Fi networks or cellular base stations at the airport and the cruise centre to remind the tourist when the MDCC 120 accesses these networks. Alternatively, the MDCC 120 can detect transmitters (including but not limited to Bluetooth Low Energy beacons) located at a departure point, such as an airport or a cruise centre, and trigger the application to remind the tourist. This saves the tourist the trouble of having to arrive at the airport early to locate the eTRS self-help kiosk, since the tourist can now submit the request using his or her MDCC 120.

Once the request for refund is submitted (s160) to the server 110, the CCH 170 is notified via s180 and can communicate to the server 110 as to whether the tourist has been selected for inspection by the Revenue/Customs authorities and the server 110 notifies the tourist via the MDCC 120 accordingly (s160).

For tourists who have not been selected for inspection, they would receive a digitised Notification of Approval slip on their MDCC 120. Those who have not received a notification of approval slip and/or have been selected for inspection either at any point of purchase or after the submission of the request for refund would receive a digitised Notification of Inspection slip prompting them to proceed to a counter of the Revenue/Customs authorities for further processing. There, upon presenting the digitised eTRS tickets, invoices/receipts and notification slips stored on the tourists' MDCC 120 together with the goods purchased, passport and plane ticket, as required, an authorized personnel such as the Revenue/Customs officer or inspector updates the record stored at the CCH 170. This may be performed via a separate computing device provided to the customs officer having a dedicated software application installed thereon and arranged in data communication with the server 110 to interact with the server 110. In some embodiments, a 'customs officer' identifier in the form of a QR Code may be provided to the customs inspector to present to the tourist after the customs inspector is satisfied with the eligibility of the tourist and the purchases for a refund. Upon scanning of the QR Code, the server 110 then updates the CCH record as "Approved" and issues a Notification of Approval slip.

This Notification of approval may be in paper, or digitised and sent to their MDCC 120.

Cash refunds would be made at a Central Refund Counter (CRC) upon presentation of the Notification of Approval slips, otherwise the monies would be credited to their credit/debit card or bank account as previously indicated, or any payment platforms (e.g. Alipay<sup>TM</sup>, Paypal<sup>TM</sup>) for facilitating the transfer of refund monies to one or more user accounts. The tourists would then proceed to depart Singapore accordingly.

In some embodiments, instead of a cash refund, the refund value may be converted to an intermediate value. Examples of such intermediate value may be coupons, credits, points, or other electronic value etc. One embodiment of

an intermediate value is in the form of 'rewards points'. Such a system of rewards points can also be implemented into the tourist refund process, where the rewards points can be applied towards the purchase of goods and services at participating retailers. Retailers participating in this system of rewards points can be the same ones that are accredited under the tourist refund scheme or retailers that are not accredited but can also be equipped with a Retailer Device 130. Tourists can accumulate rewards points issued by the CRA. In the conversion of tax refund to rewards points, the system may refund the full amount, less than or more than the full amount of tax levied depending on the conversion rate between the tax refund to rewards point, instead of withholding a service fee as in the traditional method, although a service fee can still be offered as an alternative. The system can offer the tourist the option to take the refund in the form of tourist refund (whether as cash or via a credit/debit card) or in the form of rewards points, by way of a prompt either at the point of purchase or at the point of departure from the country. The tourist could even be allowed to convert the tourist refund into rewards points (vice versa) at any point in time, with or without a conversion fee. There may be a point in time where the availability of a tourist refund by way of cash or credit card is reduced or even removed. The rewards points can also be tagged with an expiry date, such that they expire if not used within a certain period of time, or the rewards points may be issued without an expiry date.

With reference to Fig. 2, an embodiment of a process for facilitating a tourist refund, wherein like numerals reference like parts, is described. The process begins when the dedicated software application installed on MDCC 120 is launched (step 210). The process begins with checking whether the tourist is already registered or is a new unregistered user (step 220). If the tourist is not registered, the tourist is walked through with a registration procedure (step 230) where an electronic user account is created with the server 110 and the relevant details are captured by the dedicated software application. Backend, the system 10 performs checks against the details like the passport number, nationality, name and/or other relevant information to ensure duplicate records

are not created. The system can also verify the authenticity of the passports based on their security features or the server 110 may be linked with one or more third party servers. These third party servers may be private, public or government databases for the checking of stolen passports, as well as

