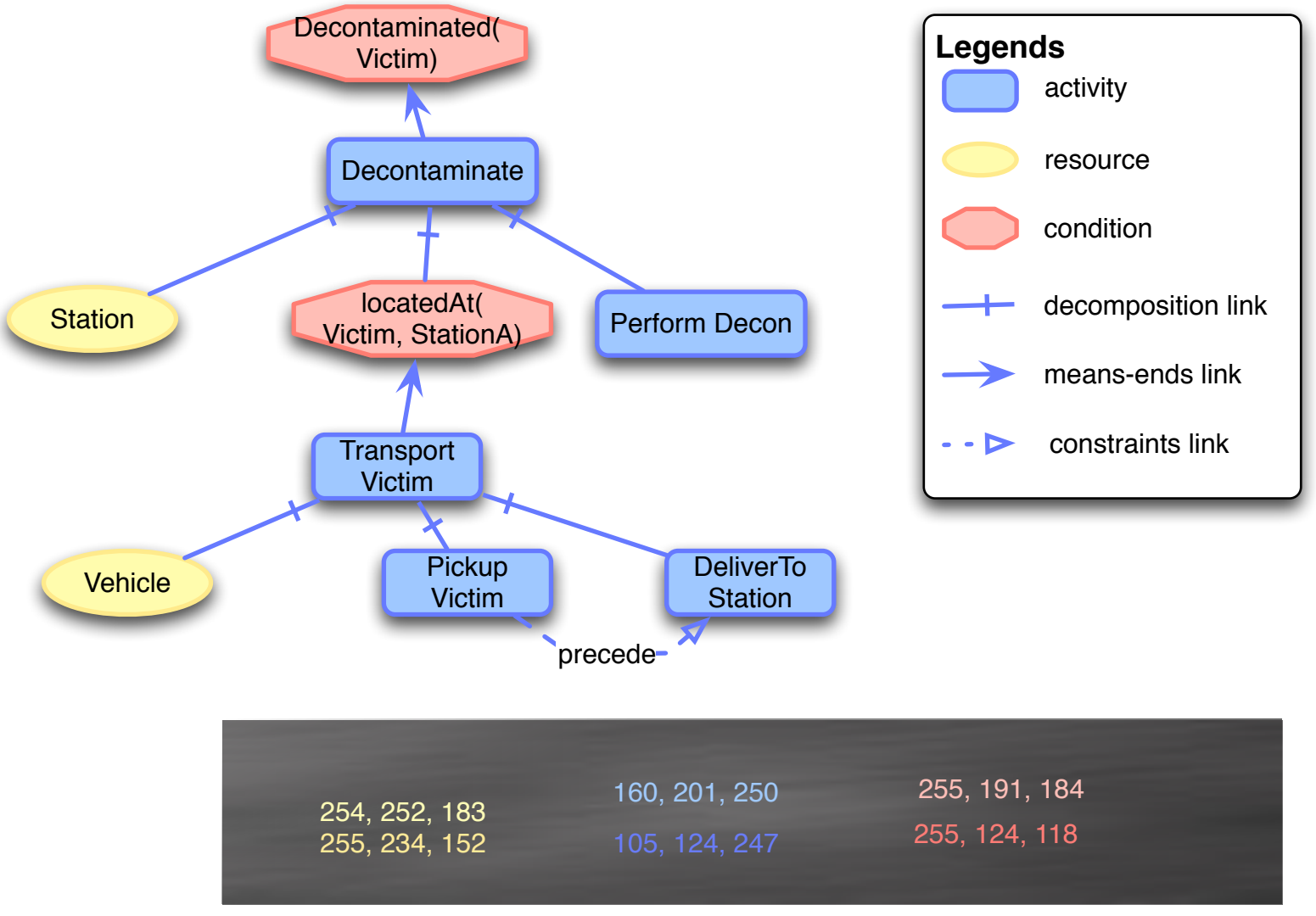
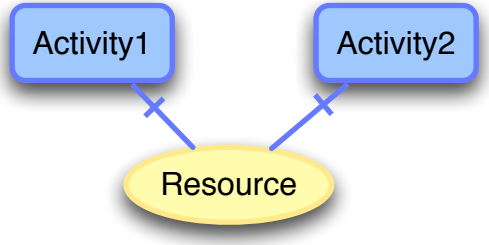
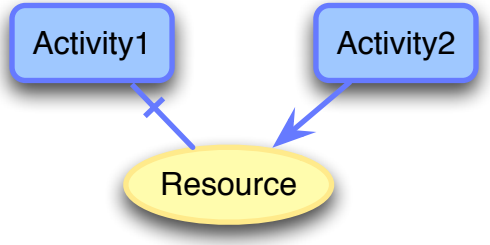
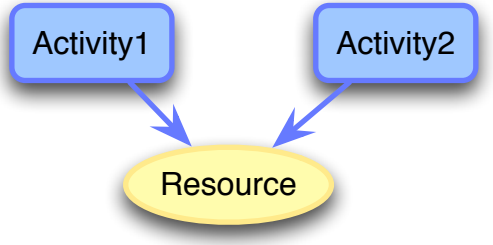

