

# **Exploiting External Event Detectors to Anticipate Resource Requirements for the Elastic Adaptation of SDN/NFV Systems**

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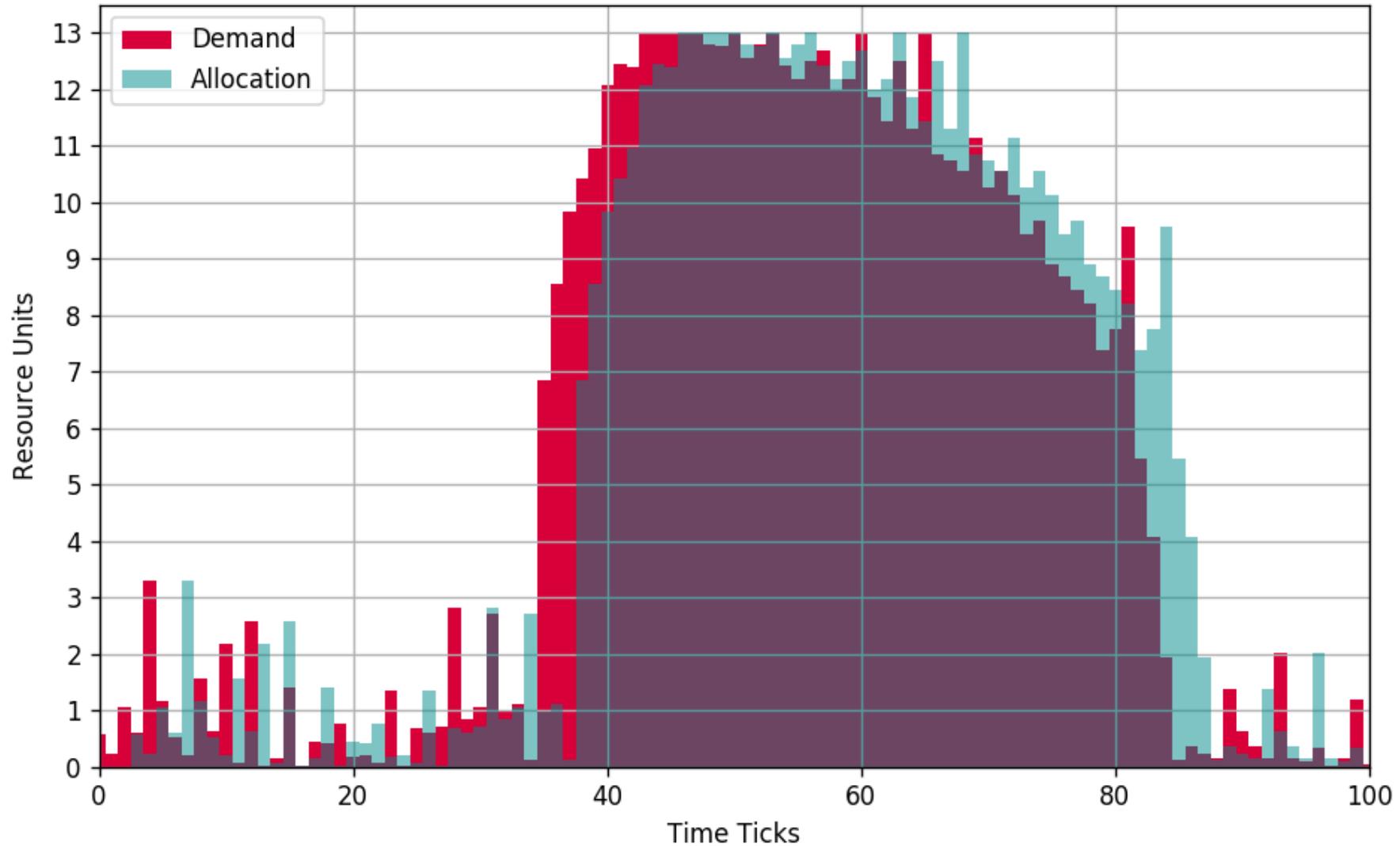
**24 April 2018**

Managing virtual network objects and functions is becoming a complex task...

