Claims

1. Method for registering, in a database, a transaction between a first party, hereinafter referred to as “Alice”, and a second party, hereinafter referred to as “Bob”, and for allowing a third party, hereinafter referred to as “Carol”, to cause an action to be performed in relation to the transaction, wherein each of Alice, Bob, and Carol has an electronic device capable of communicating with the database over a communication network and capable of electronically signing data to be sent over the communication network, the method comprising:

causing, by Alice’s electronic device, the creation of a record, hereinafter referred to as “transaction record”, comprising

an identifier, hereinafter referred to as “transaction identifier”, for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as “transaction content information”, relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s4), by Alice’s electronic device, the transaction record, the resulting transaction record being hereinafter referred to as “TR_{kA}”;

registering (s6) TR_{kA} in the database;

notifying (s8) Carol’s electronic device that TR_{kA} has been registered in the database;

determining (s10) that TR_{kA} is in accordance with a rule or set of rules and has been electronically signed by Alice’s electronic device;

electronically signing (s12), by Carol’s electronic device, TR_{kA}, the resulting transaction record being hereinafter referred to as “$TR_{kA,kC1}$”;

registering (s14) $TR_{kA,kC1}$ in the database;

notifying (s16) Bob’s electronic device that $TR_{kA,kC1}$ has been registered in the database;

electronically signing (s18), by Bob’s electronic device, $TR_{kA,kC1}$, the resulting transaction record being hereinafter referred to as “$TR_{kA,kC1,kB}$”;

registering (s20) $TR_{kA,kC1,kB}$ in the database;

notifying (s22) Carol’s electronic device that $TR_{kA,kC1,kB}$ has been registered in the database; and,

determining (s24) that $TR_{kA,kC1,kB}$ has been electronically signed by Bob’s electronic device;

electronically signing (s26), by Carol’s electronic device, $TR_{kA,kC1,kB}$, the resulting transaction record being hereinafter referred to as “$TR_{kA,kC1,kB,kC2}$”;

registering (s28) $TR_{kA,kC1,kB,kC2}$ in the database; and

causing, by Carol's electronic device, an action to be performed (s30), wherein the action is based on the transaction content information and is associated with levying a tax by Carol.

2. Method of claim 1, wherein determining (s10) that TR_{kA} is in accordance with a rule or set of rules comprises:

verifying, by Carol's electronic device, based on the identifier for identifying Alice, the identifier for identifying Bob, and the transaction content information, the transaction conformity with the rule or set of rules.

3. Method of claim 1 or 2, wherein the transaction record further comprises a state variable indicating at least one of:

that the transaction record has been electronically signed (s4) by Alice's electronic device;

that TR_{kA} has been registered (s6) in the database;

that Carol's electronic device has been notified (s8) that TR_{kA} has been registered in the database;

that TR_{kA} has been determined (s10) to be in accordance with the rule or set of rules and to have been electronically signed by Alice's electronic device;

that TR_{kA} has been electronically signed (s12) by Carol's electronic device;

that $TR_{kA,kC1}$ has been registered (s14) in the database;

that Bob's electronic device has been notified (s16) that $TR_{kA,kC1}$ has been registered in the database;

that $TR_{kA,kC1}$ has been electronically signed (s18) by Bob's electronic device;

that $TR_{kA,kC1,kB}$ has been registered (s20) in the database;

that Carol's electronic device has been notified (s22) that $TR_{kA,kC1,kB}$ has been registered in the database; and

that $TR_{kA,kC1,kB}$ has been determined (s24) to have been electronically signed by Bob's electronic device;

that $TR_{kA,kC1,kB}$ has been electronically signed (s26) by Carol's electronic device;

that $TR_{kA,kC1,kB,kC2}$ has been registered (s28) in the database; and

that the action has been caused to be performed (s30).

4. Method according to any one of the preceding claims, wherein the transaction relates to an object, and the object is marked with a code representing, or corresponding to, the transaction identifier.

5. Method of claim 4, further comprising marking the object with the code after creating (s2) the transaction record.

6. Method of claim 4 or 5, further comprising:

reading (s32a) the code marked on the object; and

determining (s34a), by querying the database, at least one of:

whether the action has been performed for a transaction identified by the transaction identifier represented by, or corresponding to, the read code; and

whether the object's nature matches the transaction content information of the transaction identified by the transaction identifier represented by, or corresponding to, the read code.

7. Method according to any one of claims 1 to 3, wherein the transaction relates to a service, and a document associated with the service is marked with a code representing, or corresponding to, the transaction identifier.

