Claims

1. A communications server apparatus for managing authorisation codes for transport-related services, comprising a processor and a memory, the communications server apparatus being configured, under control of the processor to execute instructions in the memory to:

in response to receiving user request data comprising a data field indicative of a number of authorisation codes to be generated and a data field indicative of a period for which the authorisation codes are valid,

determine whether a maximum number of authorisation codes predefined for the period has been exceeded, by comparison of the maximum number with a total number comprising the number of the authorisation codes to be generated for the period and, if there are existing authorisation codes previously generated for the period, a sum number of the existing authorisation codes; and

if the total number is less than or equal to the maximum number, the communications server apparatus is further configured to generate one or more code data records comprising:

a period data field having data corresponding to the period for which the authorisation codes are valid; and

code data fields, wherein a number of the code data fields that is generated corresponds to the number of the authorisation codes, and wherein, for each code data field, the communications server apparatus is further configured to generate a respective authorisation code of the authorisation codes and data indicative of a status of the respective authorisation code,

wherein the authorisation codes are devoid of a monetary value and usable as permission codes for authorising bookings of transport-related services for payment by a non-human entity, and wherein each authorisation code is redeemable once; and

if the total number is more than the maximum number, the communications server apparatus is further configured to provide an alert to the user.

2. The communications server apparatus as claimed in claim 1, wherein the communications server apparatus is further configured to generate one or more travel history data records,

wherein, in response to an authorisation code being redeemed for a particular transport-related service, the communications server apparatus is further configured to:

generate, in the one or more travel history data records, a redeemed code data field comprising the authorisation code that is redeemed;

generate, in the one or more travel history data records, a travel data field comprising data corresponding to the particular transport-related service; and

associate the redeemed code data field and the travel data field to each other.

3. The communications server apparatus as claimed in claim 1 or 2, wherein, for each authorisation code, in response to a change in the status of the authorisation code, the communications server apparatus is further configured to update, in the code data field corresponding to the authorisation code, the data indicative of the status in accordance with the change.

4. The communications server apparatus as claimed in any one of claims 1 to 3, wherein the communications server apparatus is further configured to generate one or more entity data records comprising an entity data field comprising data corresponding to the non-human entity and further configured to associate the one or more code data records and the one or more entity data records to each other.

5. The communications server apparatus as claimed in claim 4, wherein, in response to receiving user request data comprising a data field indicative of at least one condition to be imposed on the transport-related services to be used with the authorisation codes, the communications server apparatus is further configured to generate, in the one or more entity data records, a condition data field comprising data corresponding to the at least one condition.

6. The communications server apparatus as claimed in any one of claims 1 to 5, wherein the transport-related services comprise ride-hailing transportation services.

7. A method, performed in a communications server apparatus for managing authorisation codes for transport-related services, the method comprising, under control of a processor of the communications server apparatus:

in response to receiving user request data comprising a data field indicative of a number of authorisation codes to be generated and a data field indicative of a period for which the authorisation codes are valid,

determining whether a maximum number of authorisation codes predefined for the period has been exceeded, by comparison of the maximum number with a total number comprising the number of the authorisation codes to be generated for the period and, if there are existing authorisation codes previously generated for the period, a sum number of the existing authorisation codes; and

if the total number is less than or equal to the maximum number, the method further comprises generating one or more code data records comprising:

a period data field having data corresponding to the period for which the authorisation codes are valid; and

code data fields, wherein a number of the code data fields that is generated corresponds to the number of the authorisation codes, and wherein, for each code data field, the method further comprises generating a respective authorisation code of the authorisation codes and data indicative of a status of the respective authorisation code,

wherein the authorisation codes are devoid of a monetary value and usable as permission codes for authorising bookings of transport-related services for payment by a non-human entity, and wherein each authorisation code is redeemable once; and

if the total number is more than the maximum number, the method further comprises providing an alert to the user.

8. The method as claimed in claim 7, further comprising:

generating one or more travel history data records,

wherein, in response to an authorisation code being redeemed for a particular transport-related service, the method further comprises:

generating, in the one or more travel history data records, a redeemed code data field comprising the authorisation code that is redeemed;

generating, in the one or more travel history data records, a travel data field comprising data corresponding to the particular transport-related service; and

associating the redeemed code data field and the travel data field to each other.

9. The method as claimed in claim 7 or 8, further comprising, for each authorisation code, in response to a change in the status of the authorisation code, updating, in the code data field corresponding to the authorisation code, the data indicative of the status in accordance with the change.