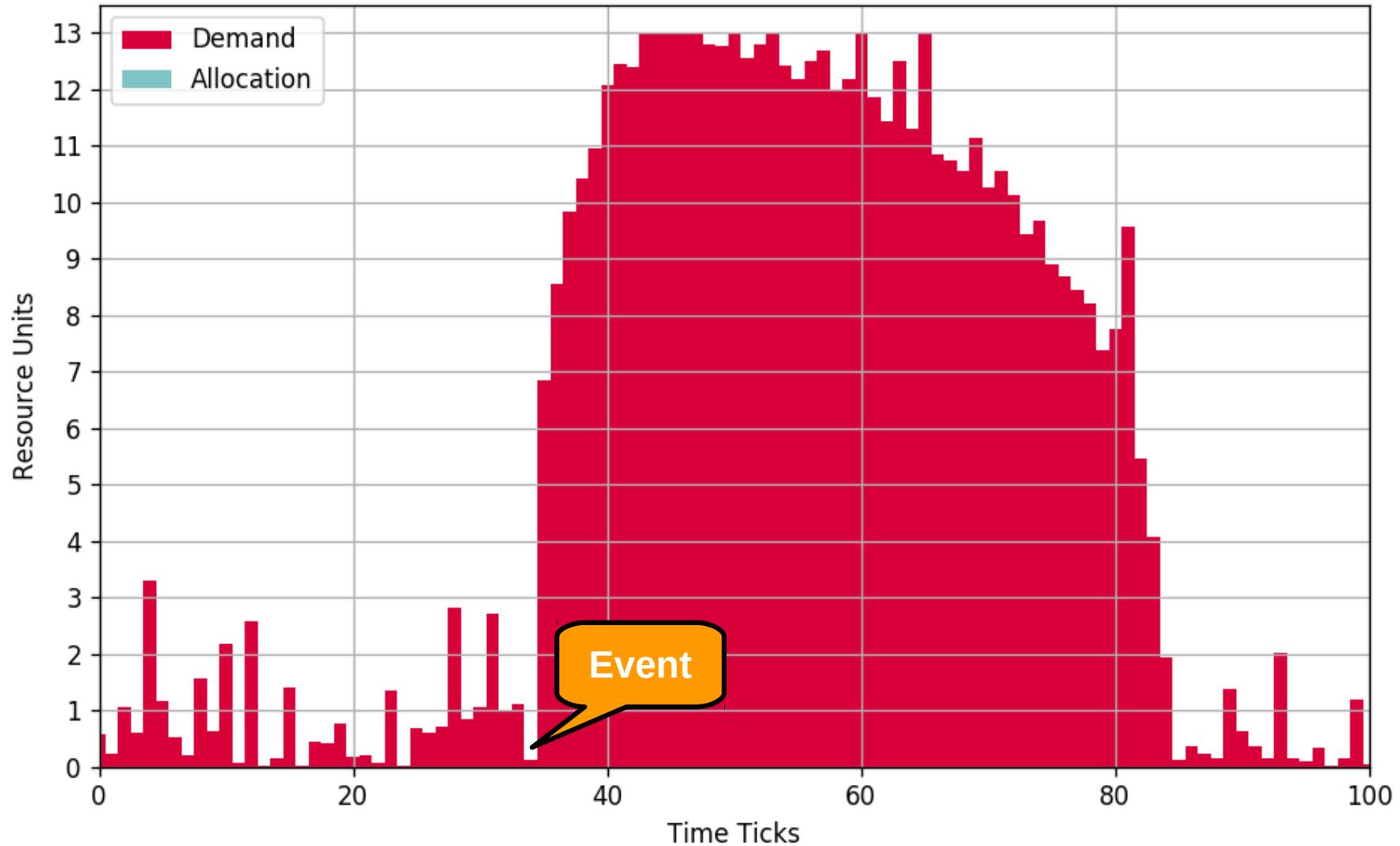
- Humans cannot follow the **evolution**.
- **Automation** is a **MUST**.
- **Optimization** is not achieved by design, but by **adaptation**.
- Applying **AI** techniques is **unavoidable**.

# Motivation (I)

Current elastic allocation methods **require some time** to **adapt the resources** (delay) that leads to discard some traffic...