8. Method of claim 7, further comprising marking the document with the code after creating (s2) the transaction record.

9. Method of claim 7 or 8, further comprising:

reading (s32b) the code marked on the document associated with the service; and

determining (s34b), by querying the database, at least one of:

whether the action has been performed for a transaction identified by the transaction identifier represented by, or corresponding to, the read code; and

whether the object's nature matches the transaction content information of the transaction identified by the transaction identifier represented by, or corresponding to, the read code.

10. Method according to any one of claims 1 to 3, wherein the transaction relates to an object, and the transaction identifier corresponds to a signature, hereinafter referred to as "object signature", generated based on at least one of:

a property of the object; and

a property of a material-based security element apposed on or attached to the object.

11. Method of claim 10, further comprising:

obtaining (s32c) the object signature; and

determining (s34c), by querying the database, at least one of:

whether the action has been performed for a transaction identified by the transaction identifier corresponding to the obtained object signature; and

whether the object's nature matches the transaction content information of the transaction identified by the transaction identifier corresponding to the obtained object signature.

12. Method according to any one of claims 1 to 3, wherein the transaction relates to a service, and the transaction identifier corresponds to a signature, hereinafter referred to as "service-associated document signature", generated based on at least one of:

a property of a document associated with the service; and

a property of a material-based security element apposed on or attached to the document associated with the service.

13. Method of claim 12, further comprising:

obtaining (s32d) the service-associated document signature; and

determining (s34d), by querying the database, at least one of:

whether the action has been performed for a transaction identified by the transaction identifier corresponding to the obtained service-associated document signature; and

whether the object's nature matches the transaction content information of the transaction identified by the transaction identifier corresponding to the obtained service-associated document signature.

14. Method according to any one of the preceding claims, wherein,

upon electronically signing (s12) TR_{kA} by Carol's electronic device, an account associated with Alice is debited from an amount representing a tax on the added value that is considered to result from the transaction; and,

upon determining (s24) that $TR_{kA,kC1,kB}$ has been electronically signed by Bob's electronic device, an account associated with Bob is credited by the amount.

15. System for registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein each of Alice, Bob, and Carol has an electronic device capable of communicating with the database over a communication network and capable of electronically signing data sent over the communication network, the system being configured for:

causing, by Alice's electronic device, the creation (s2) of a record, hereinafter referred to as "transaction record", comprising

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s4), by Alice's electronic device, the transaction record, the resulting transaction record being hereinafter referred to as "TR_{kA}";

registering (s6) TR_{kA} in the database;

notifying (s8) Carol's electronic device that TR_{kA} has been registered in the database;

determining (s10) that TR_{kA} is in accordance with a rule or set of rules and has been electronically signed by Alice's electronic device;

electronically signing (s12), by Carol's electronic device, TR_{kA}, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1}$";

registering (s14) $TR_{kA,kC1}$ in the database;

notifying (s16) Bob's electronic device that $TR_{kA,kC1}$ has been registered in the database;

electronically signing (s18), by Bob's electronic device, $TR_{kA,kC1}$, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB}$";

registering (s20) $TR_{kA,kC1,kB}$ in the database;

notifying (s22) Carol's electronic device that $TR_{kA,kC1,kB}$ has been registered in the database; and,

determining (s24) that $TR_{kA,kC1,kB}$ has been electronically signed by Bob's electronic device;

electronically signing (s26), by Carol's electronic device, $TR_{kA,kC1,kB}$, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB,kC2}$";

registering (s28) $TR_{kA,kC1,kB,kC2}$ in the database, and

causing, by Carol's electronic device, an action to be performed (s30), wherein the action is based on the transaction content information and is associated with levying a tax by Carol.

16. Method for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein each of Alice, Bob, and Carol has an

electronic device capable of communicating with the database over a communication network and capable of electronically signing data to be sent over the communication network, the method being carried out by Alice's electronic device, and comprising:

causing a record, hereinafter referred to as "transaction record", to be created (s2), the transaction record comprising

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s4) the transaction record, the resulting transaction record being hereinafter referred to as "TR_{kA}";

causing TR_{kA} to be registered (s6) in the database; and

causing Carol's electronic device to be notified (s8) that TR_{kA} has been registered in the database.