5 checking for other eligibility criteria such as whether the user is in fact a Permanent Resident of a particular jurisdiction and does not fall under the category of 'tourist', therefore ineligible for tourist refund; or whether the user has entered Singapore on a visit pass that may not strictly fall under a 'tourist pass', such as a student pass, etc. whereupon additional criteria have to be

10 fulfilled. For each user account, a unique identifier like a QR code is created and stored by the application, or created by the server 110 and stored by the application. This process can be integrated with the onboard camera of the mobile device 120 to scan the machine readable zone of the passport to populate the various details or even to scan the passport itself with optical

15 character recognition, or else manual entry of the details is used. The tourist is also given the option of imaging the passport, guiding him through the process of which page to capture, so that he does not have to carry a physical passport when shopping to claim a refund.

20 At a participating shop, the tourist makes a purchase and the retailer enters or scans the relevant details into the point-of-sale (POS) machine (step 240). After verifying that the purchases qualify for refund and the eligibility of the tourist by checking the tourist's passport, the retailer scans the unique identifier being displayed on the user MDCC 120 by either using the issued

25 retailer device or the retailer's own mobile device with the application installed (step 250). One method of verifying the status of the tourist would be verification upon scanning the unique identifier or QR code via an onboard camera (where available) if the retailer is using a mobile device as the retailer device 130, whereby upon receipt of the scanned information (which includes

30 the unique identifier), the server 110 would inform the retailer device whether the user is a tourist or not, which dispenses with the need to check the physical passport. The details of the transaction are then sent to the central server 110 or a processor belonging to the central refund agency (CRA) (step

260), and this may be further sent to CCH 170. Once verified and the records updated, confirmation of the transaction is sent (step 270) together to the retailer and an eTRS Ticket is sent to the tourist either in the application, by email or any other forms of messaging. An electronic image or document of the invoice or receipt issued by the retailer can also be stored in the mobile application for later retrieval.

With some newer POS machines, the purchase details can be transmitted to the retailer device, either wirelessly via Wi-Fi or Bluetooth, or by a cable like a USB or similar, which speeds up the process and reduces the possibility of human error. The purchase details can even be directly transmitted to the server 110 in the form of a central processor. The added security measure of requiring the unique identifier before transmitting means the possibility of non-genuine tourist transactions is reduced. The tourist or the retailer may also use his or her mobile device to image the paper receipt associated with the transaction for the transaction details to be extracted by Optical Character Recognition. The retailer may also be equipped with other devices with imaging or scanning capabilities. Where the details are captured by the tourist's device, once the retailer has verified the transaction details thus captured, he can present the tourist with an identifier, which can be another QR code, unique to the retailer, for scanning by the tourist's device, as a form of retailer confirmation.

The application (and server 110) is also able to track the fulfilment of certain jurisdictional requirements where the purchases made by the tourist are submitted to the server are logged into the system. This feature is available where the tourist images receipts and enters the necessary details relating to the transactions he made. For example, in Singapore in order to qualify for a tax refund, a minimum \$100 must be spent from retailers bearing the same GST registration number and this can be accumulated in up to 3 same-day invoices or receipt, thus the application can immediately alert the user, whether tourist or retailer, if this minimum amount has been reached on the same day. This does away with the current need to check physical receipts

and sum them up.

An additional feature of using a system of intermediate value in the form of rewards points as described in the earlier embodiment can be incorporated into the process. During the purchase (step 240), the tourist informs the retailer that he wishes to use his rewards points, and upon scanning the QR code on the tourist's MDCC (step 250), the rewards points balance is retrieved from the server and displayed to the retailer. Based on this amount and confirmation from the tourist via the tourist's MDCC (step 250) of the number of rewards points to redeem, the retailer would apply the rewards points against the purchase price accordingly and update the server (step 260). In another embodiment, during a purchase (step 240), the tourist who wishes to utilize his intermediate value in the form of rewards points may launch the software application installed on the MDCC 120 to retrieve from the server and display the rewards points balance information. The tourist can inform the retailer of his intention to use his rewards points and scan an identifier, which can be another QR code, unique to the retailer before entering and confirming the number of rewards points he wishes to use, for transmission to the server. The server can then push the number of rewards points to be thus used for display on the issued retailer device or the retailer's own mobile device with the application installed, and the retailer would apply the rewards points against the purchase price accordingly and update the server (step 260). Upon receipt of the eTRS Ticket in the application, the tourist can be prompted to choose whether to convert the amount, with or without a service charge to the CRA, into the rewards points. This raises the possibility of the tourist being able to spend his tourist refund at participating retailers even before leaving the country.

