

Event processing

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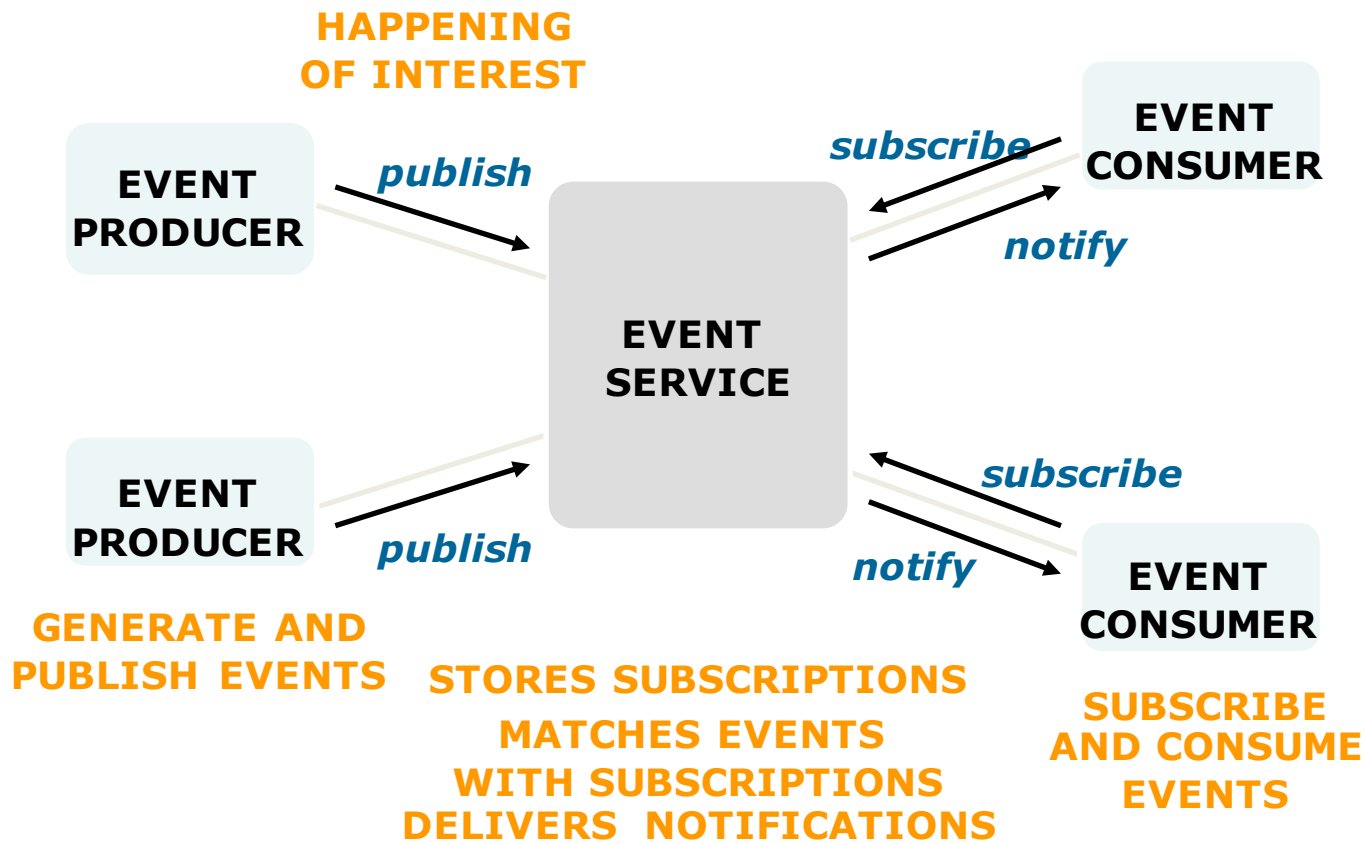
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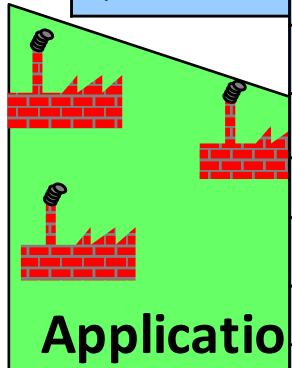


