SYSTEM AND METHOD FOR CONTENT RECOMMENDATIONS ACROSS ISOLATED IN-VEHICLE NETWORKS

FIELD OF INVENTION

The present invention relates to a system and method for providing content recommendations across isolated in-vehicle networks. In particular, the invention relates to systems and methods for providing content recommendations for personalised in-transit (e.g. in-flight) entertainment systems.

BACKGROUND ART

As noted above, the present invention generally relates to systems and methods for providing content recommendations for personalised in-transit entertainment systems. For convenience, the following description will make specific reference to In-Flight Entertainment (IFE) systems. It should be appreciated that the invention is not so limited and also applies to other isolated in-vehicle networks, including but not limited to entertainment systems provided on cruise liners, trains and buses, and even in cars.

It is considered that personalisation of available content will be the next evolution in IFE systems. The airline industry is already taking initial steps to demonstrate such technologies at trade shows. Such demonstrations often include allowing passengers to configure their media playlist on their personal electronic devices (i.e. smartphones and tablets) and then upload them onto the IFE after they have boarded the aircraft, enabling a personalized user experience.

Existing recommendation technologies, such as those used by Google, Amazon, YouTube, and so on, are designed for use on the Internet, an infrastructure that has a stable connected network topology. The always-connected network topology allows these technologies to easily synchronise user profiles and preferences, which is vital for providing relevant recommendations.

Services offered by an airline operator's IFE system are in some ways similar to those offered by the Internet. Passengers can watch movies, listen to music, play games, shop on-line and read. As briefly mentioned above, airline operators are competing for customers by offering more and more content on their IFE in order to enhance the flight experience. Eventually, this might create a negative experience as passengers become overwhelmed with content and frustrated by the IFE. Recommendation technologies, like those on the Internet, are ideal for solving such a problem and may add a dimension of personalization to the process. However, IFE implementation poses some challenges.

Important challenges facing IFE implementation of Internet-type technologies include limited data connectivity between one aircraft to another and limited connectivity between aircraft and the main recommendation database. Also, passenger profiles and preferences are captured and stored onboard the aircraft's recommendation database. The limited or lack of connectivity between aircraft-aircraft and aircraft-ground makes seamless synchronization and enrichment of the recommendation databases almost impossible. As a result, making Internet-type recommendations is challenging on IFEs within the current state of the art.

United States Patent Publication No. 20110029998-A1 describes an in-flight video entertainment system. In US 20110029998-A1, recommendations (of advertisements) are based on recorded user interactions with the IFE system and user chat sessions on a per-flight basis. Using this system, it is not possible

to provide users with pre-flight recommendations and the recorded information is not propagated to other IFEs.

United States Patent Publication No. 20080243997-A1 describes a distributed content item recommendation system and method of operation thereof. In US 20080243997-A1, all distributed recommendation devices are synchronized by the recommendation server over direct Internet connections. This cannot be applied to distributed recommendation devices that do not have any direct connections with the recommendation server.

The present invention aims to facilitate greater personalisation for IFEs by enabling a seamless user experience by automatically gathering passenger profiles and preferences and then making content (e.g. movies, music, shopping, games, magazine articles, etc.) recommendations to the passenger using a hybrid of content-based and collaborative filtering techniques across isolated in-vehicle networks.

More particularly, it would be advantageous if a system could be devised that: enables synchronization and enrichment of the recommendation databases between aircrafts; enables synchronization and enrichment of the recommendation databases between aircraft and a consolidated recommendation database (CRDB); provides a dynamic and relevant IFE content recommendation to passengers; and will work with existing and future cellular and Internet data infrastructures.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practice.

SUMMARY OF INVENTION

One aspect of the present invention provides a system for content recommendations across isolated in-vehicle networks comprising:

application software for loading onto a user device, the application software providing a user interface on the user device and a personal recommendation database adapted to store user preference information comprising content ratings of a user of the user device;

at least one isolated in-vehicle network comprising an in-vehicle recommendation database, the isolated in-vehicle network having localised connectivity with the user device;

a ground portal associated with a consolidated recommendation database adapted to store consolidated user preference information,

wherein when the user device has local connection to the isolated in-vehicle network the personal recommendation database and the in-vehicle recommendation database can be synchronised, and wherein when the user device has connectivity to the ground portal the personal recommendation database and the consolidated recommendation database can be synchronised.

