

## 10.5 Penalty for Violated Commitment



A sales order contains commitments that represent promises of future economic events that both contracting parties promise to fulfill. Contracts usually also specify terms for what should happen if some of the commitments are not fulfilled as promised. For example, it can be specified that an economic agent that cannot fulfill a commitment has to pay a specified penalty to the other economic agent. The promise to pay a penalty is not a commitment when the contract is signed; it may become a commitment under the conditions specified by the terms of the contract.

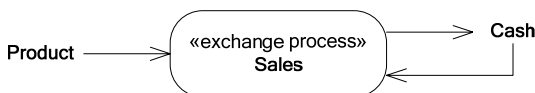
The payment of the penalty is an outflow of resources. To make a full REA model that includes penalties for violated commitments, an application designer must answer the following question

### Problem

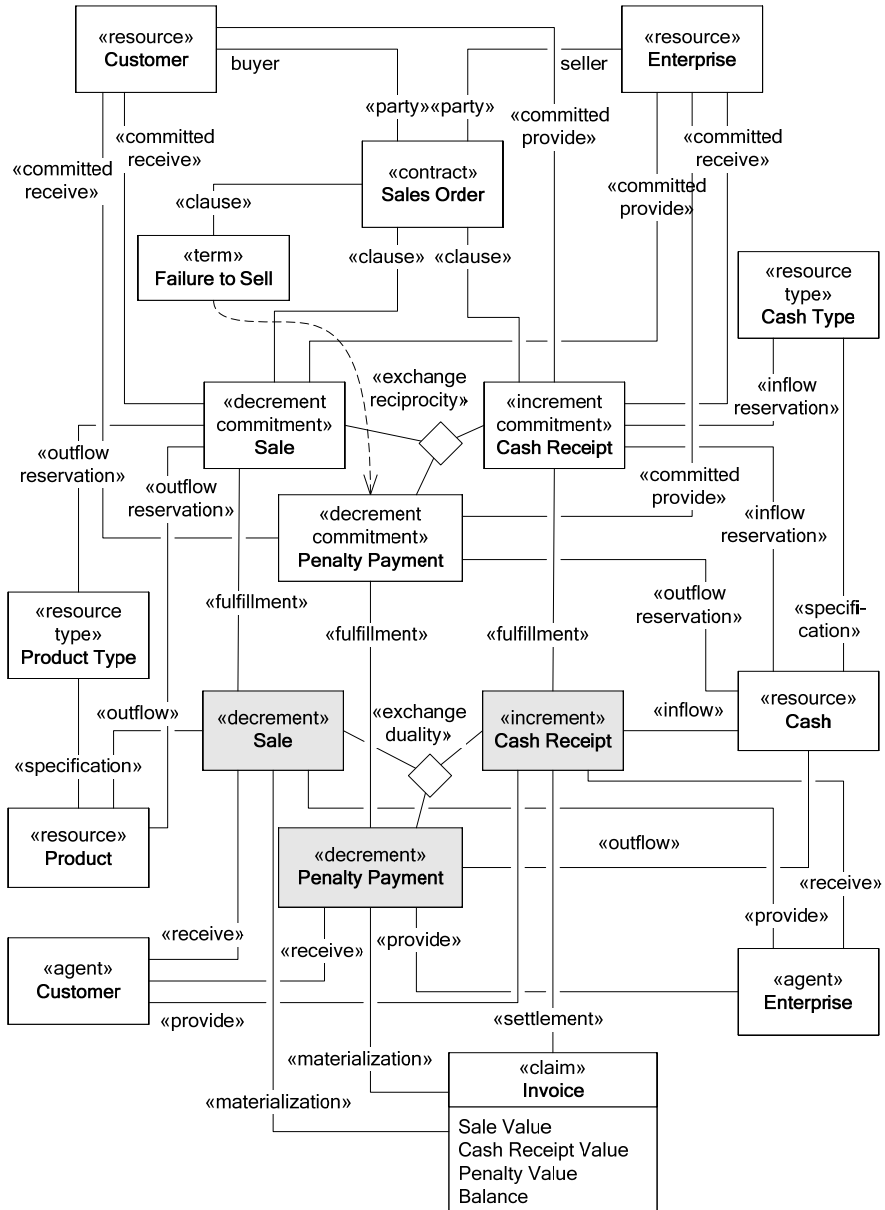
According to the REA rules, every resource outflow must be paired through an exchange duality with some inflow. What does an economic agent receive in return for a paid penalty?