Event based data space



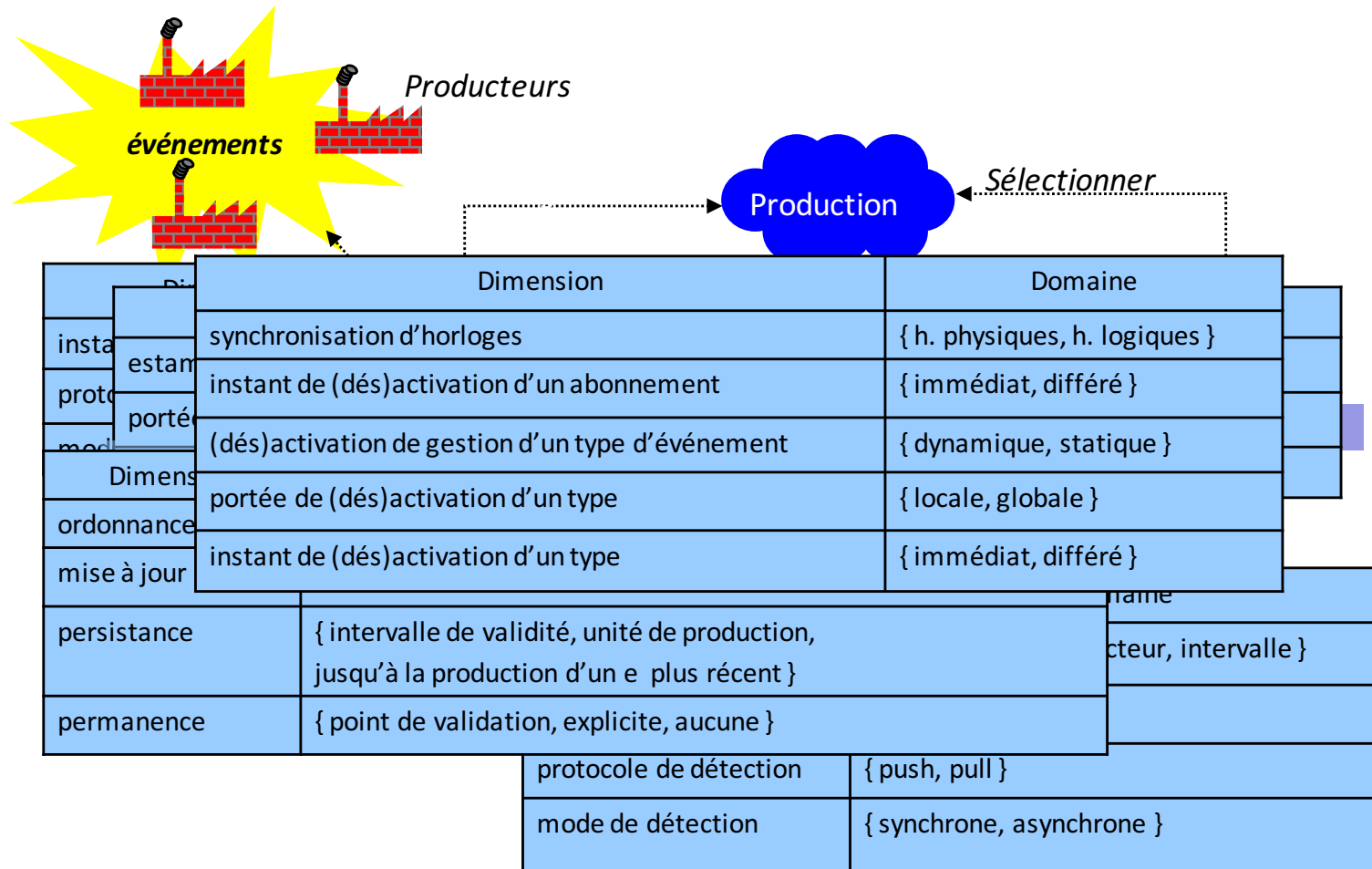
Event definition

Dimension	Domaine	
temps	{ discret, continu }	
granularité	{ jour, mois, année, heure, minute, seconde }	
fonction de conversion	{ oui, non }	
types temporels	{ instant, intervalle, durée }	
opérateurs tem	Dimension	Domaine
	événement	{ typé, non typé }
	type événement	{ chaîne de caractères, expression, objet }
	environnement de production	{ oui, non }
	type d'opérateurs	{ sélecteur, algébrique, temporel }
	intervalle de validité	{ intervalle, période }
	filtrage	{ expressions régulières, prédicats }
	effet net	{ événements inverses, algèbre d'environnements de production, non }