10. The method as claimed in any one of claims 7 to 9, further comprising:

generating one or more entity data records comprising an entity data field comprising data corresponding to the non-human entity; and

associating the one or more code data records and the one or more entity data records to each other.

11. The method as claimed in claim 10, further comprising, in response to receiving user request data comprising a data field indicative of at least one condition to be imposed on the transport-related services to be used with the authorisation codes, generating, in the one or more entity data records, a condition data field comprising data corresponding to the at least one condition.

12. The method as claimed in any one of claims 7 to 11, wherein the transport-related services comprise ride-hailing transportation services.

13. A communications server apparatus for processing an authorisation code provided by a user making a request for booking of a transport-related service, comprising a processor and a memory, the communications server apparatus being configured, under control of the processor to execute instructions in the memory to:

in response to receiving user request data comprising a data field indicative of the provided authorisation code, data indicative of the user and data indicative of a non-human unit,

determine validity of the provided authorisation code against data stored in the communications server apparatus, wherein the data comprise:

first data corresponding to a non-human entity and corresponding persons associated with the non-human entity;

second data corresponding to authorisation codes generated for the non-human entity and corresponding status of the generated authorisation codes; and

third data corresponding to corresponding periods for which the generated authorisation codes are valid;

wherein an authorisation code that is determined to be valid is devoid of a monetary value and acts as a permission code for authorising payment by the non-human entity;

if the provided authorisation code is determined to be valid in relation to the first data in that the non-human unit matches the non-human entity and the user is a person associated with the non-human entity, the second data in that the provided authorisation code matches a generated authorisation code for the non-human entity and the corresponding status is indicative that the matched generated authorisation code is redeemable, and the third data in that the period for which the matched generated authorisation code is valid matches the period in which the request is made, the communications server apparatus is further configured to generate a booking of the transport-related service for payment by the non-human entity, wherein the matched generated authorisation code is redeemable once; and

if the provided authorisation code is determined to be invalid in relation to at least one of the first, second, or third data, the communications server apparatus is further configured to provide an alert to the user without booking of the transport-related service.

14. A method, performed in a communications server apparatus for processing an authorisation code provided by a user making a request for booking of a transport-related service, the method comprising, under control of a processor of the communications server apparatus:

in response to receiving user request data comprising a data field indicative of the provided authorisation code, data indicative of the user and data indicative of a non-human unit,

determining validity of the provided authorisation code against data stored in the communications server apparatus, wherein the data comprise:

first data corresponding to a non-human entity and corresponding persons associated with the non-human entity;

second data corresponding to authorisation codes generated for the non-human entity and corresponding status of the generated authorisation codes; and

third data corresponding to corresponding periods for which the generated authorisation codes are valid;

wherein an authorisation code that is determined to be valid is devoid of a monetary value and acts as a permission code for authorising payment by the non-human entity;

if the provided authorisation code is determined to be valid in relation to the first data in that the non-human unit matches the non-human entity and the user is a person associated with the non-human entity, the second data in that the provided authorisation code matches a generated authorisation code for the non-human entity and the corresponding status is indicative that the matched generated authorisation code is redeemable, and the third data in that the period for which the matched generated authorisation code is valid matches the period in which the request is made, the method further comprises generating a booking of the transport-related service for payment by the non-human entity, wherein the matched generated authorisation code is redeemable once; and

if the provided authorisation code is determined to be invalid in relation to at least one of the first, second, or third data, the method further comprises providing an alert to the user without booking of the transport-related service.

15. A communications device for managing a request for booking of a transport-related service, comprising a processor and a memory, the communications device being configured, under control of the processor, to execute instructions in the memory to:

in response to receiving user request data comprising a data field indicative of an origin location, a data field indicative of a destination location, and a data field indicative of an authorisation code for the transport-related service,

generate data corresponding to the origin location, the destination location, the authorisation code and the user making the request, wherein the authorisation code is devoid of a monetary value and usable as a permission code for authorising

booking of the transport-related service for payment by a non-human entity, and is redeemable once; and

transmit the data to a communications server apparatus for processing for booking of the transport-related service.

16. A method, performed in a communications device for managing a request for booking of a transport-related service, the method comprising, under control of a processor of the communications device:

in response to receiving user request data comprising a data field indicative of an origin location, a data field indicative of a destination location, and a data field indicative of an authorisation code for the transport-related service,

generating data corresponding to the origin location, the destination location, the authorisation code and the user making the request, wherein the authorisation code is devoid of a monetary value and usable as a permission code for authorising booking of the transport-related service for payment by a non-human entity, and is redeemable once; and

transmitting the data to a communications server apparatus for processing for booking of the transport-related service.