A flowchart shown in Fig. 3 describes an embodiment of how the tax refund is credited/made to the tourist when the tourist is departing the country. At a departing point such as the airport or cruise centre, the installed application on the MDCC 120 is launched by the tourist either on his own volition or reminded by notifications displayed on the mobile device 120. Such

notifications can be triggered by detecting that the tourist is at a departure point such as the airport or cruise centre. The tourist is then prompted to confirm that he is departing the country (step 310), which triggers the system 10 (either via the installed software application or the server 110) to notify the tourist of the purchases made to date, the eTRS Tickets collected, the amount of refund available, as well as the amount of outstanding refunds which may be in the form of an intermediate value as described. The tourist also indicates how the refund is to be made, either in cash or to the credit card account that was used (based on the purchase or transaction details), or to a specified bank account or even to another different credit card account. A further prompt whether to convert the refund available may be triggered to allow the tourist to do so.

Once the list of purchases is confirmed and verified by the tourist, the tourist is guided through the various steps of completing the Declaration of Eligibility and displays the tourist's passport details for confirmation. After confirmation, the declaration of eligibility and refund claims are submitted to the server (step 320) and to the CCH and confirmation is sent to the tourist (step 330), together with either an approval Notification slip or an inspection Notification slip if the tourist has been selected for inspection. If the inspection is verified and cleared, an approval Notification slip is issued to the tourist, and based on the approval Notification slip, a refund can be obtained (step 340) either in cash at the Cash Refund Counter at the airport or cruise centre, or credited back to the specified credit/debit card or bank account. Alternatively, the tourist can also choose to obtain the refund in the form of an intermediate value such as the rewards points, especially if he plans to visit the country again sometime soon. The tourist then departs the country (step 350). The Declaration of Eligibility can be submitted together with the refund claims via the application on the mobile device, which means that process is simplified and the tourist can do so at their own convenience, e.g. while queuing to check in or clearing immigration or even in the transport on the way to the airport.

In another embodiment of the present invention and with reference to Fig. 4

and 5, wherein like numerals reference like parts, the functions associated with the MDCC 120 and retailer device 130 may be integrated into a single MDCC device 420. Such an arrangement is advantageous in the sense that one single MDCC 420 may be utilized for the whole refund process. It is to be

5 appreciated that either:-

the associated functions described for both mobile device 120 and computing device 130 as earlier described would have to be implemented on the MDCC 420, or

10 another dedicated software application incorporating essential functions for mobile device 120 and the computing device 130 would have to be installed on the MDCC 420.

In the single device arrangement, the participating retailer's premises may be equipped with a transmitter and/or receiver (including but not limited to Bluetooth Low Energy 'Bluetooth LE' beacons) 410 operable to transmit  
15 to/receive from a MDCC 420 (used interchangeably with the term 'single device') within range of the transmitter/receiver.

An example of the single device arrangement 400 is shown in Fig. 4. The arrangement 400 comprises one or more Bluetooth LE (BLE) beacons 410 installed within the retailer's shop at a designated location, such as around a  
20 cashier. The BLE beacons 410 can operate in a 'broadcast' or 'advertisement' mode to notify nearby devices of its presence via an address. The address follows a specific format, such as a predefined prefix, followed by a variable UUID, and a major, minor pair. When a user with the MDCC 420, such as a tourist is within the pre-determined range of the designated location, the  
25 MDCC 420 detects the BLE beacons 410 and prompts the user to launch his dedicated software application, or directly launches the software application without prompt once the BLE beacons 410 are detected, which can be programmed to inform the user that he is at a participating retailer based on matching and verifying the broadcast format of the BLE. The retailer specific  
30 information can then be displayed on the MDCC 420.

The user next shops and transacts at the retailer shop. Upon payment for the merchandise, the tourist requests for a tax refund. The cashier then requests

the tourist to send the request for refund from his MDCC 420, together with the refund account number and BLE address to the server 110.

The server 110 opens a session between the user account and the retailer account. The tourist is prompted to scan the transaction receipt using the MDCC 420 via the OCR module as described in previous embodiments, or via other means including manual or POS system as described. Once scanned, the transaction details are displayed on the MDCC 420.