nts

Event management



Existing approaches

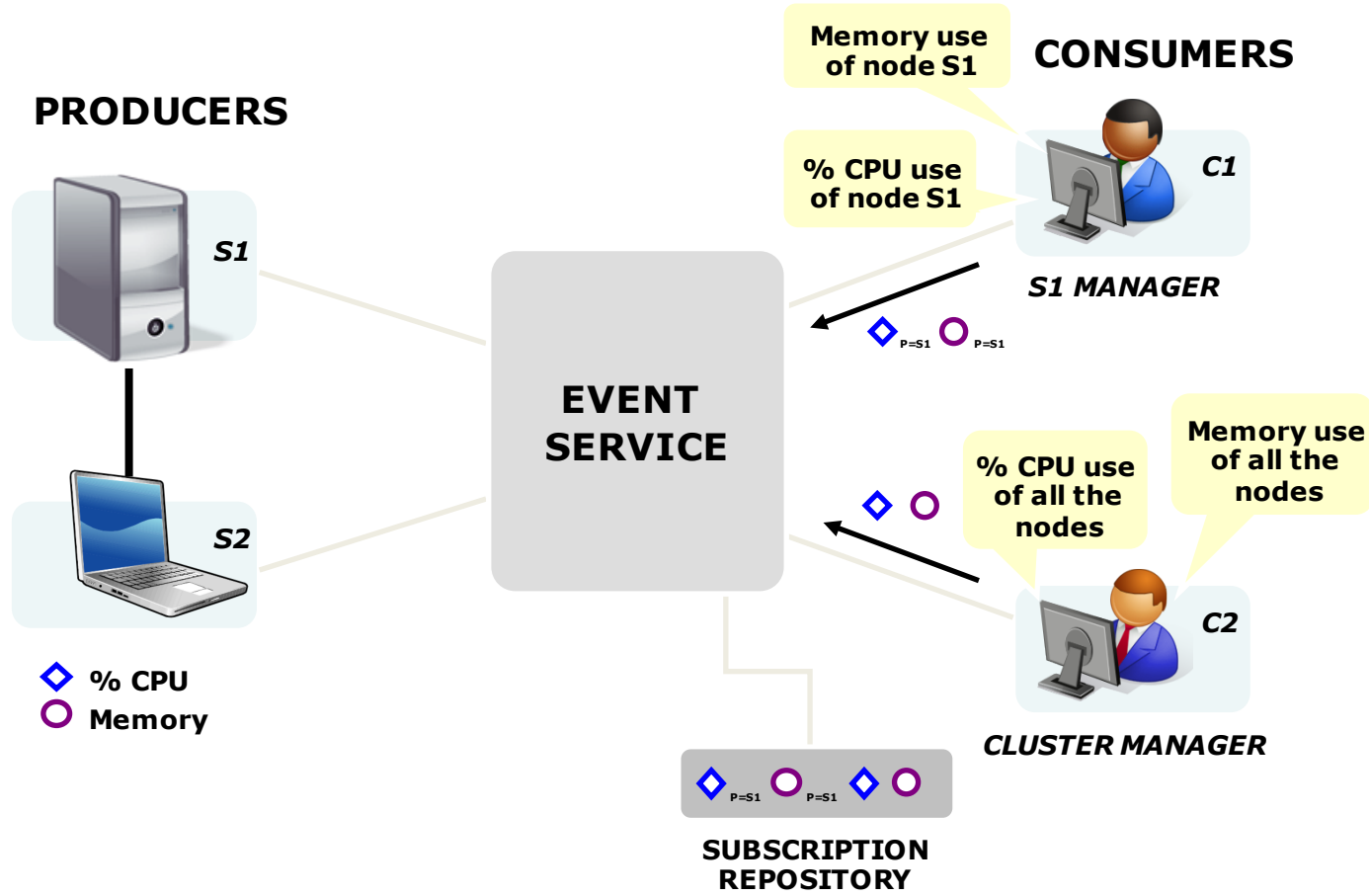


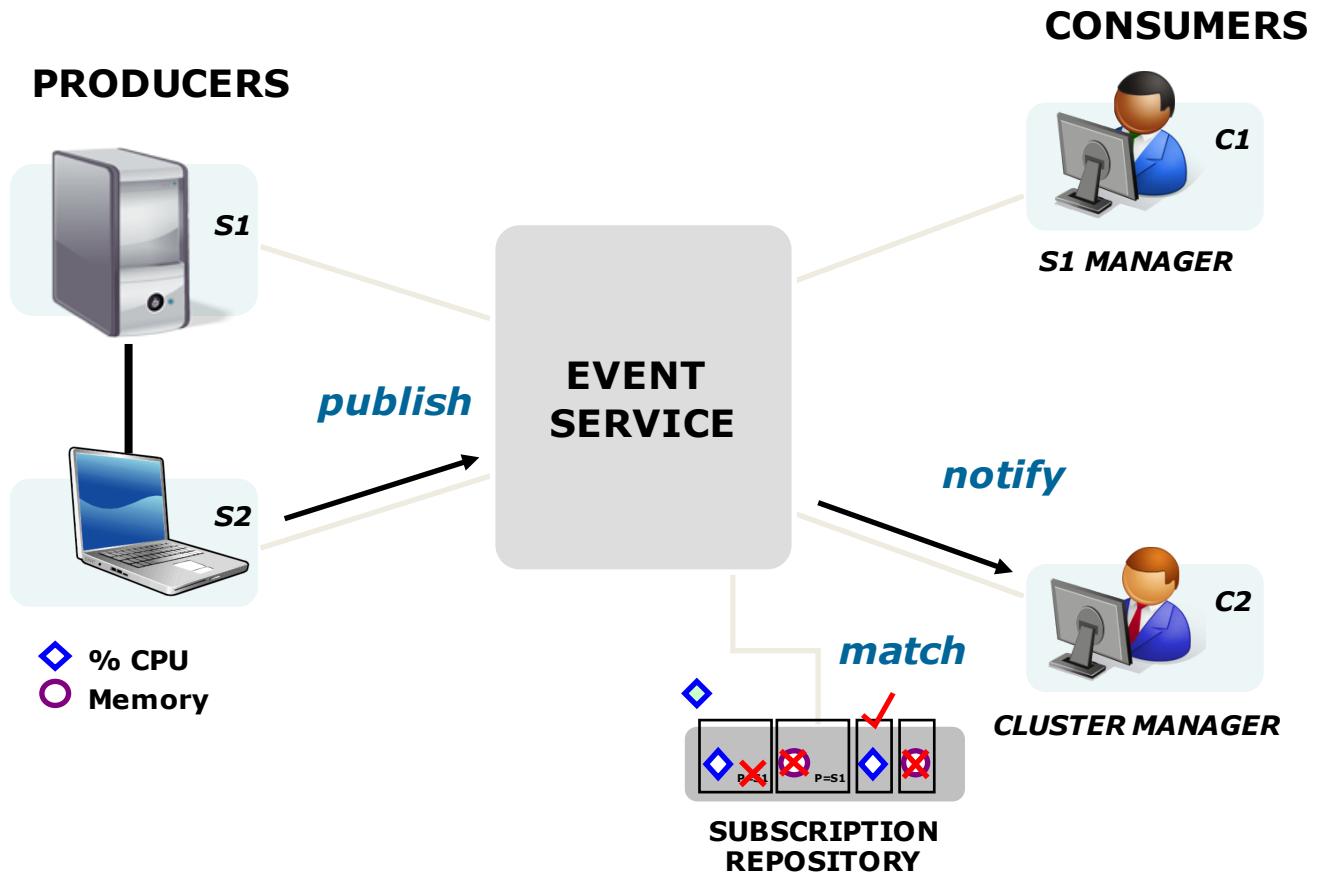
- **Complex event processing:** derive patterns of low level events
 - (Distributed) Complex event processing systems: Next, Cayuga, SASE, DistCED, RACED