### Solution

The short answer is nothing, for the penalty as such, because a commitment to pay a penalty for a violated commitment makes sense only when considering the original commitment that has been violated. However, a penalty reduces the value of the claim of the original exchange.



**Fig. 220.** Sale with possible penalty payment



**Fig. 221.** Contract with penalty for failure to sell

An REA model for a *Sales Order* with a penalty for failure to sell is illustrated in Fig. 221. The contract term *Failure to Sell* specifies that the *Enterprise* pays *Cash* as a penalty in the case where it fails to deliver (and

consequently to sell) products in a specified time. If the condition in a contract term becomes true, the *Penalty Payment* decrement commitment is created, which can be fulfilled by the decrement event *Penalty Payment*. The consequence of this economic event is that the difference in the *Claim* between *Sale* and *Cash Receipt* is reduced by the value of the *Penalty*, so this *Claim* can be settled by a *Cash Receipt* of less value; the original value of the *Claim* is decreased by the value of the *Penalty*.

Note that, at runtime, the decrement commitment *Penalty Payment* is instantiated by the *Sales Order* contract only if the conditions specified in the *Failure to Sell* term are met. The *Penalty Payment* commitment is not instantiated when the *Sales Order* is registered. An analogous model can be made for a penalty for late payment.

The economic resource transferred as a penalty can be different from *Cash*; it can, for example, be a product or a service.

## 10.6 Schedule



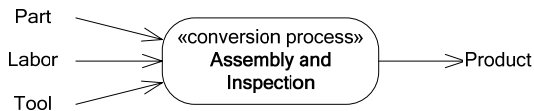
Creating a product is seldom a spontaneous thing. Companies usually plan and schedule the usage and consumption of their resources. The aim is to optimize the usage and to fulfill the exchange commitments to other economic agents.

### Problem

How do we create an REA application model for a production schedule?