Decontaminated(
Victim)
Decontaminate
Station
locatedAt(
Victim, StationA)
Perform Decon
Transport
Victim
Vehicle
Pickup
Victim
DeliverTo
Station
precede
Legends
activity
resource
condition
decomposition link
means-ends link
constraints link
254, 252, 183
255, 234, 152
160, 201, 250
105, 124, 247
255, 191, 184
255, 124, 118



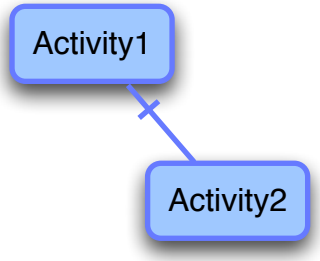
(a) shared-resource



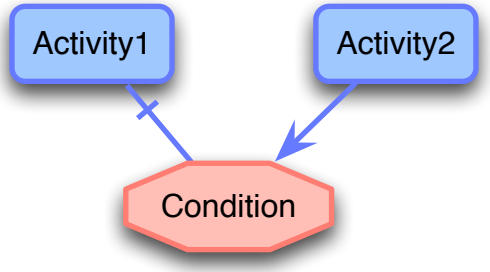
(b) producer-consumer



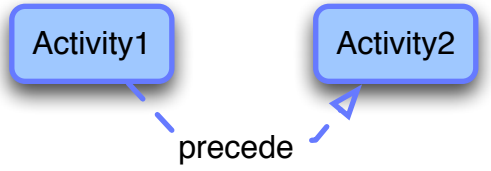
(c) common-output



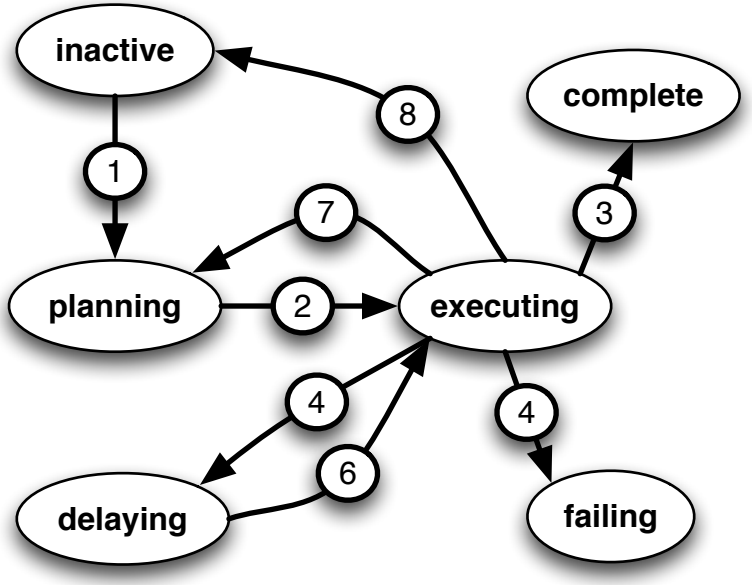
(d) direct goal dependency



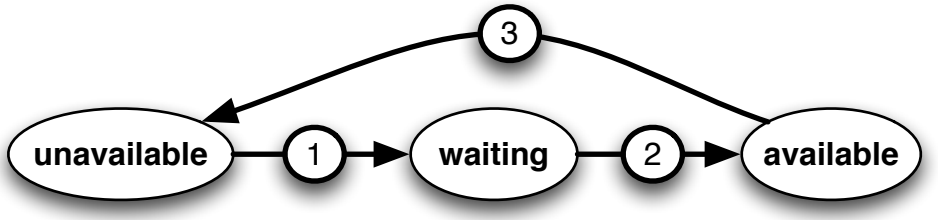
(e) indirect goal dependency



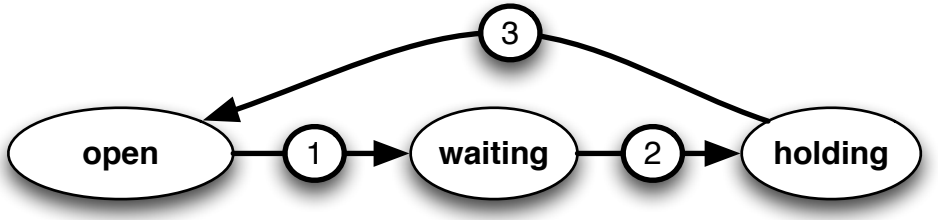
(e) temporal constraint



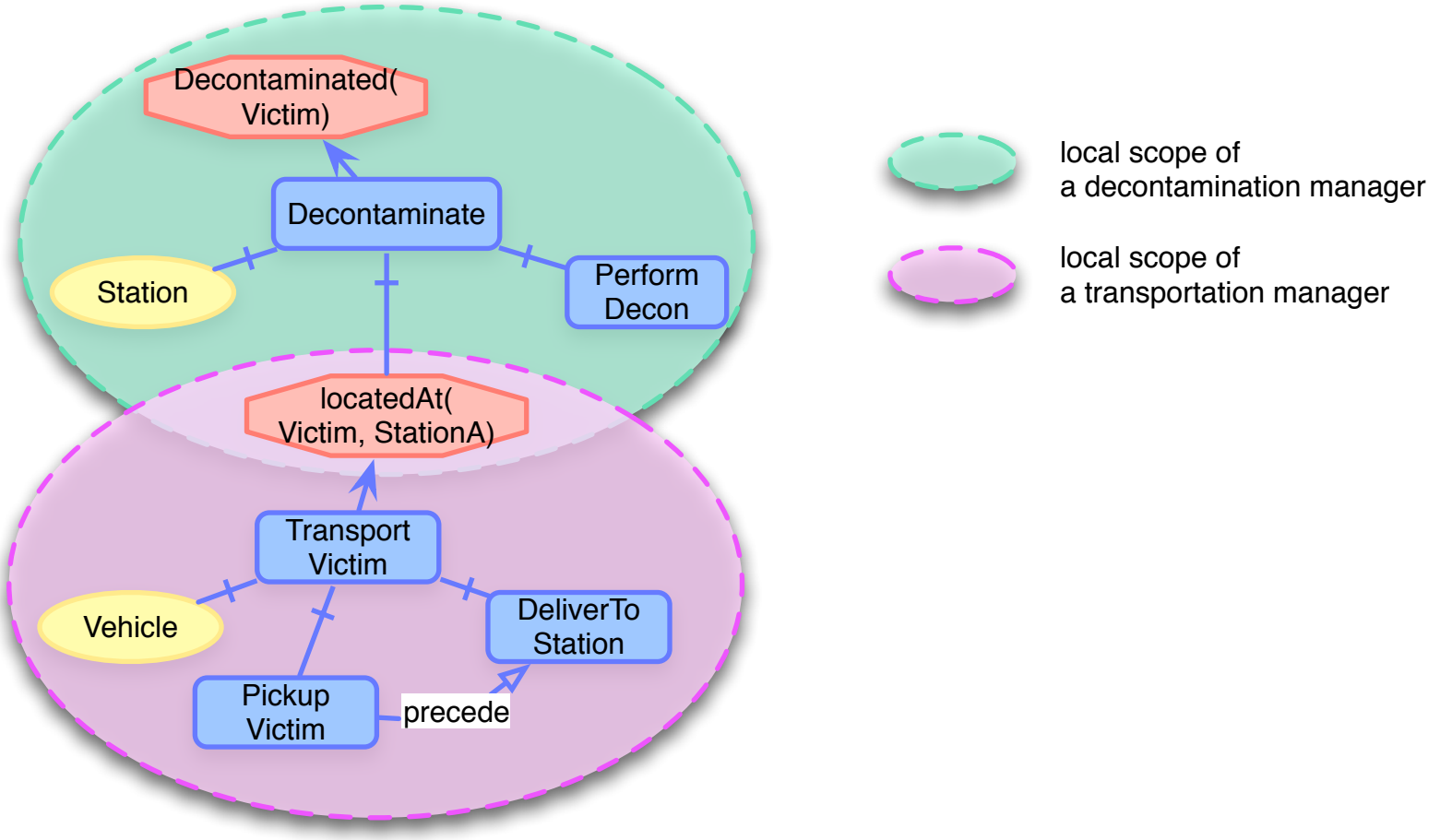
(a) state transitions of an activity

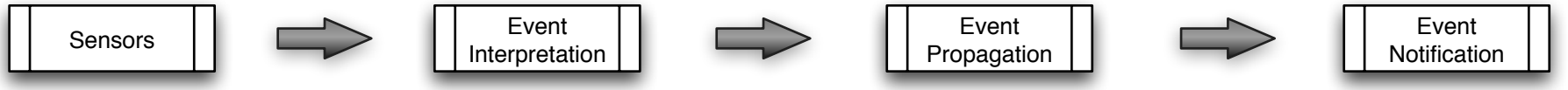