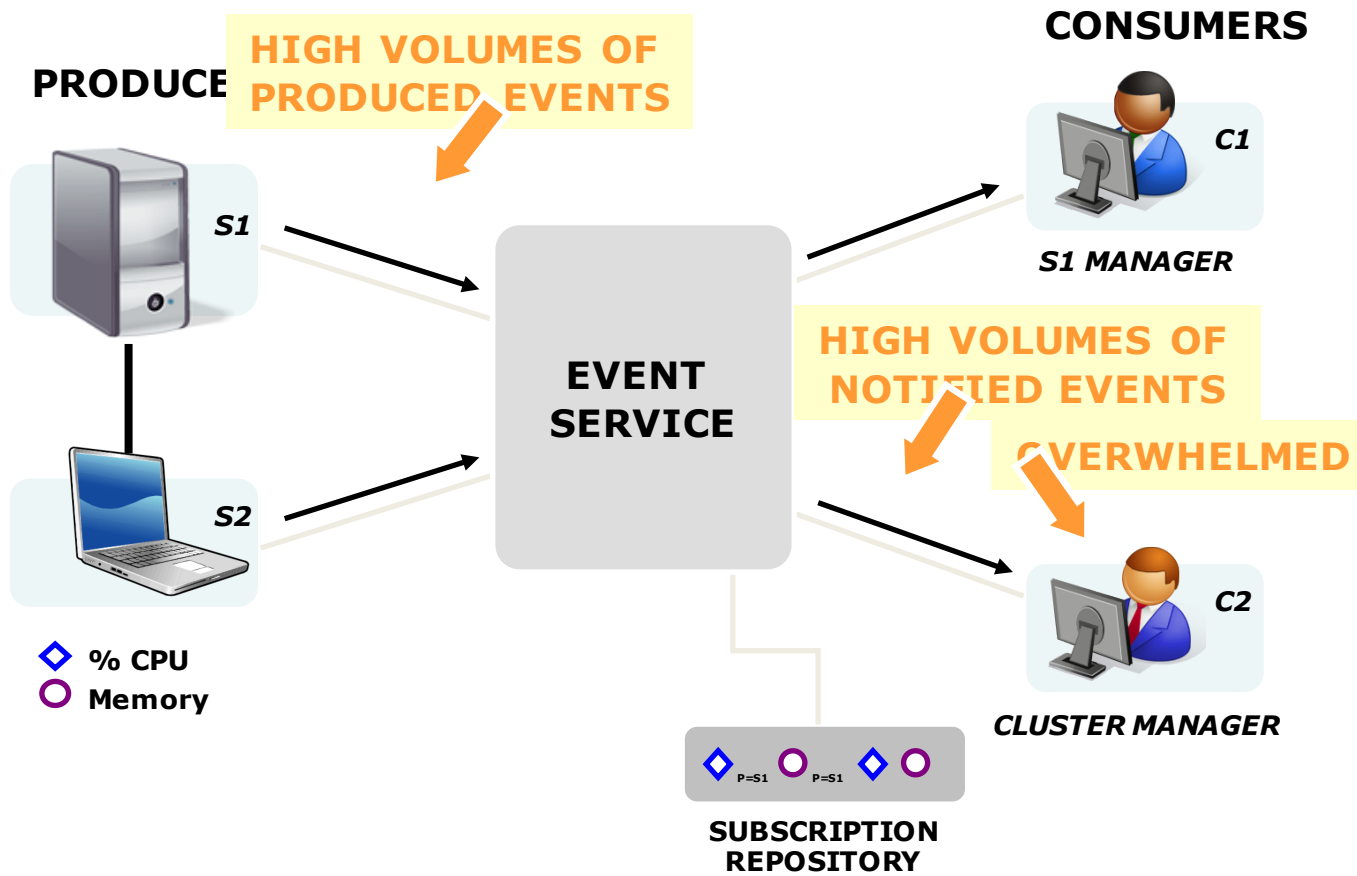
They focus on the detection process, Qos aspects are less studied

- **Data stream management systems:** continuous queries, SQL like language
 - Stream, Niagara, Gigascope, Aurora, Borealis
 - **Aurora and Borealis studied QoS aspects** (response time, tuple drops, accuracy of results) in continuous query processing.

Developed techniques can be useful for event processing







Challenges

- Producers generate high volumes of events (primitive events)
 - Thousands of events per second or higher (event streams)
 - Consumers may be overwhelmed by a large number of notifications
- Primitive event notifications are not significant enough for consumers