Connectivity between the ground portal and the user device may be established by any suitable means. If the system is a small personalised system, the ground portal may be a user's desktop device, in which case connectivity with the user device may be through Bluetooth, USB or other means. In a preferred embodiment, the ground portal has Internet connectivity facilitating connectivity with the user device.

The ground portal generally comprises a recommendation engine that has access to the consolidated recommendation database. Likewise, the isolated in-vehicle network generally comprises a recommendation engine that has access to the in-vehicle recommendation database.

The user interface provided by the application software advantageously facilitates ranking of content by the user. More preferably, the application software is adapted to gather user preference information of the user and update the personal recommendation database with the user preference information.

In one embodiment, the isolated in-vehicle network is an in-flight entertainment network and the in-vehicle recommendation database is an in-flight recommendation database. Preferably, the in-flight entertainment network comprises: (i) a backend comprising a recommendation engine and the in-flight recommendation database; and (ii) at least one frontend comprising a user input device and a screen for displaying content served by the backend. The frontend may additionally comprise a graphic user interface that facilitates ranking of content received from the backend by the user.

According to another aspect of the invention there is provided a method for providing content recommendations across isolated in-vehicle networks comprising:

receiving rankings of content from a user and updating user preference information on a personal recommendation database stored on a user device;

synchronising the personal recommendation database with a consolidated recommendation database associated with a ground portal and comprising consolidated user preference information, thereby updating the consolidate user preference information;

establishing connectivity between the user device and an isolated in-vehicle network comprising an in-vehicle recommendation database;

synchronising the personal recommendation database with the in-vehicle recommendation database thereby updating user preference information held on the in-vehicle recommendation database; and

delivering recommendation data from the in-vehicle recommendation database to a frontend of the isolated in-vehicle network based on the user preference information held on the in-vehicle recommendation database.

Synchronising the personal recommendation database with the consolidated recommendation database associated with the ground portal may be facilitated by Internet connectivity of the ground portal which facilitates connectivity with the user device.

The method preferably additionally comprises providing application software adapted to gather user preference information of the user and update the personal recommendation database with the user preference information.

As with the above described system, in one embodiment the isolated in-vehicle network is an in-flight entertainment network and the in-vehicle recommendation database is an in-flight recommendation database.

According to a further aspect of the invention there is provided an in-flight entertainment system comprising:

a backend comprising a recommendation engine and an in-flight recommendation database;

at least one frontend comprising a screen for displaying content served by the backend; and

connection for establishing connectivity of a user device with the in-flight entertainment network,

wherein the backend is adapted to facilitate synchronising of the in-flight recommendation database with a personal recommendation database stored on the user device, thereby updating user preference information held on the in-flight recommendation database from which content recommendations can be generated by the recommendation engine and delivered to the user through the frontend of the in-flight network.

The in-flight entertainment system may additionally comprise a graphic user interface that facilitates ranking of content received by the user. The frontend

may be adapted to convey the user ranking of the content to the user device and/or the backend resulting in updating of the user preference information held on the in-flight recommendation database.

According to yet another aspect of the invention there is provided a computer readable medium containing programming instructions that cause a computer processor to perform the steps of:

receive rankings of content from a user and update user preference information on a personal recommendation database stored on a user device;

synchronise the personal recommendation database with a consolidated recommendation database associated with a ground portal and comprising consolidated user preference information, thereby updating the consolidate user preference information;

establish connectivity between the user device and an isolated in-vehicle network comprising an in-vehicle recommendation database;

synchronise the personal recommendation database with the in-vehicle recommendation database thereby updating user preference information held on the in-vehicle recommendation database; and

deliver recommendation data from the in-vehicle recommendation database to a frontend of the isolated in-vehicle network based on the user preference information held on the in-vehicle recommendation database

The present invention consists of features and a combination of parts hereinafter fully described and illustrated in the accompanying drawings, it being understood that various changes in the details described may be made without departing from the scope of the invention or sacrificing any of the advantages of the present invention.