17. A computer program or a computer program product comprising instructions for implementing the method as claimed in any one of claims 7 to 12, 14 and 16.

18. A non-transitory storage medium storing instructions, which when executed by a processor cause the processor to perform the method as claimed in any one of claim 7 to 12, 14 and 16.

19. A communications system for managing authorisation codes for transport-related services, comprising a communications server apparatus, at least one user communications device and communications network equipment operable for the

communications server apparatus and the at least one user communications device to establish communication with each other therethrough,

wherein the at least one user communications device comprises a first processor and a first memory, the at least one user communications device being configured, under control of the first processor, to execute first instructions in the first memory to:

in response to receiving first request data comprising a data field indicative of a number of authorisation codes to be generated and a data field indicative of a period for which the authorisation codes are valid,

generate data corresponding to the number of authorisation codes and the period; and

transmit the data for receipt by the communications server apparatus for processing; and

wherein the communications server apparatus comprises a second processor and a second memory, the communications server apparatus being configured, under control of the second processor, to execute second instructions in the second memory to:

in response to receiving second request data indicative of the data transmitted by the at least one user communications device,

determine whether a maximum number of authorisation codes predefined for the period has been exceeded, by comparison of the maximum number with a total number comprising the number of the authorisation codes to be generated for the period and, if there are existing authorisation codes previously generated for the period, a sum number of the existing authorisation codes; and

if the total number is less than or equal to the maximum number, the communications server apparatus is further configured to generate one or more code data records comprising:

a period data field having data corresponding to the period for which the authorisation codes are valid; and

code data fields, wherein a number of the code data fields that is generated corresponds to the number of the authorisation codes, and wherein, for each code data field, the communications server apparatus is further configured to generate a respective authorisation code of the authorisation codes and data indicative of a status of the respective authorisation code, wherein the authorisation codes are devoid of a monetary value and usable as permission codes for authorising bookings of transport-related services for payment by a non-human entity, and wherein each authorisation code is redeemable once; and

transmit, for receipt by the at least one user communications device, data corresponding to the period, data corresponding to the authorisation codes and data indicative of the status corresponding to the authorisation codes; and

if the total number is more than the maximum number, the communications server apparatus is further configured to provide, for receipt by the at least one user communications device, an alert to the user.

20. A communications system for managing a request for booking of a transport-related service, comprising a communications server apparatus, at least one user communications device and communications network equipment operable for the communications server apparatus and the at least one user communications device to establish communication with each other therethrough,

wherein the at least one user communications device comprises a first processor and a first memory, the at least one user communications device being configured, under control of the first processor, to execute first instructions in the first memory to:

in response to receiving user request data comprising a data field indicative of an origin location, a data field indicative of a destination location, and a data field indicative of an authorisation code provided for the transport-related service,

generate data corresponding to the origin location, the destination location, the provided authorisation code, the user making the request, wherein the data further comprises additional data indicative of a non-human unit, wherein a valid authorisation code is devoid of a monetary value and is usable as a permission code for authorising booking of the transport-related service for payment by a non-human entity, and is redeemable once; and

transmit the data for receipt by the communications server apparatus for processing for booking of the transport-related service; and

wherein the communications server apparatus comprises a second processor and a second memory, the communications server apparatus being configured, under control of the second processor, to execute second instructions in the second memory to:

in response to receiving second request data indicative of the data transmitted by the at least one user communications device,

determine validity of the provided authorisation code against data stored in the communications server apparatus, wherein the stored data comprise:

first data corresponding to the non-human entity and corresponding persons associated with the non-human entity;

second data corresponding to authorisation codes generated for the non-human entity and corresponding status of the generated authorisation codes; and

third data corresponding to corresponding periods for which the generated authorisation codes are valid;

if the provided authorisation code is determined to be valid in relation to the first data in that the non-human unit matches the non-human entity and the user is a person associated with the non-human entity, the second data in that the provided authorisation code matches a generated authorisation code for the non-human entity and the corresponding status is indicative that the matched generated authorisation code is redeemable, and the third data in that the period for which the

matched generated authorisation code is valid matches the period in which the request is made, the communications server apparatus is further configured to generate a booking of the transport-related service for payment by the non-human entity, wherein the matched generated authorisation code is redeemable once, and further configured to transmit data indicative of the booking for receipt by the at least one user communications device; and

if the provided authorisation code is determined to be invalid in relation to at least one of the first, second, or third data, the communications server apparatus is further configured to provide, for receipt by the at least one user communications device, an alert to the user without booking of the transport-related service.