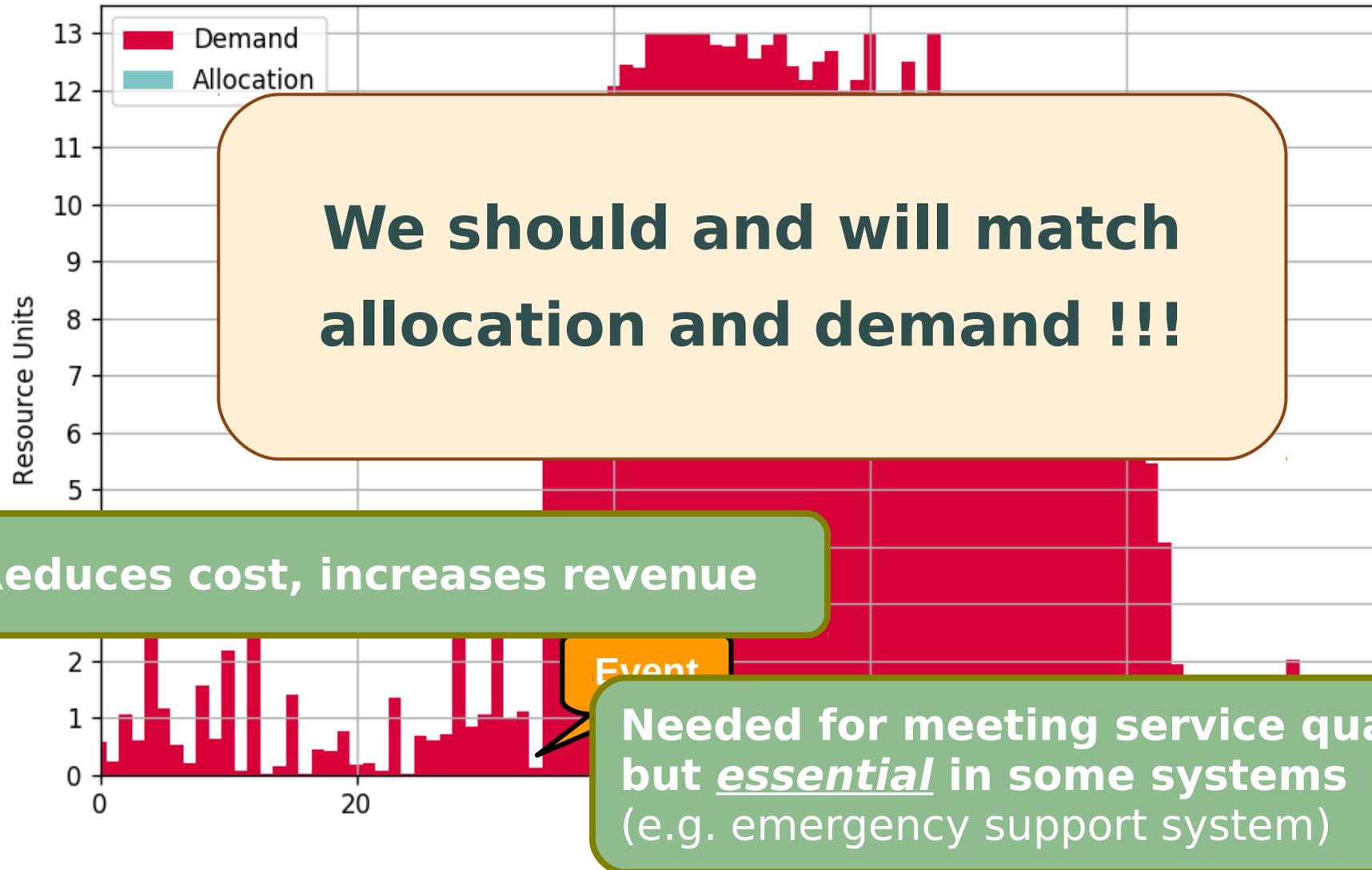
But **traffic spikes** on services are typically associated to the **user response to some event...**