BRIEF DESCRIPTION OF ACCOMPANYING DRAWINGS

To further clarify various aspects of some embodiments of the present invention, a more particular description of the invention will be rendered by references to specific embodiments thereof, which are illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the accompanying drawings in which:

FIG. 1 illustrates a recommendation system of an embodiment of the invention.

FIG. 2 illustrates a flow diagram for a recommendation system of an embodiment of the invention.

FIG. 3 illustrates a proof of concept implementation diagram of a recommendation system of an embodiment of the invention.

FIG. 4 illustrates a P3GA Main Menu Screen according to an embodiment of the invention.

FIG. 5 illustrates a P3GA Login Screen to Ground Portal according to an embodiment of the invention.

FIG. 6 illustrates a Movie Recommendation List display.

FIG. 7 illustrates a Movie Rating display.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As discussed above, the present invention relates to a system and method for providing content recommendations across isolated in-vehicle networks. In

particular, the invention relates to systems and methods for providing content recommendations for personalised in-transit (e.g. in-flight) entertainment systems.

Hereinafter, this specification will describe the present invention according to the certain embodiments. It is to be understood that limiting the description to these embodiments of the invention is merely to facilitate discussion of the present invention as it is envisioned without departing from the scope of the appended claims. In particular, as mentioned above, it should be appreciated that while the following detailed description pays particular attention to in-flight entertainment systems, the invention is not so limited and also applies to other isolated in-vehicle networks, including but not limited to entertainment systems provided on cruise liners, trains and buses, and even in cars.

Referring to Figure 1, a recommendation system 100 for isolated in-vehicle networks is illustrated. The system 100 includes several isolated in-vehicle networks 101 (IFE networks) and mobile devices 102 (PEDs), which may be for example smartphones, tablets, etc. The content (e.g. movies, songs, magazines, online shop, etc.) are hosted in the IFE networks 101. The system 100 also includes a ground portal 103 associated with a consolidated recommendation database 104 (CRDB). The challenges faced by such a system 100 include (i) getting a list of recommended contents into the mobile PEDs 102 regardless of which IFE network 101 they are connected to; and (ii) synchronizing the CRDB 104 with recommendation ratings in in-flight recommendation databases 107 (IRDBs). The solution involves using the PEDs 102 as data carriers between IFE networks 101 and the Ground Portal 103, and synchronising through portable recommendation databases 105 (PRDB) associated with the PEDs 102.

The recommendation lists are generated using a hybrid of content-based and collaborative filtering techniques. Both are dependent on users rating the content

on their PEDs 102 and/or IFE networks 101. It is therefore crucial to synchronise the latest ratings with the CRDB 104 in order to provide the most relevant recommendations to users.

The IFE networks 101 are isolated in-vehicle networks that reside in the aircraft. They do not have any direct connection with the Internet 106, but provide connections to the in-flight entertainment system and to the PEDs 102. Each IFE network 101 consists of a backend server (for media and applications) and multiple frontends for viewing contents and receiving user inputs.

The Ground Portal 103 has a permanent connection to the Internet and consists of a recommendation engine that has access to the CRDB 104. The PEDs 102 are mobile devices carried by users that roam between the Internet 106 and the IFE networks 101, and is able to connect to the Ground Portal 103 and IFE networks 101.

The P3GA is a software application (i.e. a Passenger Profile and Preferences Gathering App) that runs on the PEDs 102. It gathers the profile, preferences and recommendation ratings of the PED user and updates it in the PRDB 105. It also provides a graphic user interface (GUI) to present the recommendations to the user and accepts user ratings.

When a user initiates the P3GA with the PED 102 connected to the Internet 106, the user will receive a list of recommended contents from the Ground Portal's 103 recommendation engine. This received list will be stored in the PRDB 105 of the PED 102. The user is able to rate the recommended contents using the P3GA's GUI. New ratings will trigger a sync with the CRBD 104 via the Internet 106.