The tourist presents the transaction details to the cashier or other personnel authorized by the retailer. The cashier verifies the transaction details and presents a retailer identifier to the tourist. The retailer identifier may be a QR code. The retailer identifier encoded in the form of a QR code may further comprise one or more of the following information:-

- i. Retailer's account number held with the server 110; and
- ii. Sub-accounts created by the retailer for each authorized personnel (e.g. cashier).

The sub-accounts provide a means for identifying the cashier in case of suspected transaction activity(ies), such as collusion between cashier and tourist.

The tourist scans the retailer QR code and the software application transmits the same to the server 110 for verification.

Upon receipt of the information related to the retailer identifier, the server 110 matches the QR code with the BLE address to verify that the MDCC 420 is on site. Upon verification, the MDCC 420 transmits the transaction details to the server 110. The server 110 then runs checks on the transaction details. The checks may include (but not limited to) ensuring that the transaction details are current, i.e. with current date and time, and relate to the correct retailer.

Upon completion of the checks, the server 110 then sends the transaction details to the CCH 170. The CCH 170 then acknowledges the lodgement of the refund claim to the server 110. The server 110 generates the eTRS Ticket, assigns the DOC-ID and sends the same to MDCC 420.

With reference to Fig. 5, at the point of departure, such as an airport or cruise center, the location of the MDCC 420 is determined by the software application via GPS or other location-based services. Alternatively, the

application on the tourist MDCC 120 can also rely on Wi-Fi networks or cellular base stations at the airport and the cruise centre for detecting the MDCC 420. Once detected, the software application guides the user through the declaration of eligibility as described earlier (see steps 310 to 350). Next  
5 the tourist confirms his departure and eligibility. The MDCC 420 then retrieves the transaction records from the server 110 for the tourist to select for refund. Once the user selects the transaction records, he is prompted to select the refund method (e.g. rewards points, direct credit into specified account etc.). Upon selection, the MDCC 420 sends the declaration of eligibility; selected  
10 refund transaction(s); and refund method to the server 110. The server 110 in turn transmits the information to the CCH 170. The CCH 170 then replies with an approval or non-approval Notification slip to the server 110, which in turn transmit the approval or non-approval Notification to the MDCC 420. If the refund is approved, the CCH 170 further instructs or informs the CRC 430 to  
15 process the refund.

Where the CCH 170 replies with the non-approval notification slip, in some embodiments the tourist may be directed to the customs officer or inspector as described in the earlier embodiment for further inspection. The customs officer may be provided with a separate computer device with a dedicated  
20 software application installed thereon to facilitate inspection by the customs officer. A 'customs officer approval' identifier in the form of a QR Code may be provided to the customs inspector to present to the tourist after the customs inspector is satisfied with the eligibility of the tourist. Upon scanning of the 'customs officer approval' QR Code, the server 110 then updates the CCH  
25 record as "Approved" and issues a Notification of Approval slip. If still not approved, the purchases will not be eligible for tax refunds.

During a purchase (step 240), the tourist who wishes to utilize his intermediate value in the form of rewards points can inform the retailer of his intention to  
30 use his rewards points. He may launch the software application installed on the MDCC 420 to retrieve from the server 110 his rewards points balance and enter and confirm the number of rewards points he wishes to use, before showing to the retailer for verification. Once the retailer has verified the

number of rewards points to be used, he can present the tourist with a retailer identifier, which can be another QR code, unique to the retailer, for scanning by the single device 420 as a form of retailer confirmation, and the server will be updated (step 260). The retailer would apply the rewards points against the purchase price accordingly. Also, upon receipt of the eTRS Ticket in-app, the tourist can be prompted to choose whether to convert the amount, with or without a service charge to the server 110, into the rewards points. This raises the possibility of the tourist being able to spend his tourist refund at participating retailers even before leaving the country.

The single device arrangement is based on the use of a mobile device 420 and eliminates the need for a Retailer Device. Instead of issuing each retailer with a separate device, Bluetooth Low Energy (BLE) beacons (transmitters/receivers) can be placed in each retailer outlet, and each authorized personnel may access the retailer's identifier (which may be in the form of a QR code or otherwise) in a variety of ways. For example an authorized personnel such as a cashier at the retailer shop can be provided with a QR Code Staff Pass, or each retailer outlet can be provided with its own QR Code identifier. The BLE can ensure transactions only take place at participating shops and the QR Code Staff Pass or identifier acts as retailer acknowledgement that the cashier has done her checks. The BLE can also be used to push targeted retailing information to the tourist, e.g. discounts, advertisements, etc. It is to be appreciated that both the QR code and BLE may be utilized in the form of a two-layered check to ensure that the transactions take place within the retailer's shop or premise. Such a two-layered check reduces the risk of any collusion between a member of the retailer's staff and the tourist.

