Delegation of Responsibilities
(Position Paper)

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1 Delegation of Responsibility

Delegation is usually seen as delegation of rights, where the term \textit{delegation} is used to refer the process whereby a principal authorises an agent to act on her behalf, by transferring a set of rights to the agent for a specific period of time.

Here we would like to propose an other form of delegation: \textit{delegation of responsibility} with the following definition that is slightly different from the previous one: \textit{delegation} is used to refer the process whereby a principal authorises an agent to act on her behalf, by transferring a set of rights to the agent for a specific period of time - during which the principal can no longer exercise these rights.

Delegation of rights assumes that a principal, A, has a set of rights $G$ and she delegates a subset of them, $G'$, to an other principal B who can act on behalf of A to exercise that particular set of rights $G'$. A is always responsible for $G'$, but with delegation she shares these responsibilities with B.

We use the following terminology: the principal that delegates is said to be the grantor. The principal that is authorised by the grantor to use some rights is said to be the grantee. The target that accepts the last operation invocation of a cascaded operations chain is called the end-point.

To whom a principle is responsible for her rights depend on the security policy. Usually the grantee is responsible to the grantor about the rights he got from her, but there could be cases where the grantee is responsible to a third party or many other more complex agreements.

There are a lot of situations where this sharing of responsibilities, that introduces uncertainty for auditing purposes, is not desired.

We use the term responsibility to mean something different from what the term is most commonly used for. We will not determine who is going to pay a bill, but rather to make sure that the bill will be delivered to the person accountable for it. We cannot technically establish who is going to be legally, morally or...
socially liable for an action. Our goal is, more modestly but still quite difficult, to determine who, technically, performed a specific action.

Delegation of responsibility takes place everytime a principal has to rely upon some other party to complete a transaction. She relies upon an other principal but she does not trust him.

Following we describe a couple of examples where this new form of delegation is needed.

Let suppose to have a service provider that offers a set of services to her customers. The customers demand for a new service. The service provider finds more convenient to delegate this service to an other party rather than to provide it by herself. Customers do not want to see this delegation, i.e. the new service has to have the usual interface of all the other services. The responsible for all the services for the customers it is always the service provider (grantor). Anyway the service provider wants to be able to distinguish if a disruption of the new service is its responsibility or the other party (grantee) one.

In order to do this we propose a new form of delegation: delegation of responsibility. What it is delegated are not only the rights but the right with the attached responsibilities.

An other practical example how delegation of responsibilities differs from delegation of rights is the following.

Let us suppose the case of a bank manager that possesses the physical key to open the vault. The manager needs to go away for a week and she delegates her chief cashier to open the vault in her absence giving to the secretary a copy of her key. This is represented in security literature as delegation of rights. But the delegation could be implemented also in another way where the manager gives to her secretary the original, not duplicable, physical key to her, to delegate to her the power to open the vault in the manager’s absence. This second case is what we define as delegation of responsibility.

The difference become even clearer if the vault is mysteriously emptied out while the manager is away. In the former case both, manager and secretary, will be put in jail (or none of them if the principle of doubt held). In the latter case, the manager may be fired because she did not choose carefully enough her secretary but it is the secretary that will be put in jail.

This is a typical example of delegation of responsibilities and not of rights. In the banking practice there are a lot of examples where for security and auditing purposes more than one independent parties cannot execute themselves a transaction but their authorisation is necessary for the execution of the transaction by one or more responsible party.

We are not saying that delegation of responsibility must substitute the concept of delegation of rights, which is useful and appropriate for many situations, but rather we pointed out that both meanings of delegations are necessary to provides mechanisms to solve a wider variety of problems.