When the user starts the P3GA with the PED 102 connected to an IFE network 101, the P3GA will send the recommendation data from the PRDB to the IFE backend via the IFE network 101. If the PRDB does not have an empty recommendation list, it will be synchronized with an in-flight recommendation database 107 (IRDB) and the recommended content list will be displayed to the user on the screen of the IFE frontend. If the PRDB has an empty recommendation list there will be no synchronization with the IRDB 107. Instead, the IFE networks 101 recommendation engine will generate a recommendation list for the user.

The user is then able to consume and rate the recommended contents. A change in the ratings of the recommended contents will trigger an update to the IRDB 107, the user's PRDB 105 and the recommendations shown to the user. Through the use of collaborative filtering, this will, over time, allow the IFE network 101 to provide more relevant recommendations for all users onboard the aircraft.

The CRBD 104 will be synchronized again with the PRDB when the user roams back into the Internet 106 space. In this way, the CRDB 104 will also be synchronized with the IRDBs 107 even though they are not connected. This will, over time, enable all passengers of the airline to benefit from more relevant recommendations.

In more detail, the Passenger Profile and Preferences Gathering App (P3GA) is a software application that is installed on the user's PED 102. It's main functions include (i) gathering user profile and preferences from media contents found in the user's PED 102; (ii) accessing the Ground Portal 103 (via Internet 106) and IFE backend (via IFE network 101); using GUI, displaying a recommended contents list to the user; using GUI, allowing the user to rate the recommended contents; and synchronizing the PRDB 105 based on the user profile and preference updates, and recommendation ratings.

The Ground Portal 103 is ground-based server software that is installed on a server class computer. It offers a recommendation service to the P3GAs and synchronizes the CRDB 104 with PRDBs 105 sent from the P3GAs. The synchronization between the CRDB 104 and PRDBs 105 is an important aspect of the present invention. The Ground Portal 103 has a stable connection to the Internet 106, as previously discussed.

The IFE backend and frontends are connected to the IFE network 101. The IFE backend is an aircraft-based server computer. It offers a recommendation service to the P3GAs and synchronizes the IRDB 107 with PRDBs 105 on the PEDs 102. The synchronization between the IRDB 107 and PRDBs 105 is another important aspect of the present invention. An IFE frontend consists of a screen and user input device for displaying contents that are served by the IFE backend to the user based on the user inputs. It also has a GUI that allows the user to rate the recommended contents. Typically, one IFE backend serves many IFE frontends.

The PRDB 105 resides in a PED 102 and is accessed by the P3GA. It contains the knowledge of the PED 102 user's profile and preferences and recommendation ratings.

The CRDB 104 resides in the Ground Portal 103 and is accessed by a recommendation engine of the Ground Portal 103. It contains the knowledge of all the Airline's past and present passengers' profiles and preferences, and recommendation ratings.

The IRDB 107 resides in the IFE backend and is accessed by the IFE network's 101 recommendation engine 108. It contains the knowledge of all of the aircraft's past and present passengers' profiles and preferences, and recommendation ratings.

Figure 2 illustrates methodology 200 of the system 100 of the invention and how this will function in practice. Referring to Figure 2, the methodology 200 of the invention may be broken down into various use scenarios. These will be dealt with in turn below.

Ground to Aircraft Use Scenario

On the ground, the user executes the P3GA 201 on his/her PED before boarding the aircraft (assuming the user has it installed already). The P3GA runs in the background to gather information on user profile and media content preferences from the PED and concurrently requests for user login to authenticate the user.

Upon successful login, the P3GA will be connected 202 to the Ground Portal and the gathered information together with the PRDB will be seamlessly sent 203 from the PED to the Ground Portal in the background to request for recommendations.

The Ground Portal synchronises 204 the received PRDB with its CRDB and computes a set of recommendations 205 for the requesting P3GA, which is then sent and cached 206. The recommendations are then displayed 207 to the user on the PED, who is given the option to rate the recommendations individually 208 to indicate their preferences. Any preference changes on the recommendations by the user are then logged 209 into the PRDB and communicated 210 to the Ground Portal for synchronization 204 with the CRDB. The user boards the aircraft, which then takes off into the air.