17. Method for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein each of Alice, Bob, and Carol has an electronic device capable of communicating with the database over a communication network and capable of electronically signing data to be sent over the communication network, the method being carried out by Carol's electronic device, and comprising:

being notified (s8) that a transaction record, hereinafter referred to as "TR_{kA}", has been registered in the database, wherein TR_{kA} comprises:

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

determining (s10) that TR_{kA} is in accordance with a rule or set of rules and has been electronically signed by Alice's electronic device;

electronically signing (s12) TR_{kA}, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1}$";

causing $TR_{kA,kC1}$ to be registered (s14) in the database;

causing Bob's electronic device to be notified (s16) that $TR_{kA,kC1}$ has been registered in the database;

subsequently being notified (s22) that another version of the transaction record, said version being hereinafter referred to as "$TR_{kA,kC1,kB}$", has been registered in the database;

determining (s24) that $TR_{kA,kC1,kB}$ has been electronically signed by Bob's electronic device;

electronically signing (s26) $TR_{kA,kC1,kB}$, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB,kC2}$";

causing $TR_{kA,kC1,kB,kC2}$ to be registered (s28) in the database; and

causing an action to be performed (s30), wherein the action is based on the transaction content information and is associated with levying a tax by Carol.

18. Method for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein each of Alice, Bob, and Carol has an electronic device capable of communicating with the database over a communication network and capable of electronically signing data to be sent over the communication network, the method being carried out by Bob's electronic device, and comprising:

being notified (s16) that a transaction record, hereinafter referred to as "$TR_{kA,kC1}$", has been registered in the database, wherein $TR_{kA,kC1}$ comprises:

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s18) $TR_{kA,kC1}$, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB}$";

causing $TR_{kA,kC1,kB}$ to be registered (s20) in the database; and

causing Carol's electronic device to be notified (s22) that $TR_{kA,kC1,kB}$ has been registered in the database.

19. Electronic device for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein the electronic device is usable as Alice's electronic device, is capable of communicating with the database over a

communication network, and is capable of electronically signing data to be sent over the communication network, the electronic device being configured for:

causing a record, hereinafter referred to as "transaction record", to be created (s2), the transaction record comprising

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s4) the transaction record, the resulting transaction record being hereinafter referred to as "TR_{kA}";

causing TR_{kA} to be registered (s6) in the database; and

causing Carol's electronic device to be notified (s8) that TR_{kA} has been registered in the database.

20. Electronic device for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein the electronic device is usable as Carol's electronic device, is capable of communicating with the database over a communication network, and is capable of electronically signing data to be sent over the communication network, the electronic device being configured for:

being notified (s8) that a transaction record, hereinafter referred to as "TR_{kA}", has been registered in the database, wherein TR_{kA} comprises:

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

determining (s10) that TR_{kA} is in accordance with a rule or set of rules and has been electronically signed by Alice's electronic device;

electronically signing (s12) TR_{kA} by Carol's electronic device, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1}$";

causing $TR_{kA,kC1}$ to be registered (s14) in the database;

causing Bob's electronic device to be notified (s16) that $TR_{kA,kC1}$ has been registered in the database;

subsequently being notified (s22) that another version of the transaction record, said version being hereinafter referred to as "$TR_{kA,kC1,kB}$", has been registered in the database;

determining (s24) that $TR_{kA,kC1,kB}$ has been electronically signed by Bob's electronic device;

electronically signing (s26) $TR_{kA,kC1,kB}$ by Carol's electronic device, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB,kC2}$";

causing $TR_{kA,kC1,kB,kC2}$ to be registered (s28) in the database; and

causing an action to be performed (s30), wherein the action is based on the transaction content information and is associated with levying a tax by Carol.

21. Electronic device for participating in registering, in a database, a transaction between a first party, hereinafter referred to as "Alice", and a second party, hereinafter referred to as "Bob", and for participating in allowing a third party, hereinafter referred to as "Carol", to cause an action to be performed in relation to the transaction, wherein the electronic device is usable as Bob's electronic device, is capable of communicating with the database over a communication network, and is capable of electronically signing data to be sent over the communication network, the electronic device being configured for:

being notified (s16) that a transaction record, hereinafter referred to as "$TR_{kA,kC1}$", has been registered in the database, wherein $TR_{kA,kC1}$ comprises:

an identifier, hereinafter referred to as "transaction identifier", for identifying the transaction,

an identifier for identifying Alice,

an identifier for identifying Bob, and

information, hereinafter referred to as "transaction content information", relating to at least one of the nature of the transaction and a value that the transaction is considered to have;

electronically signing (s18) $TR_{kA,kC1}$ by Bob's electronic device, the resulting transaction record being hereinafter referred to as "$TR_{kA,kC1,kB}$";

causing $TR_{kA,kC1,kB}$ to be registered (s20) in the database; and

causing Carol's electronic device to be notified (s22) that $TR_{kA,kC1,kB}$ has been registered in the database.

22. Computer program product comprising computer-readable instructions configured, when executed on an electronic device or set of electronic devices, to cause the electronic device or set of electronic devices to carry out the method according to any one of claims 1 to 14 and 16 to 18.