(b) state transitions of a resource

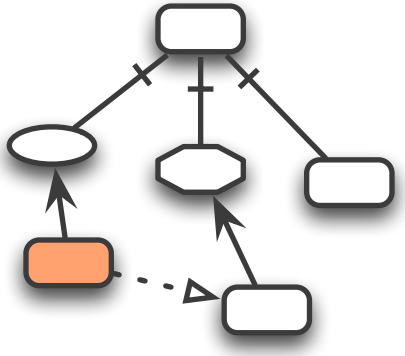


(c) state transitions of a condition

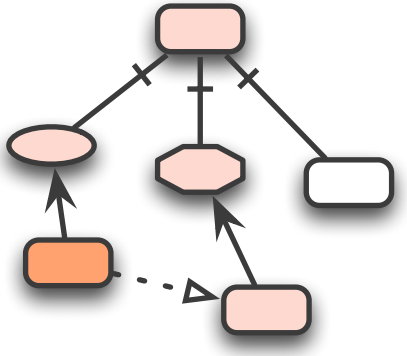

Decontaminated(
Victim)
Decontaminate
Station
Perform
Decon
locatedAt(
Victim, StationA)
Transport
Victim
Vehicle
DeliverTo
Station
Pickup
Victim
precede
local scope of
a decontamination manager
local scope of
a transportation manager