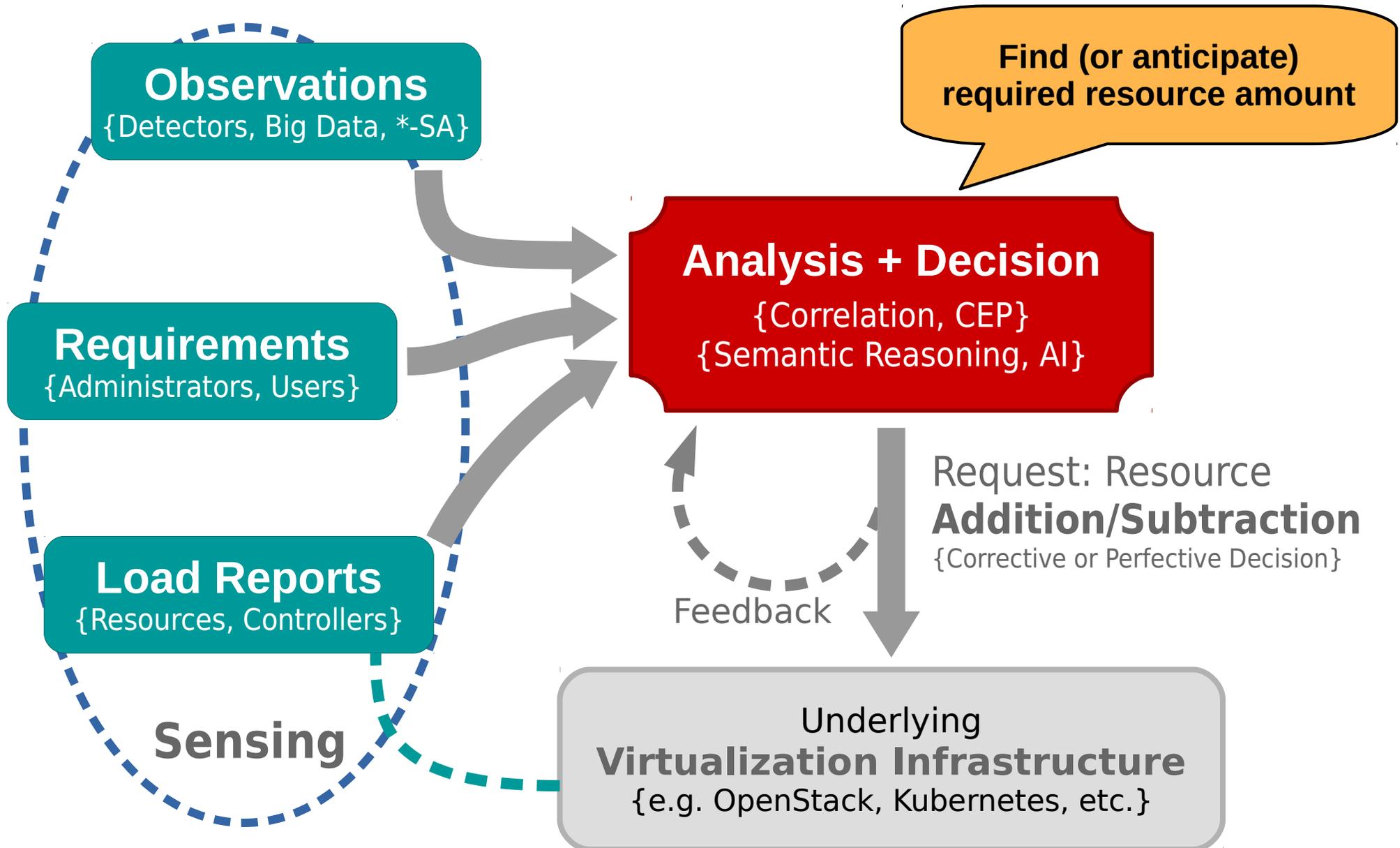
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