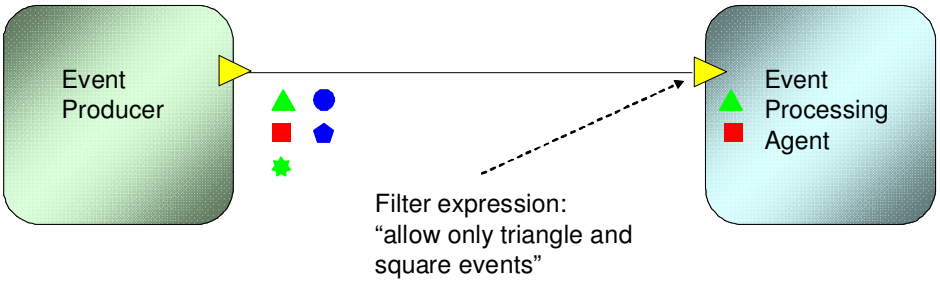
Filtering and transformation

We now return to the examination of event processing networks that we started in chapter 6, to take a deeper look at the event processing agents (EPAs) that an EPN can contain. The most important kinds of EPA are `filter`, `transformation` and `pattern detection` agents, and in this chapter we will look at the first two of these. Pattern detection is a large topic, so we dedicate the whole of the next chapter to that. We will also, as promised in the chapter 7, look at the general question of how context is applied to EPA's of all kinds.

In this chapter we will cover

- The idea of a filter, the places where filtering can be performed in an Event Processing Agent, and languages used to specify filter expressions.
- The use of event context to perform filtering
- The different types of stateful and stateless transformation
- The effect of filtering and transformation on event header elements
- As usual we will illustrate this with examples from the Fast Flower Delivery application and some examples from other fictional applications. We will start with the discussion of filtering and then move on to transformation later in the chapter.



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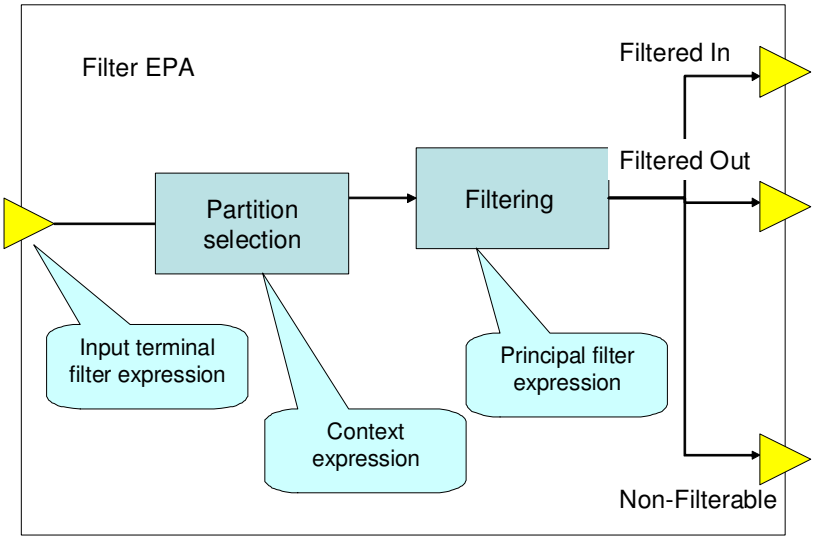

