Claims

1. A communications server apparatus for allocating resources to service requests related to a shared economy on-demand service or asset provision, the communications server apparatus comprising a processor and a memory, and being configured, under the control of the processor, to execute instructions stored in the memory to:

receive a plurality of service requests, each service request comprising data representative of a service or asset requested and a delivery time at or by which said service or asset is required;

determine, in respect of each said service request, a lead time comprising a time period between a time at which a respective service request is received and the associated delivery time;

compare each said lead time with a predetermined threshold, and define each respective lead time as high if it is greater than the predetermined threshold and low if it is less than the predetermined threshold;

receive resource data comprising data representative of available resources capable of providing said service or asset, the available resources including service providers that are currently fulfilling a previous service request, and service providers that are not currently fulfilling a service request;

generate cost matrix data, each element of said cost matrix being representative of an available resource-service request pair, said cost matrix data assigning, in respect of each available resource-service request pair, a cost value; wherein assigning cost values comprises calculating, for each available resource-service request pair, a cost value, dependent on whether the lead time associated with the respective service request is high or low, wherein a first calculation is performed to calculate a cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as high, and a second, different calculation is performed to calculate the cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as low;

for each service request, select, from a respective set of available resource-service request pair cost values, a minimum cost value and assign the available resource associated with the selected cost value to the respective service request.

2. A communications server apparatus according to claim 1, configured for the generation of said cost matrix to comprise applying a linear assignment algorithm to data derived from said service requests and said resource data.

3. A communications server apparatus according to claim 1 or claim 2, configured for only said first calculation to use a parameter representative of service or asset delivery delay time if a respective available resource cannot provide the service or asset by the delivery time specified in the respective service request.

4. A communications server apparatus according to claim 3, configured for said delivery delay time to be weighted according to an estimated time period within which a respective available resource will be able to provide the respective service or asset.

5. A communications server apparatus according to any of the preceding claims, configured for said first and second calculations to use a parameter representative of a lag time if a respective available resource is able to provide a respective service or asset earlier than the specified delivery time.

6. A communications server apparatus according to claim 5, configured for said lag time to be weighted according to an estimated time period within which a respective available resource will be able to provide the respective specified service or asset.

7. A communications server apparatus according to any of the preceding claims, configured for said first calculation to comprise a sum of a time value representative of a time period within which a respective available resource will be able to provide the respective specified service or asset, a weighted lag time if the respective available resource is able to provide the service or asset earlier than the delivery time specified in the respective service request, and a weighted delivery delay time if a respective available resource cannot provide the service or asset associated with the respective user request by the specified delivery time; and for the second calculation to comprise a sum of a time value representative of a time period within which a respective available resource will be able to provide the respective specified service or asset and a weighted lag time if the respective available resource is able to provide the service or asset earlier than the delivery time specified in the respective service request.

8. A communications server apparatus according to any of the preceding claims for allocating resources to service requests related to a product delivery service, configured for each said service request to represent a request by a service user for a delivery vehicle to transport a product to an end user and to comprise data representative of a product delivery order and a collection time at which said product will be ready for collection; and for said lead time to comprise a time period between at time at which a respective service request is received and the associated collection time, and for said resource data to comprise data representative of available delivery vehicles and their current geographical location.

9. A communications server apparatus according to claim 8, configured for said product delivery service to comprise a food delivery service.

10. A communications server apparatus according to claim 8 or claim 9, comprising a routing engine for estimating, in respect of each available delivery vehicle resource, a time period within which a respective delivery vehicle can travel to the location specified in a service request at which a product for delivery is to be collected.

11. A method, performed in a service provider apparatus, for allocating resources to service requests related to a shared economy on-demand service or asset provision, the method comprising, under control of a processor of the communications server apparatus:

receiving a plurality of service requests, each service request comprising data representative of a service or asset requested and a delivery time at or by which said service or asset is required;

determining, in respect of each said service request, a lead time comprising a time period between a time at which a respective service request is received and the associated delivery time;

comparing each said lead time with a predetermined threshold, and define each respective lead time as high if it is greater than the predetermined threshold and low if it is less than the predetermined threshold;

receiving resource data comprising data representative of available resources capable of providing said service or asset, the available resources including service providers that are

currently fulfilling a previous service request, and service providers that are not currently fulfilling a service request;

generating cost matrix data, each element of said cost matrix being representative of an available resource-service request pair, said cost matrix data assigning, in respect of each available resource- service request pair, a cost value; wherein assigning cost values comprises calculating, for each available resource-service request pair, a cost value, dependent on whether the lead time associated with the respective service request is high or low, wherein a first calculation is performed to calculate a cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as high, and a second, different calculation is performed to calculate the cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as low;

for each service request, selecting, from a respective set of available resource-service request pair cost values, a minimum cost value and assign the available resource associated with the selected cost value to the respective service request.

12. A computer program product comprising instructions for implementing the method of claim 11.

13. A computer program comprising instructions for implementing the method of claim 11.

14. A non-transitory storage medium storing instructions which, when executed by a processor, cause the processor to perform the method of claim 11.

15. A communications system for allocating resources to service requests related to a shared economy on-demand service or asset provision, the communications system comprising 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, and at least one service or asset provider communications device and communications network equipment operable for the communications server apparatus and the at least one service provider communications device to establish communication with each other therethrough, the communications server apparatus comprising a processor and a memory, and being configured, under the control of the processor, to execute instructions stored in the memory to:

receive a plurality of service requests, each service request comprising data representative of a service or asset requested and a delivery time at or by which said service or asset is required;

determine, in respect of each said service request, a lead time comprising a time period between a time at which a respective service request is received and the associated delivery time;

compare each said lead time with a predetermined threshold, and define each respective lead time as high if it is greater than the predetermined threshold and low if it is less than the predetermined threshold;

receive resource data comprising data representative of available resources capable of providing said service or asset, the available resources including service providers that are currently fulfilling a previous service request, and service providers that are not currently fulfilling a service request;

generate cost matrix data, each element of said cost matrix being representative of an available resource-service request pair, said cost matrix data assigning, in respect of each available resource-service request pair, a cost value; wherein assigning cost values comprises calculating, for each available resource-service request pair, a cost value, dependent on whether the lead time associated with the respective service request is high or low, wherein a first calculation is performed to calculate a cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as high, and a second, different calculation is performed to calculate the cost value for an available resource-service request pair if the lead time associated with the respective service request is defined as low;

for each service request, select, from a respective set of available resource-service request pair cost values, a minimum cost value and assign the available resource associated with the selected cost value to the respective service request.