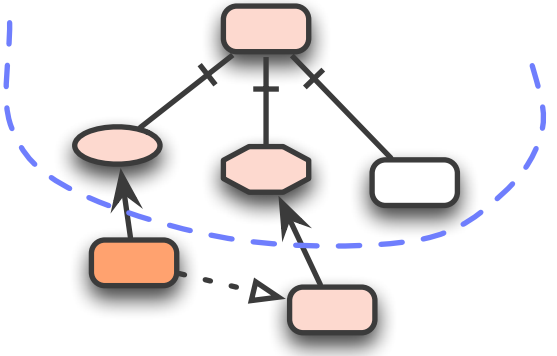
(1) an event is recognized by sensors



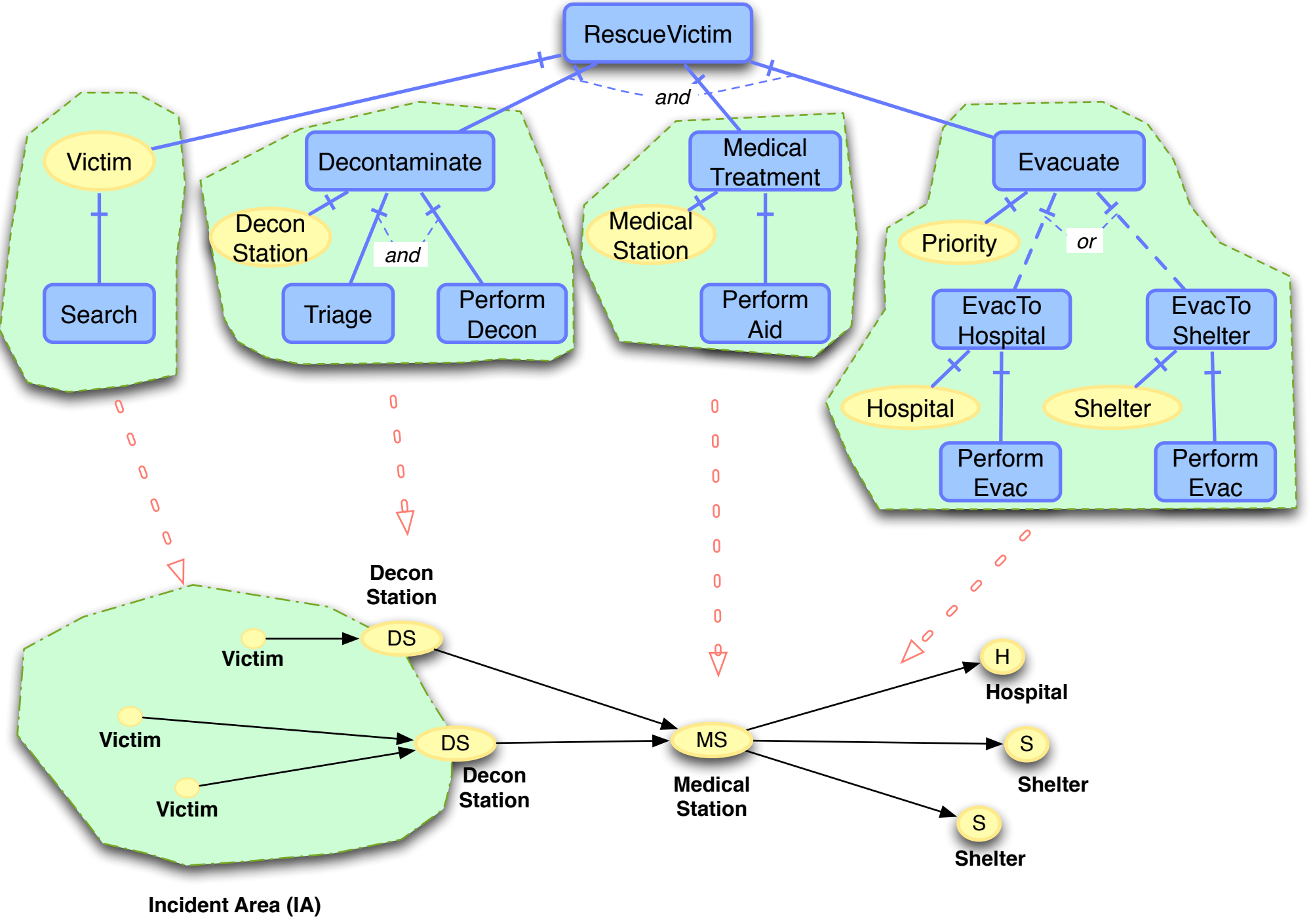
(2) the event is associated with a node in the activity model

