CLAIMS

1. A method for sharing functionality and/or data between two or more linked entities using a network comprising the steps of:

(a) creating on at least one entity at least one real object, each said real object providing access to the functionality and/or data of said entity;

(b) creating on each entity at least one virtual object, each said virtual object providing access to the functionality and/or data of a real object on said entity, each said virtual object containing at least one object action; and

(c) creating on at least one entity at least one remote object for connection to a virtual object on a remote entity via the network; said remote object allowing a entity to access functionality and/or data of a remote entity.

2. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 1 including the step of:

(d) creating on at least one entity a metaobject, said metaobject providing access to the functionality and/or data of a plurality of virtual, remote and meta objects.

3. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 1 wherein said metaobject can contain data and/or functionality independent of any virtual or remote objects.

4. A method for sharing functionality and/or data between two or more linked entities as claimed in any one of claims 1 to 3 wherein a list of the objects of each entity is synchronized between entities.

5. A method for sharing functionality and/or data between two or more linked entities as claimed in any one of claims 1 to 4 wherein each of said virtual and meta objects may include security functionality for controlling access to the object.

6. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 5 wherein said network is a virtual private network (VPN).

7. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 6 wherein each of said real objects are selected from the group consisting of File Browser, Mail Browser; Calendar Browser; Music Streamer; Voice module; Video Streamer; Chat module; MediaPlayer Remote; Remote Application Module; Advertisement Module; Banking Module; Printer Module; Panic Module; Web RSS feed module; FTP Server module; BLOG update module; Legacy module; Database module; Web camera module.

8. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 7 wherein at least one of said entities is a device having a processor and that can be connected to the internet.

9. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 8 wherein said at least one said device includes computers, PDAs, PPC, mobile telephones or smartphones, and embedded devices.

10. Computer software for sharing functionality and/or data between two or more linked entities using a network, said software residing on each said entity and comprising:

(a) a routine for creating at least one real object, each said real object providing access to the functionality and/or data of said entity;

(b) a routine for creating at least one virtual object, each of said of virtual objects providing access to the functionality and/or data of a real object on said entity, each said virtual object containing at least one object actions; and

(c) a routine for creating at least one remote object for connection to a virtual object on a remote entity via the network; said remote object allowing an entity to access functionality and/or data of a remote entity.

11. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 6 wherein said VPN is formed by the steps of:

(a) providing a lookup device having a known address with an updatable index of entities known to be connectable to the VPN, which look up device accepts requests from known entities ("joining entity") wishing to link to the VPN,

(b) causing at least one pre-designated contact entity on the VPN to periodically poll the lookup device for received joining requests,

(c) said lookup device receiving a request from a joining entity to connect to the VPN

(d) in response to a poll for joining requests said lookup device notifying the polling contact entity of at least the address of each joining entity (236),

(e) if the contact entity permits a connection to the VPN, the contact entity supplies at least its address to the lookup device which passes this to the joining entity,

(f) the joining entity and contact entity establish a first link between them,

(g) the joining entity and the contact entity conduct an authentication process over said first link,

(h) and if the authentication process is successful the contact entity notifies the joining entity of at least the status of other entities belonging to the VPN and notifies all entities on the VPN that the joining device is joining the VPN,

(i) said joining device using the status of other entities belonging to the VPN to calculate its node position in the VPN including the one or two neighbour entities it will connect to,.

(j) said one or two neighbour entities initiating a process of the type specified in steps (c) to (f) with said lookup entity to establish one or more second links with said joining entity and terminating said first link,

(k) and said joining entity and at least one neighbour entity conducting a mutual authentication process which if successful sustains said one or more second links.

12. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 11 wherein said VPN is formed by including an initial registration step whereby entities register with the lookup device for access to one or more desired VPNs and only entities which are so registered are subsequently recognised or known to the lookup device, said registration step comprising: the entity sending to the lookup device registration information including at least a username, a

password, and the lookup device storing said registration information for identification purposes when a registered entity sends a VPN joining request to the lookup device.

13. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 11 or 12 wherein said registration step includes the lookup device sending to registering entities a security key to allow such entities to access security keys unique to VPN for which registration has been made and the other entities registered for that VPN.

14. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 11 to 13 wherein in step (h) the contact entity further notifies the joining entity of the entity identifiers of other entities belonging to the VPN.

15. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 15 wherein in step (i) said joining entity additionally uses the entity identifiers of other entities belonging to the VPN to calculate its node position.

16. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claims 14 or 15 wherein said entity identifier is an address.

17. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 11 to 16 wherein said authentication process consists of each of the two entities challenging the other using a key unique to the purported identity of the other entity, each challenge comprising a transmission to the other entity, a response from the other entity and verification by the challenging entity that the response is correct.

18. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 17 wherein each challenge between a first entity and a second entity comprises the steps of:

(a) the first entity generates a random sequence of data (AB'600), stores it and encrypts it with the public key (304)of the second entity and sends the resultant cyphertext to the second entity,

(b) the second entity receives the cyphertext from the first entity, decrypts it using the private key of the second entity, encrypts the resultant plaintext with the public key of the first entity and sends it to the first entity, and

(c) the first entity receives the cyphertext from the second entity, decrypts it using the private key of the first entity compares the resultant plaintext with said stored random sequence of data (AB'600) and if there is a match accepts that the second entity is authenticated.

19. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 18 wherein data traffic between entities connected to a VPN is encrypted using a symmetric key and said symmetric key is said random sequence of data (AB'600).

20. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 19 wherein said authentication process is periodically repeated and the periodically generated random data sequences are used as a dynamic symmetric session key.

21. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 11 to 20 wherein said entities are devices having a processor that can be connected to the internet.

22. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 21 wherein said devices include computers, PDAs, PPC, mobile telephones or smartphones, and embedded devices.

CLAIMS

1. A method for sharing functionality and/or data between two or more linked entities using a network comprising the steps of:

(a) creating on at least one entity at least one real object, each said real object providing access to the functionality and/or data of said entity;

(b) creating on each entity at least one virtual object, each said virtual object providing access to the functionality and/or data of a real object on said entity, each said virtual object containing at least one object action; and

(c) creating on at least one entity at least one remote object for connection to a virtual object on a remote entity via the network; said remote object allowing a entity to access functionality and/or data of a remote entity,

(d) creating on at least one entity a metaobject, said metaobject providing access to the functionality and/or data of a plurality of virtual, remote and meta objects.

2. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 1 wherein said metaobject can contain data and/or functionality independent of any virtual or remote objects.

3. A method for sharing functionality and/or data between two or more linked entities as claimed in any one of claims 1 to 3 wherein a list of the objects of each entity is synchronized between entities.

4. A method for sharing functionality and/or data between two or more linked entities as claimed in any one of claims 1 to 4 wherein each of said virtual and meta objects may include security functionality for controlling access to the object.

5. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 3 wherein said network is a virtual private network (VPN).

6. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 6 wherein each of said real objects are selected from the group consisting of File Browser, Mail Browser; Calendar

Browser; Music Streamer; Voice module; Video Streamer; Chat module; MediaPlayer Remote; Remote Application Module; Advertisement Module; Banking Module; Printer Module; Panic Module; Web RSS feed module; FTP Server module; BLOG update module; Legacy module; Database module; Web camera module.

7. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in any one of claims 1 to 7 wherein at least one of said entities is a device having a processor and that can be connected to the internet.

8. A method for sharing functionality and/or data between two or more linked entities using a network as claimed in claim 8 wherein said at least one said device includes computers, PDAs, PPC, mobile telephones or smartphones, and embedded devices.

9. Computer software for sharing functionality and/or data between two or more linked entities using a network, said software residing on each said entity and comprising:

(a) a routine for creating at least one real object, each said real object providing access to the functionality and/or data of said entity;

(b) a routine for creating at least one virtual object, each of said of virtual objects providing access to the functionality and/or data of a real object on said entity, each said virtual object containing at least one object actions; and

(c) a routine for creating at least one remote object for connection to a virtual object on a remote entity via the network; said remote object allowing an entity to access functionality and/or data of a remote entity.

(d) a routine for creating on at least one entity a metaobject, said metaobject providing access to the functionality and/or data of a plurality of virtual, remote and/or metaobjects on that entity.