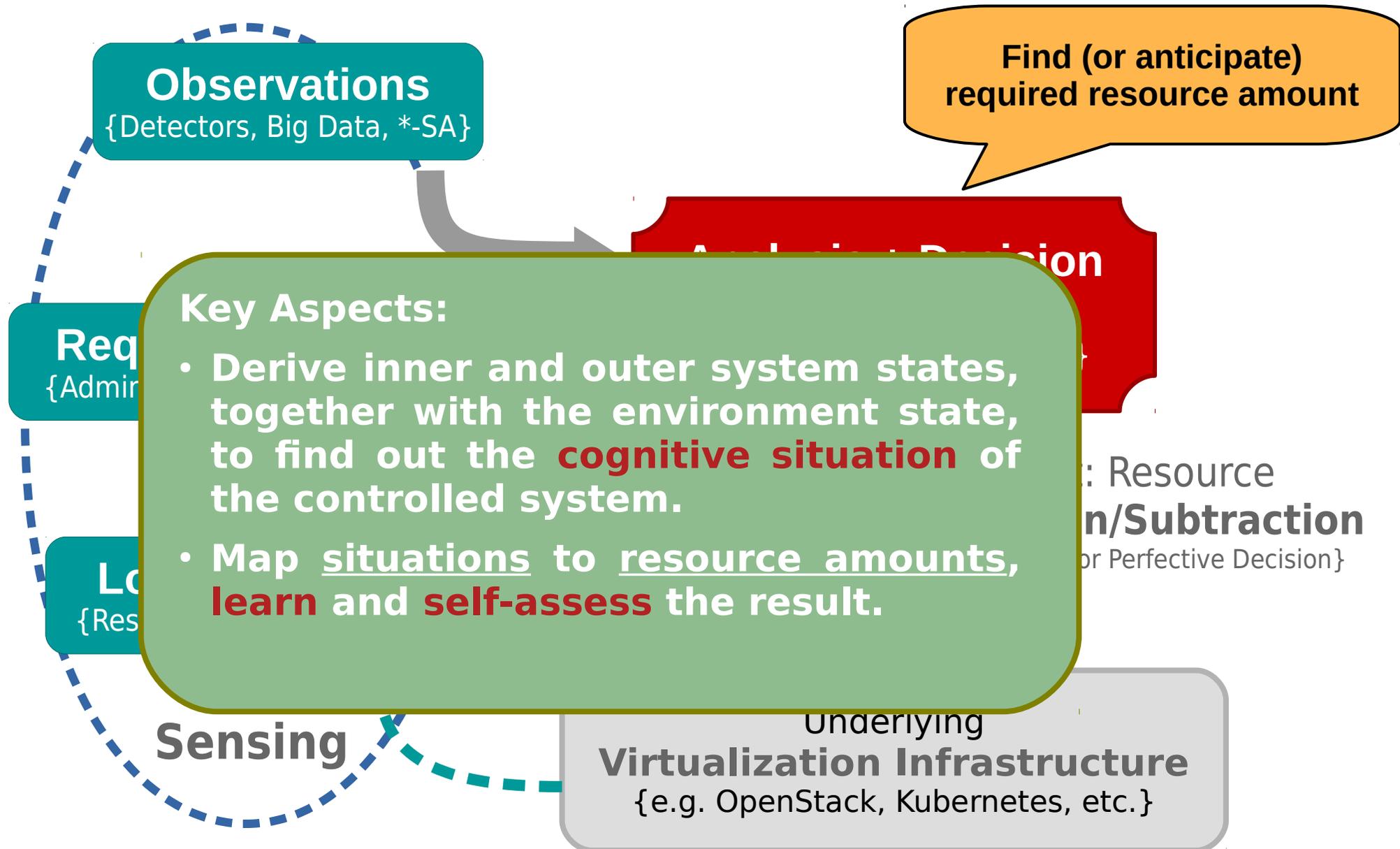