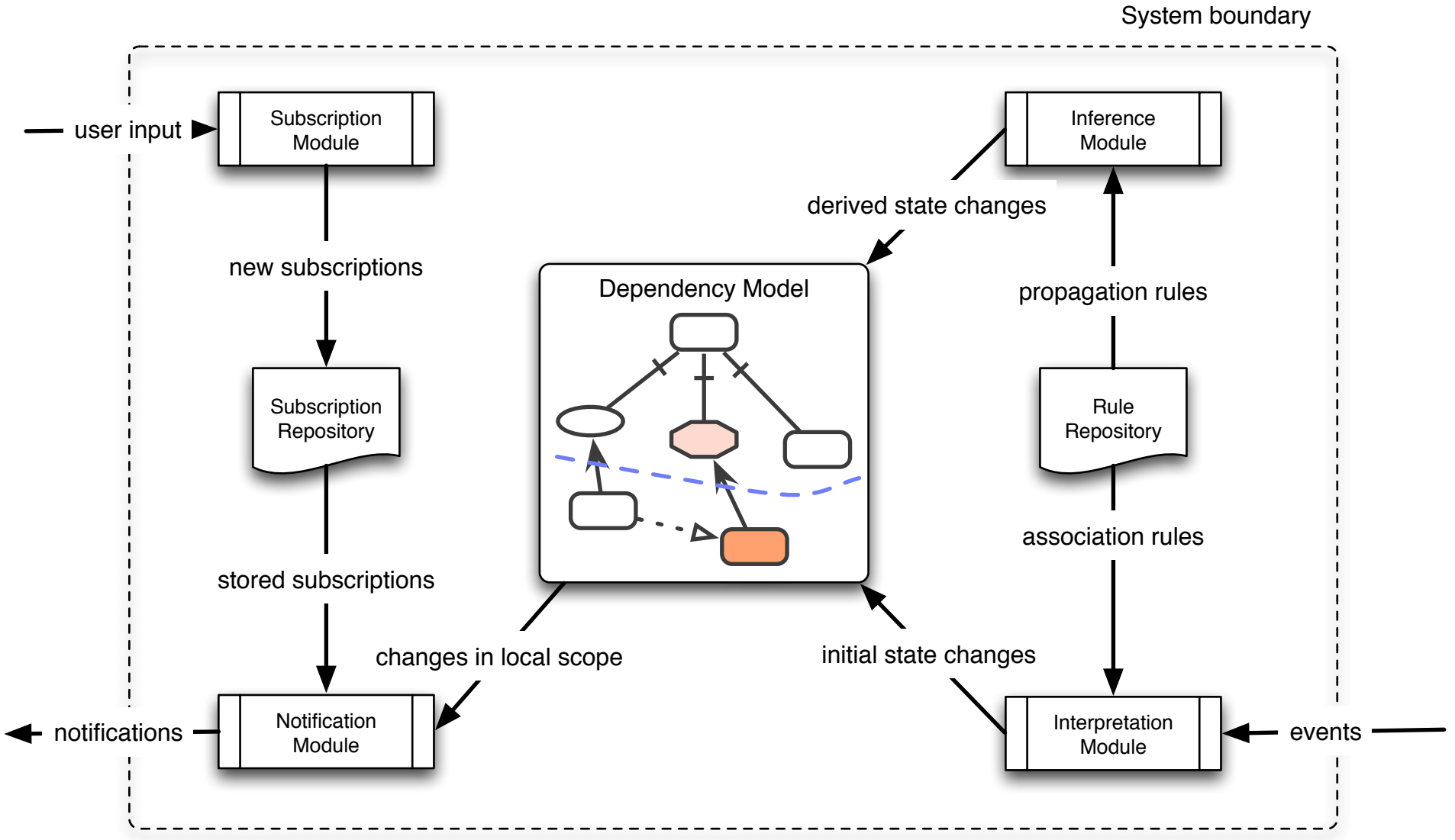


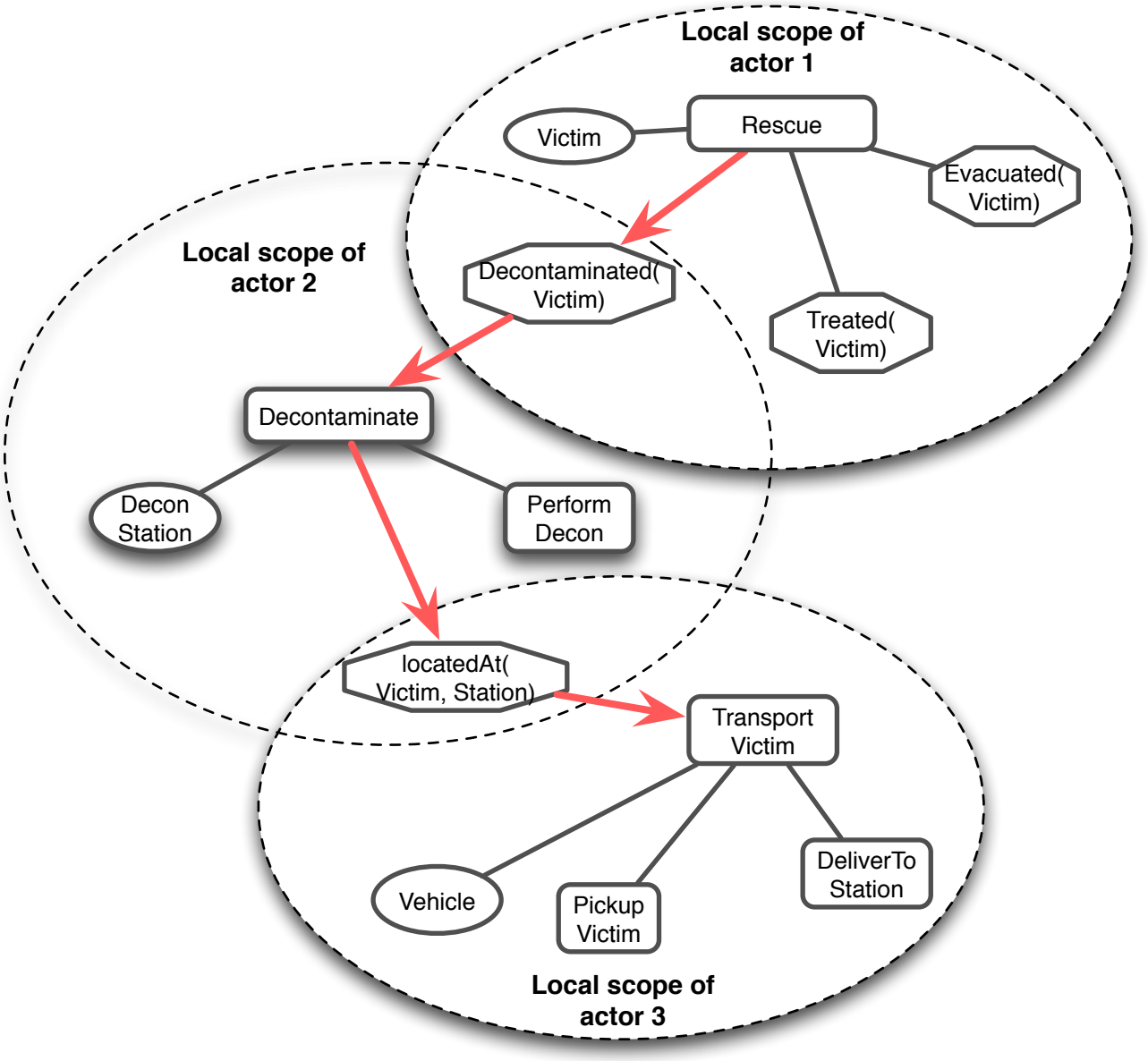
(3) the change is propagated in the activity model