In the Air, the user connects 211 his or her PED to the IFE, for example using connectivity such as, but not limited to, WiFi, Bluetooth, NFC, USB, and so on, provided by the aircraft, by logging in with the P3GA. Upon successful

connection 211 and login, the P3GA will seamlessly send 212 the PRDB to the IFE to inform it about the user's recommendations. The IFE then synchronises the received PRDB with its IRDB and displays the recommendations 213 to the user on the IFE screen. In the event that the PRDB is empty, the IFE would make recommendations based on the user's profile and preference information gathered by the P3GA. The user is able to access the recommended contents, or rate them from the IFE screen. Any preference changes on the recommendations by the user may then be recorded 214 and synchronized 215 with the IRDB and PRDB. This keeps the recommendations dynamic and up-to-date with the preferences of the users on the aircraft. Any updates to the IRDB will affect relevant updates to corresponding PRDBs via the aircraft's network.

Aircraft to Ground Use Scenario

After the user disembarks the aircraft, the P3GA will seamlessly check if there were updates 216 to the PRBD. If there are updates, the P3GA will send the updated PRBD to the Ground Portal 202 to be synchronized 204 with the CRDB.

Aircraft to Aircraft Use Scenario

This scenario assumes that the user has disembarked from a previous flight and is in transit at an airport waiting to board a connecting flight and there is no data connectivity available for the PED. This would prohibit: (i) the PRDB to be synchronized with the CRDB; and (ii) recommendation updates to the PED from the Ground Portal.

After the user boards the connecting flight, a process as described above takes place. In particular, the user connects 211 his or her PED to the IFE. The P3GA then sends 212 the PRDB to the IFE to inform it about the user's recommendations. The IFE then synchronises the received PRDB with its IRDB

and displays the recommendations 213 to the user on the IFE screen. If the PRDB is empty, the IFE makes recommendations based on the user's profile and preference information gathered by the P3GA. Again, the user is able to access the recommended contents, or rate them from the IFE screen. Any preference changes on the recommendations by the user may then be recorded 214 and synchronized 215 with the IRDB and PRDB.

Figure 3 illustrates proof-of-concept implementation of a system 300 of the invention. It will be understood that implementation can be different for an operational system. It should also be noted that the system 300 is not content dependent and it can be applied to many forms of contents, such as video, audio, print, product, etc., which would be the case in an actual operational system.

The selection of Personal Electronic Device (PED) 302 is not particularly limited. For example, this may be an Android smartphone and/or an Android tablet device. The PED 302 is equipped with a camera and WIFI. A Passenger Profile and Preferences Gathering App (P3GA) may be, for example, an Android software application.

IFE networks 301 are isolated from one another. Each IFE network 301 includes an IFE backend 309 and, usually, a plurality of IFE frontends 310 as discussed above. WIFI access points, or other connectivity as described above, facilitate communication between the PED 302 and the IFE network 301, which may result in updating of the in-flight recommendation database (IRDB) 307.

When internet connectivity is available the PED syncs with a ground portal 303, thereby updating the consolidated recommendation database 304, as discussed in more details above.

Figure 4 to 7 are GUI layout of the P3GA software. The P3GA has 2 modes of operation: the ground mode and flight mode. Referring to Figure 4, the ground mode is enabled by the Ground Portal button. Ground mode allows the P3GA to connect with the Ground Portal. Similarly, the flight mode is enabled by the IFE button. Flight mode allows the P3GA to connect with the IFE backend. Once launched, a user enters a User ID and Password, as shown in Figure 5. As illustrated in Figures 6 and 7 respectively, the P3GA then displays recommended content and the user may rate the content, resulting in updating of their profile.

The Ground Portal is implemented as a Java-based ActiveMQ server and runs on an Intel based PC with the Ubuntu Linux OS as the operating system. The IFE backend is also implemented as a Java-based ActiveMQ server and runs on an Intel based PC with the Ubuntu Linux OS as the operating system. The IFE frontend is implemented as an Android application running on a tablet.