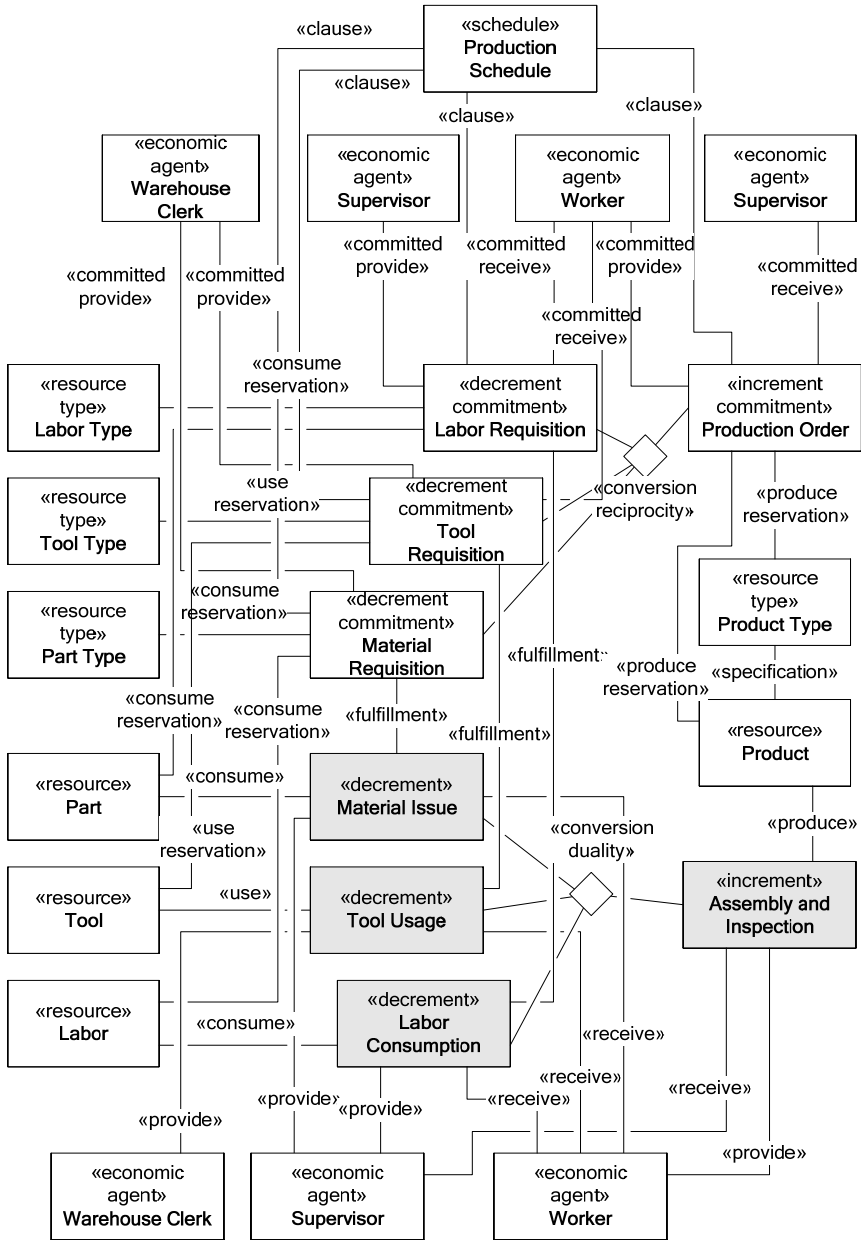
### Solution

A production schedule consists of commitments to use, consume, and produce economic resources. A value chain model for the product creation process is illustrated in Fig. 222, and an REA application model for a production schedule is illustrated in Fig. 223.



**Fig. 222.** Value chain model for creating a new product

In Fig. 223, the *Production Schedule* consists of four commitments; *Material Requisition*, *Tools Requisition*, and *Labor Requisition* are the decrement commitments paired through a *conversion reciprocity* with the increment commitment *Production Order*.



**Fig. 223.** The REA model for a production schedule and a production run

The *Material Requisition* commitment is a promise by a *Warehouse Clerk* to make a specified amount of *Part Types* available to the *Worker*.

The *Tools Requisition* commitment is a promise by the *Warehouse Clerk* that tools of a specified *Tool Type* will be available to the *Worker*, and a promise of by the *Worker* to deliver the tools back. The *Labor Requisition* commitment is a promise by the *Worker* to the *Supervisor* to consume worker's *Labor* in a specified time. The *Production Order* commitment is a promise by the *Worker* to the *Supervisor* to produce an instance of *Product Type*.

For simplicity, we have not illustrated in the model that *Labor* is a specification of *Labor Type*, *Tool* is a specification of *Tool Type* and *Part* is a specification of *Part Type*. At runtime, when the production schedule is created, there usually are *reservation* relationships between the *commitments* and the *resource types* (*Part Type*, *Tool Type*, *Labor Type*, and *Product Type*), but eventually these *commitments* must also be related by *reservation* relationships to the *resources* (*Part*, *Tool*, and *Labor*).

The commitments are *fulfilled* by economic events that record the actual conversion process; for example, *Material Requisition* is fulfilled by *Material Issue*, *Labor Requisition* is fulfilled by *Labor Consumption*, and *Production Order* is fulfilled by *Production Run*.



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