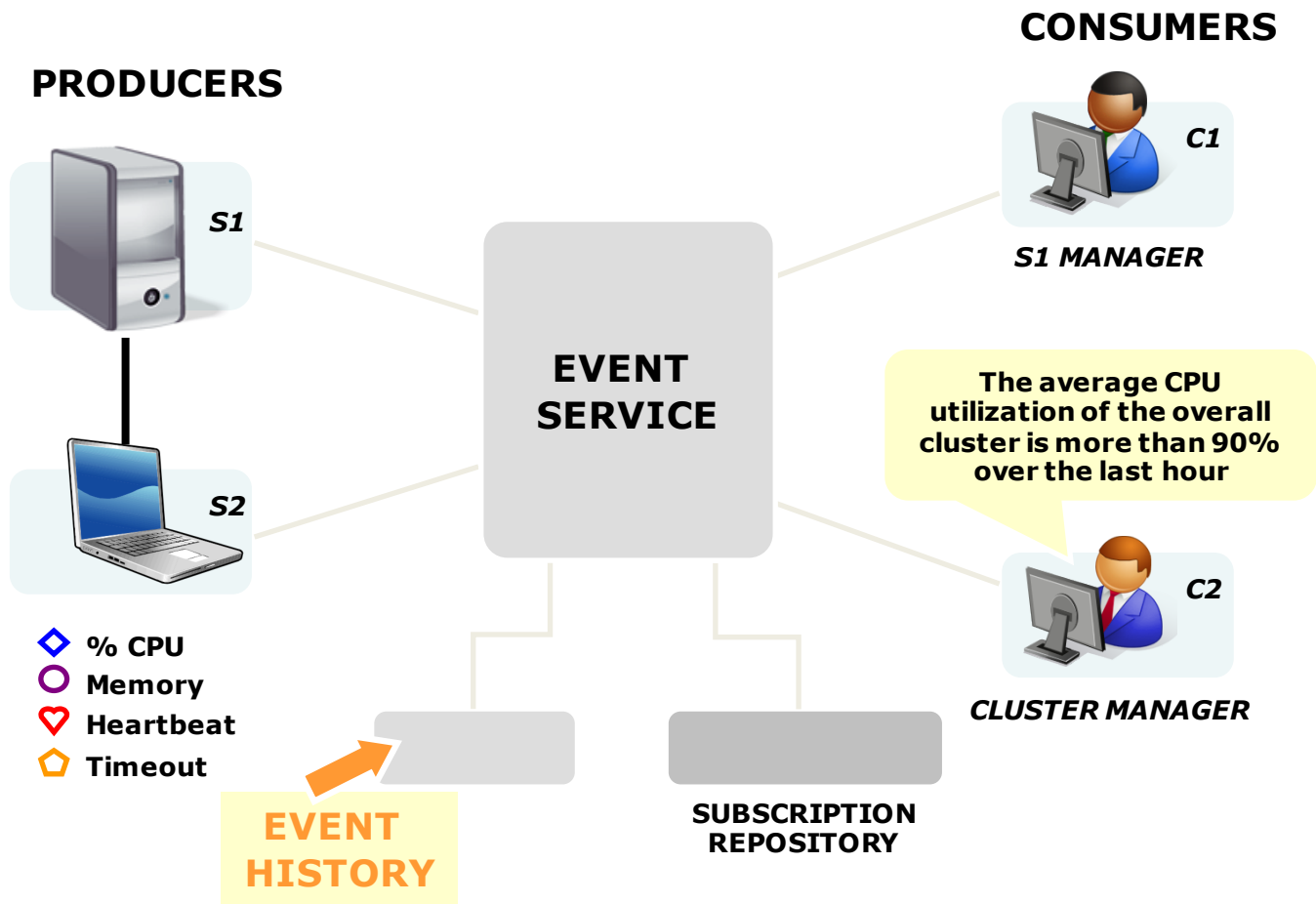
They require more meaningful information involving

- **filtering**
- **aggregation**
- **correlation**
- **pattern matching**, etc.