The recommendation engine used in the Ground Portal and IFEs is built based on the Java based Taste recommendation engine. The Taste engine supports both content-based and collaborative filtering techniques in making relevant recommendations.

Collaborative filtering is a common technique used in many of today's recommendation systems, particularly on the Internet shopping and media sites such as Amazon, eBay, YouTube, etc. In brief, it attempts to recommend by predicting what a user may like based on his ratings of items he has previously consumed and the item ratings of other fellow users with similar profiles and preferences. All ratings are consolidated in a database and a set of matrix transformations are performed on the dataset to generate the relevant predictions and recommendations.

In content-based filtering, which is another common recommendation technique, the recommendation is generated based on items that are similar to items that the user has rated highly in the past. This technique will be employed whenever there is insufficient data for effective collaborative filtering.

The consolidated recommendation database (CRDB), in-flight recommendation database (IRDB) and PED recommendation database (PRDB) are implemented as indexed binary flat files.

The following describes the message types defined for communication between P3GA and Ground Portal, and P3GA and IFE.

Between P3GA and Ground Portal

Message Type	**Description**
Login	To enable the P3GA user to login to the Ground Portal.
UploadScannedData	To upload information gathered (e.g. media list, device settings) by the P3GA from the user's PED to the Ground Portal.
GetPreferenceData	To get the preference data from the Ground Portal. This data will be stored in the PRDB.
GetDisplayItemList	To get the recommendation list based on request type (e.g. popular, best match, all, etc.) from the Ground Portal.
GetDisplayItemDetails	To get details of a user selected item on a recommended list from the Ground Portal.
RateItem	To send updated rating when user rates a selected item on the recommended list from the Ground Portal.

UpleadPreferenceData	To upload changes to user profile and preferences to the Ground Portal.

Between P3GA and IFE

Message Type	Description
Login	To identify the user by sending to the IFE the user's seat number. The login procedure requires the user to point his PED's camera at the screen of the IFE frontend and scan a login QR-code image.
UploadPreferenceData	To upload the latest user preference data to the IFE backend.
RateItem	To send updated rating to the IFE backend when user rates an item on the recommended list from the IFE frontend.
ViewItem	To inform the P3GA that the user consumed an item on the IFE frontend.
BrowseItem	To inform the P3GA that the user browsed an item on the IFE frontend.

Between IFE and IFE frontend

Message Type	Description
PEDConnected	To refresh the IFE frontend display using user information and updated user preferences from the IFE backend.

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It is envisaged that the system of the invention will provide advantages over existing IFE systems. Particularly, the system:

1. Enables synchronization and enrichment of the recommendation databases between aircrafts;

2. Enables synchronization and enrichment of the recommendation databases between aircraft and recommendation databases on the Internet;

3. Provides a dynamic and relevant IFE content recommendation to passengers;

4. Will work with existing and future cellular data and Internet infrastructures;

5. Does not require network connectivity between aircraft and the consolidated recommendation database.

Unless the context requires otherwise or specifically stated to the contrary, integers, steps or elements of the invention recited herein as singular integers, steps or elements clearly encompass both singular and plural forms of the recited integers, steps or elements.

Throughout this specification, 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 step or element or integer or group of steps or elements or integers, but not the exclusion of any other step or element or integer or group of steps, elements or integers. Thus, in the context of this specification, the term "comprising" is used in an inclusive sense and thus should be understood as meaning "including principally, but not necessarily solely".

It will be appreciated that the foregoing description has been given by way of illustrative example of the invention and that all such modifications and variations thereto as would be apparent to persons of skill in the art are deemed to fall within the broad scope and ambit of the invention as herein set forth.

CLAIMS

1. A system for content recommendations across isolated in-vehicle networks comprising:

application software for loading onto a user device, said application software providing a user interface on said user device and a personal recommendation database adapted to store user preference information comprising content ratings of a user of said user device;

at least one isolated in-vehicle network comprising an in-vehicle recommendation database, said isolated in-vehicle network having localised connectivity with said user device;

a ground portal associated with a consolidated recommendation database adapted to store consolidated user preference information,

wherein when said user device has local connection to said isolated in-vehicle network said personal recommendation database and said in-vehicle recommendation database can be synchronised, and wherein when said user device has connectivity to said ground portal said personal recommendation database and said consolidated recommendation database can be synchronised.