But **traffic spikes** on services are typically associated to the **user response to some event...**



- **Adapt** the resources assigned to a system to its dynamic demands:
  - Attend clients with **less resources**:  
**Reduce cost.**
  - Attend **more clients** with the same resources:  
**Increase revenue.**
- **Avoid** request **discarding**:
  - Important for meeting service quality.
  - **Essential** in emergency scenarios.

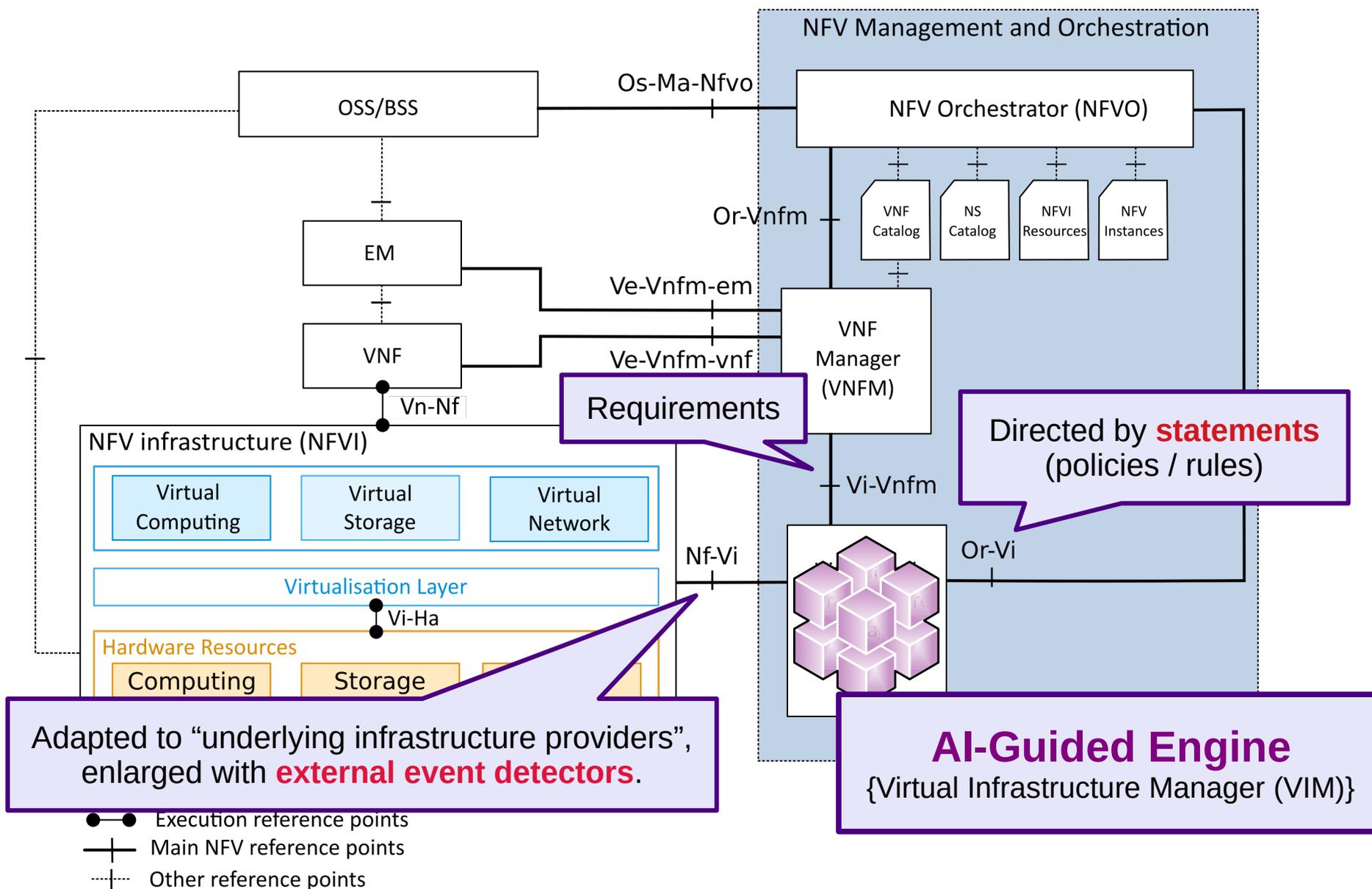




# Proposed Algorithm



```
while TRUE do
  event = GetExternalEventInformation()
  if event != NONE then
    anticipated_resource_amount = Anticipator.Get(event)
    if IsPolicyCompliant(anticipated_resource_amount) then
      current_resource_amount = anticipated_resource_amount
      anticipation_time = NOW
    end if
  end if
  anticipated_event = event
  if anticipated_event != NONE and
    (NOW - anticipation_time) > EXPIRATION_TIME then
    current_resource_amount = DEFAULT_RESOURCE_AMOUNT
    anticipated_event = NONE
  end if
  state = GetSystemState()
  if not IsAcceptable(state, current_resource_amount) then
    current_resource_amount = GetResourceAmountForState(state)
    if anticipated_event is not NONE then
      Anticipator.Set(anticipated_event, current_resource_amount)
      anticipated_event = NONE
    end if
  end if
end while
```



Adapted to “underlying infrastructure providers”, enlarged with **external event detectors**.

**AI-Guided Engine**  
 {Virtual Infrastructure Manager (VIM)}

Directed by **statements** (policies / rules)

Requirements

- Reach some **consensus**:
  - Set the **boundaries** of the functional blocks involved in each operation and interface extension.
  - **Specify** and **design** the interaction protocols and interfaces to interconnect the **elements** involved in the management and control operations.
- Link **outcomes** from related **WGs & RGs**.
- Extend the draft...  
**draft-pedro-nmrg-anticipated-adaptation**

**Thanks for Your  
Attention**

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**Questions?**

**- EOF -**