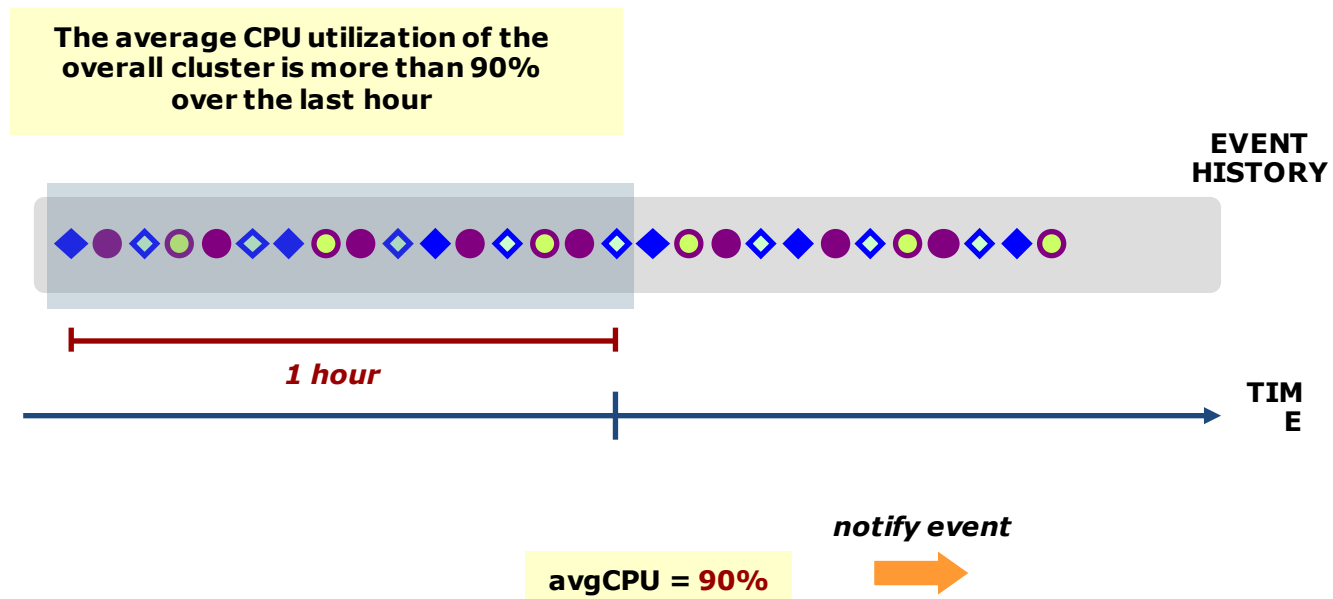
--> **Event composition**

Event composition

- Process of detecting composite events from the occurrence of multiple events
- A composite event is detected whenever a certain pattern of events is observed
- An event pattern represents:
 - a set of related events (logical, temporal, causal)
 - a recurring set of events repeated in a predictable fashion



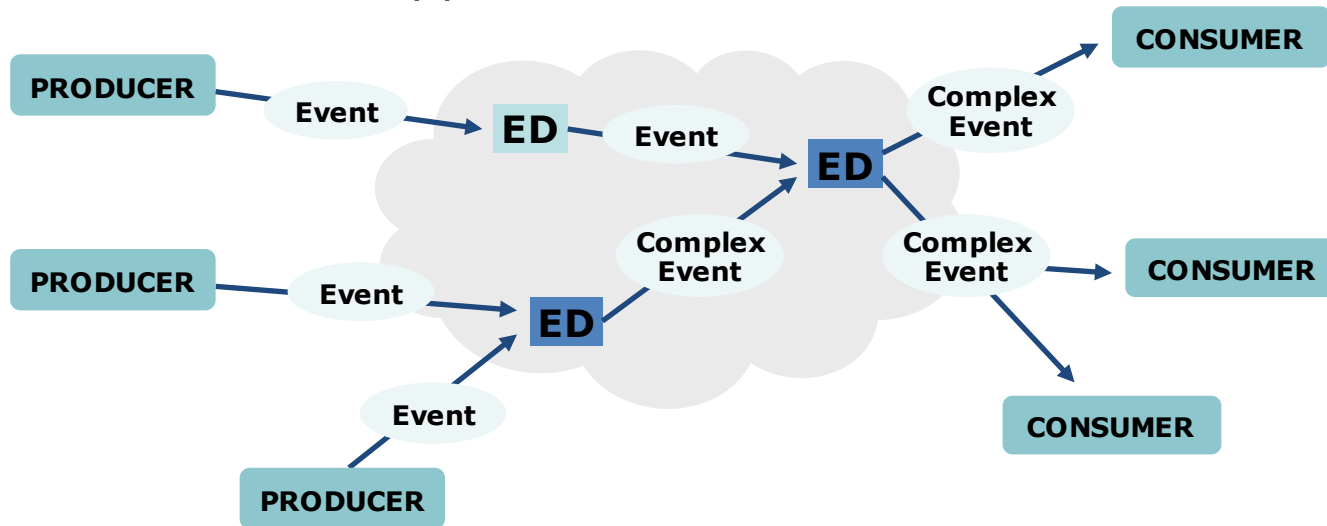
Event history



Persistent and non persistent

Event composition service

- Event Detectors (EDs) are connected forming an event composition network:
- Events can be incrementally processed at each ED with different techniques



What about analytics ?