2. A system according to claim 1, wherein said ground portal has Internet connectivity facilitating connectivity with said user device.

3. A system according to claim 1 or 2, wherein said ground portal comprises a recommendation engine that has access to said consolidated recommendation database.

4. A system according to any one of the preceding claims, wherein said isolated in-vehicle network comprises a recommendation engine that has access to said in-vehicle recommendation database.

5. A system according to any one of the preceding claims, wherein said user interface provided by said application software facilitates ranking of content by said user.

6. A system according to any one of the preceding claims, wherein said application software is adapted to gather user preference information of said user and update said personal recommendation database with said user preference information.

7. A system according to any one of the preceding claims, wherein said isolated in-vehicle network is an in-flight entertainment network and said in-vehicle recommendation database is an in-flight recommendation database.

8. A system according to claim 7, wherein said in-flight entertainment network comprises: (i) a backend comprising a recommendation engine and said in-flight recommendation database; and (ii) at least one frontend comprising a user input device and a screen for displaying content served by said backend.

9. A system according to claim 8, wherein said frontend additionally comprises a graphic user interface that facilitates ranking of content received from said backend by said user.

10. A method for providing content recommendations across isolated in-vehicle networks comprising:

receiving rankings of content from a user and updating user preference information on a personal recommendation database stored on a user device;

synchronising said personal recommendation database with a consolidated recommendation database associated with a ground portal

and comprising consolidated user preference information, thereby updating said consolidate user preference information;

establishing connectivity between said user device and an isolated in-vehicle network comprising an in-vehicle recommendation database;

synchronising said personal recommendation database with said in-vehicle recommendation database thereby updating user preference information held on said in-vehicle recommendation database; and

delivering recommendation data from said in-vehicle recommendation database to a frontend of said isolated in-vehicle network based on said user preference information held on said in-vehicle recommendation database.

11. A method according to claim 10, wherein synchronising said personal recommendation database with said consolidated recommendation database associated with said ground portal is facilitated by Internet connectivity of said ground portal which facilitates connectivity with said user device.

12. A method according to claim 10 or 11, comprising providing application software adapted to gather user preference information of said user and update said personal recommendation database with said user preference information.

13. A method according to any one of claims 10 to 12, wherein said isolated in-vehicle network is an in-flight entertainment network and said in-vehicle recommendation database is an in-flight recommendation database.

14. An in-flight entertainment system comprising:

a backend comprising a recommendation engine and an in-flight recommendation database;

at least one frontend comprising a screen for displaying content served by said backend; and

connection for establishing connectivity of a user device with said in-flight entertainment network,

wherein said backend is adapted to facilitate synchronising of said in-flight recommendation database with a personal recommendation database stored on said user device, thereby updating user preference information held on said in-flight recommendation database from which content recommendations can be generated by said recommendation engine and delivered to said user through said frontend of said in-flight network.

15. An in-flight entertainment system according to claim 14, comprising a graphic user interface that facilitates ranking of content received by said user.

16. An in-flight entertainment system according to claim 15, wherein said frontend is adapted to convey said user ranking of said content to said user device and/or said backend resulting in updating of said user preference information held on said in-flight recommendation database.

17. A computer readable medium containing programming instructions that cause a computer processor to perform the steps of:

receive rankings of content from a user and update user preference information on a personal recommendation database stored on a user device;

synchronise said personal recommendation database with a consolidated recommendation database associated with a ground portal and comprising consolidated user preference information, thereby updating said consolidate user preference information;

establish connectivity between said user device and an isolated in-vehicle network comprising an in-vehicle recommendation database;

synchronise said personal recommendation database with said in-vehicle recommendation database thereby updating user preference information held on said in-vehicle recommendation database; and

deliver recommendation data from said in-vehicle recommendation database to a frontend of said isolated in-vehicle network based on said user preference information held on said in-vehicle recommendation database.