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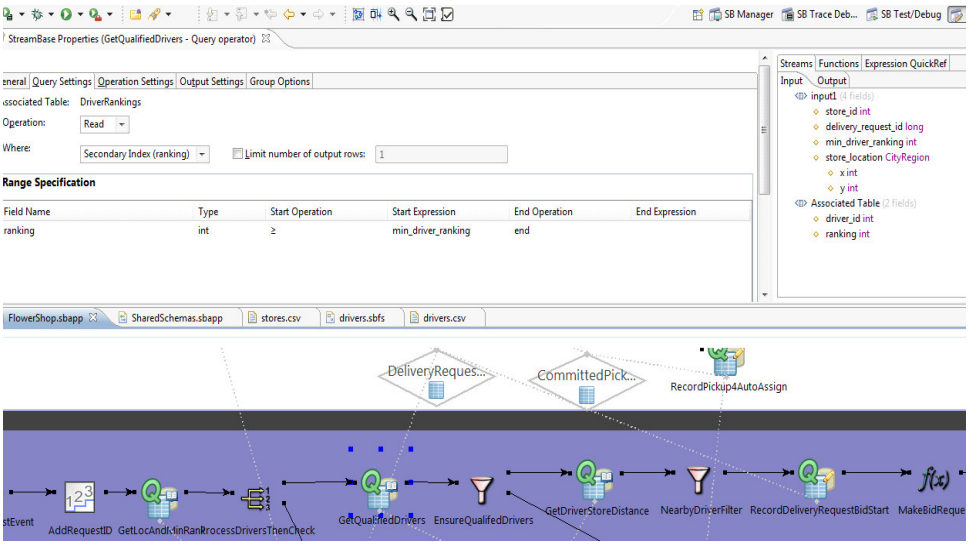

An example of a filter from the Streambase product

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A Rulecore example of filtering

```
<Rule name="CreateAutomaticAssignments" limit="?" evalMode="once"
level="2">
<Description>This is rule CreateAutomaticAssignments</Description>
<Initialize>
<Assert>
<Event>
<base:XPath>sim:EventDef[@eventType="BidRequest"]</base:XPath>
</Event>
<Expression>
<Property name=”Store”>
<InList name=”AutomaticAssignmentStore”/>
</Property>
</Expression>
</Assert>
</Initialize>
<Views>
<ViewRef name="CreateAutomaticAssignments">
<base:XPath>sim:ViewDef[@name=”CreateAutomaticAssignments”]</base:XPath>
</ViewRef>
</Views>
<Situations>
<SituationRef name="CreateAutomaticAssignments">
<base:XPath>sim:SituationDef[@name="CreateAutomaticAssignments"]</base:XPat
h>
</SituationRef>
</Situations>
<Actions>
<SituationDetected situationName="CreateAutomaticAssignments">
<ActionRef name="CreateAutomaticAssignments" eventVisibility="external">
<base:XPath>sim:ActionDef[@name="CreateAutomaticAssignments"]</base:XPath
>
</ActionRef>
</SituationDetected>
</Actions>
</Rule>
```

Listing 8.4 Apama transformation example

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```
70      /**
71       * Update the driver's current location, in region.
72       */
73      action updateCurrentLocation(string loc) {
74          edrListener.quit();
75          currentDriverRegion:=loc;
76          // because the current location is changed so what enriched delivery
77          // requests to care for is also changed -- therefore re-establish edr
78          // listener based on the changed current location
79          EnrichedDeliveryRequest edr;
80          edrListener:=on all EnrichedDeliveryRequest(region=loc, ranking<=currentDriverRanking):edr {
81              route BidRequest(edr.dr.requestId, edr.dr.store, driver,
82                    edr.dr.requiredPickupTime, edr.dr.requiredDeliveryTime);
83          }
84
85          updateGUI(driver, loc);
86      }
```

Bid Request creator example in Esper

```
insert into BidRequest(requestId, store, location, pickupTime,
deliveryTime,
storeManual)
select d.requestId, d.store, d.location, d.pickupTime, d.deliveryTime,
s.manual
from
DeliveryRequest d unidirectional,
GPSLocationW g
//,sql:DomainDB['select ranking from Driver where driver = ${g.driver} and
ranking
> ${d.minimumRanking}']
,method:Domain.driverRankLookup(g.driver) r
,method:Domain.isStoreManualLookup(d.store) s
where Geo.distanceKM(g.location, d.location) < 10
and r.ranking >= d.minimumRanking;
```

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