In some embodiments, the server 110 may be operating the system of intermediate value. In such an arrangement, the server 110 may comprise a predictive engine operable to predict which user refund account is likely to be fraudulent so as to be able to take pre-emptive action. Otherwise the system may compromise on account integrity. The predictive engine can be based on at least one criterion of user demographics (e.g. location, countries visited for a past predetermined time frame), transaction profile (e.g. value of

transaction, type of goods, etc.), the type of identifier (e.g. credit card) used to register for a refund account, gender, nationality etc. Based on these criteria, an algorithm can be developed to run in the server 110 to pick out suspicious user accounts. For example, the predictive engine may attribute high risk weights to transactions exceeding certain value arising from certain countries. In some embodiments, in addition to identifying suspicious user accounts, the predictive engine may further be configured to data communicate and send selected details relating to the 'suspicious accounts' to the relevant authorities, which include the customs. The selected details are sent to the authorities for further follow up checks in order to provide a more targeted and focused check. In other embodiments, the system 10 may refuse the registration of any requested refunds accounts deemed not to pass an initial security check based on one or more of the at least one criterion. In yet other embodiments, based on the profile identified by the predictive engine, selected users or tourists may be banned from purchasing certain tax free eligible items. In some embodiments, the predictive engine may be arranged in data communication with one or more database servers, such database servers for maintaining user information.

The above arrangements are advantageous in that more parameters for the selection of tourists for inspection are considered, compared to that considered by the CCH 170 currently. In addition, the selection performed at the servers 110 effectively provide an additional layer of check which is pre-emptive in nature, as compared to that currently done at the exit point(s) which is 'reactive'. In this regard, it is to be appreciated that the existing system performs selection at the end of a tourist's trip/visit which is deemed less efficient compared to selection performed before the tourist starts his trip. This is because based on the existing structure, the retailers would have already taken the trouble to process the eTRS transactions of a fraudster, only for the transactions to be subsequently found invalid (this is assuming the CCH is able to select the tourist for inspection) when the fraudster attempts to make a claim for a refund as he leaves the country. The above arrangements effectively prevent suspicious transactions from being performed by would-be

fraudsters, saving time and effort for both the retailers as well as the Customs. In another embodiment, the server 110 is configured to link to at least one retailer for the provision of one or more retailer item list(s) available for sale and tax refund. In the app installed on the tourist's MDCC 120, a user interface may then be provided to the tourist which displays the retailer item list of available items for sale and/or tax refund for the tourist to view before the tourist arrives at the country and/or before he/she leaves the country. Once a wish list or checklist of selected items from a tourist is communicated to the server 110 via the app, the server 110 is operable to provide a list of retailer(s) and details of the retailers selling the one or more items, via a data push or pull mechanism that the tourist desire to purchase. The wish list and retailer list may be compared by any compare and match algorithm between the entries on the tourist's wish-list with what the retailers have to offer. The compare and match may be performed at the server 110 side or the app installed on the MDCC 120.

In the creation of the tourist's checklist, the tourist can record a plurality of parameters related to each item. Non-exhaustive examples of these parameters may include the item's name, category, quantity and recipient's name and insert short notes and images (such as pictures) related to each item. Newly created items can be added to a temporary 'pending list' which the tourist can check off to move the items to a completed list whenever a purchase is made. Interfaces for sorting the items in alphabetical or other order may also be provided to the user.

Each time the tourist creates a new item, the app is operable to retrieve a list of retailer(s) selling the item from the server 110, and then provide to the tourist, retailers that sell the item or related items. The tourist can download the names of the recommended retailers to add them to his shopping list (via an interface) or to access the retailer's profile on the app. Through the list and/or a BLE located at the retailer's outlet, the tourist can be notified by the server 110 via the app and/or the retailer that sells the item or related items whenever the tourist is near to the retailer's shop and/or send content e.g. sales voucher from the retailer to the Tourist. This is advantageous to provide

a seamless experience for the tourist and to aid the retailers in selling their products. Further, the arrangement provides an advantageous hybrid between a pure online shopping experience and a real shopping experience where goods can be inspected before it is purchased. Amongst other advantages, the above arrangement reduces the shopping time required for a tourist to look or source for an item and whether that item is eligible for tax refund; provides an alert or other forms of notification when the tourist is nearby a retailer; and provides an informed list on prices and quality before committing to the purchase.

In some embodiments, the server 110 is operable to issue one eTRS ticket for each refund claim at each retailer store and charge a service fee for each eTRS Ticket issued. Each eTRS Ticket may comprise more than one sales receipt accumulated at the same store (GSTN), subject to one or more regulations to meet a minimum threshold eligible for refund (e.g. SGD 100).

For each eTRS ticket issued, the server 110 may also be required to pay a CCH Fee of SGD 1.50.

As an alternative embodiment, instead of issuing an electronic ticket in the form of an eTRS ticket for each transaction, the server 110 is instead operable to issue a provisional eTRS for the first transaction eligible for a refund claim, and add all subsequent transaction receipts to this provisional eTRS ticket.

This is akin to a batch mode process and allows multiple retailers' transactions to be combined into a single formal/final eTRS ticket. The formal eTRS ticket will be issued only when the tourist is at an approved departure point. In such a way, both the user and the service provider may save on CCH Fees because only one Refund Ticket per user per trip is issued, instead of one Refund Ticket per user, per store, per trip. This can be performed without compromising on security or authenticity, as the tourist user will have to undergo the verification step at each retailer store.

In some embodiments, users of the system, such as approved retailers, may be provided with a user interface accessible to a portal, the user interface accessible via any computer device such as, but not limited to, a mobile device. The user interface may be used to display business information related to the retailer described as follow. An example of the interface is a

webpage. The server will retrieve and store input received from various sensors such as Bluetooth LE beacons, image capturing devices located around the retailer's shop, for purpose of tracking, monitoring, obtaining, and/or deriving one or more parameters associated with the retailer.

- 5 Examples of such one or more parameters include number of shoppers in a retailer shop. Such data may be provided on a real-time or near real-time basis displayed on the user interface. The data obtained may be further analyzed to provide business intelligence information useful for the retailer. Such business intelligence information may include shopper traffic in the  
10 retailer shop, busiest period of a weekday or weekend, busiest period over one or more months, etc.

- In some embodiments, the system may be linked up with other commercial databases related to cruise ship services for example, to provide users with information such as Qualifying Cruise Ships eligible for tourist refund, as well  
15 as pre-populating travel itinerary to achieve certain level of convenience for the users of the system.

- The described embodiments are advantageous as they provide a three-tier checking and verification process. In particular, a first level of  
20 check/verification is performed when a user (tourist) registers with the central processor 110. The second level of check/verification is performed before or during the generation of the eTRS ticket, and the third level of check/verification is performed at the point of departure prior to the generation of an electronic notification indicating the success or failure of the refund  
25 transaction.

- Further, it is to be appreciated that the capturing of detailed information at the point of user registration allows a tourist to specify a desired account for refund upfront. Such an arrangement is useful to alleviate any time pressure  
30 that a tourist may face when he is leaving the country, as he needs to complete all form of formalities prior to boarding the aircraft / cruise ship. By shifting the data collection point to prior to the tourist embarking on his trip or

at the point of registration, precious time is saved for the tourist when he faces the most time pressure.

The above is a description of embodiments of systems and methods for facilitating refunds, in particular tax refunds to tourists in accordance with the present invention. It is envisioned that those skilled in the art can design alternative embodiments of this invention that falls within the scope of the invention. In particular, it is to be appreciated that features from various embodiment(s) may be combined to form one or more additional embodiments. Further, the following are non-exhaustive examples of features that may be combined with the described embodiments to form further embodiments that falls within the scope of the invention:-

- In the single device embodiment, the user (tourist) may send both the retailer identifier and the transaction details to the server 110 for further processing upon scanning the retailer QR code. As a pre-requisite, the server 110 will however process the transaction details if and only if the retailer identifier is verified.
- The verification or scanning of the retailer's identifier may be performed either during the refund qualifying transaction is made or after. In the former case, the transaction details are captured before the retailer identifier is scanned before transmission to the server 110. This is particularly relevant for the single device embodiment. In the latter case, the retailer identifier may be verified or scanned for purpose of opening the transaction session before either the user or an authorized representative of the retailer retrieves the transaction details.

## WE CLAIM

1. A system for facilitating refund to a user comprising:  
a mobile device having means to communicate with a central processor  
5 for the generation of a refund account and a unique identifier; the  
unique identifier associated with the user;  
a computer device operable to access the unique identifier for  
verification upon receipt of a refund qualifying transaction associated  
with the user, the computer device further operable to receive and send  
10 information relating to the refund qualifying transaction and generate a  
refund request upon successful verification; and  
the central processor operable to be in data communication with the  
computer device to receive or send information relating to verification of the  
unique identification and the refund qualifying transaction and process the  
15 verification and refund request, the central processor further configured to  
generate an electronic ticket to be sent to the mobile device for the generation  
of a refund upon successful process of the refund request,  
wherein the mobile device is integrated with the computer device to  
form a single device, the system comprises a transmitter arranged to  
20 broadcast an address to the single device.
2. The system according to claim 1, wherein the refund is a tax refund  
and in the form of an intermediate value.
- 25 3. The system according to claim 2, wherein the intermediate value is  
derived from the actual value of refund based on a conversion rate.
4. The system according to claim 1, wherein the computer device is a  
point-of-sale device, the point-of-sale device is configured to directly send  
30 information relating to the refund qualifying transaction to the central  
processor.
5. The system according to claim 1, wherein the unique identifier is  
encoded as a quick response (QR) code and the computer device accesses  
35 the unique identifier by scanning the QR code displayed on the mobile device.

6. The system according to claim 1, wherein the central processor is operable to send the electronic ticket to a third party server for further verification of the refund qualifying transaction and confirmation of the refund.

5 7. The system according to claim 6, wherein the central processor stores the information relating to the refund qualifying transaction in a database before the electronic ticket is generated and sent to the third party server.

8. The system according to claim 1, wherein the mobile device is operable  
10 to send an electronic notification related to a requirement being met.

9. The system according to claim 8, wherein the requirement is a confirmation of departure.

15 10. The system according to claim 8, wherein the requirement is a Declaration of Eligibility.

11. The system according to claim 10, wherein the mobile device is operable to receive a notification of refund issued by a third party server once  
20 the electronic ticket is processed successfully.

12. The system according to claim 1, wherein the central processor is operable to receive a notification of refund issued by a third party server once the at least one electronic ticket is processed successfully and the central  
25 processor is operable to send a notification of refund to the mobile device.

13. The system according to claim 1, wherein the unique identifier associated with the user is generated based on a passport information of the user.

30

14. The system according to claim 13, wherein the unique identifier is generated after a registration process by the user.

15. The system according to claim 13, wherein the unique identifier is further associated with an image capture of the passport.

16. The system according to any one of the preceding claims, wherein the  
5 central processor is operable to send a notification to the mobile device indicating the success or failure of the refund request.

17. The system according to claim 1, wherein there comprises another unique identifier associated with a retailer using the computer device.

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18. The system according to claim 17, wherein the another unique identifier is generated after a registration process by the retailer.

19. The system according to claim 17, wherein the another unique identifier  
15 is further associated with an image capture of one or more account information associated with the retailer.

20. The system according to claim 1, wherein if the unique identifier is not accessible by the computer device, the computer device is operable to obtain  
20 an alternative identifier for verification and send the alternative identifier to the central processor.

21. The system according to claim 20, wherein upon receipt of the alternative identifier, the central processor is operable to determine whether a  
25 corresponding refund account associated with the user is present and if not, the central processor is operable to generate the refund account and the unique identifier based on the alternative identifier.

22. The system according to claim 2, wherein the central processor  
30 comprises a database for storing at least one retailer list of goods and services eligible for tax refund.

23. The system according to claim 22, wherein the central processor is operable to receive a wish-list of goods and services from the mobile device  
5 and upon receipt of the wish-list, compare the wish-list with the at least one retailer list of goods and services.

24. The system according to claim 23, wherein when there is a match between the wish-list and the at least one retailer list, the central processor is  
10 operable to provide a matched list to the mobile device.

25. The system according to claim 1, wherein the electronic ticket is a provisional electronic ticket, the provisional electronic ticket comprises a plurality of electronic receipts.  
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26. The system according to claim 25, wherein the provisional electronic ticket is converted to a final electronic ticket at an approved departure point.

27. The system according to claim 1, the central processor arranged in  
20 data communication with at least one third party server to retrieve information related to the identity of the user, and sends the information related to the identity of the user to the computer device

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