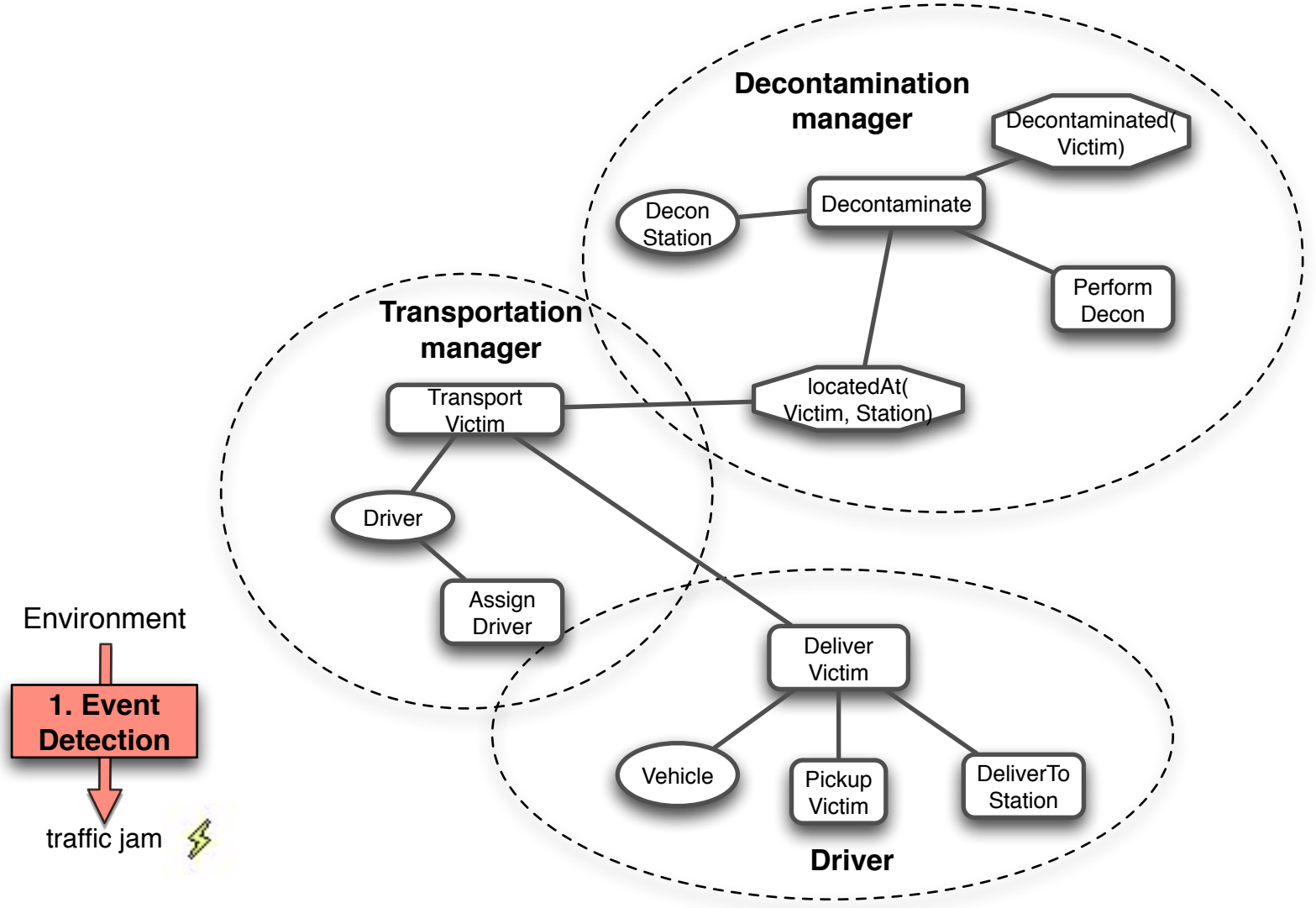


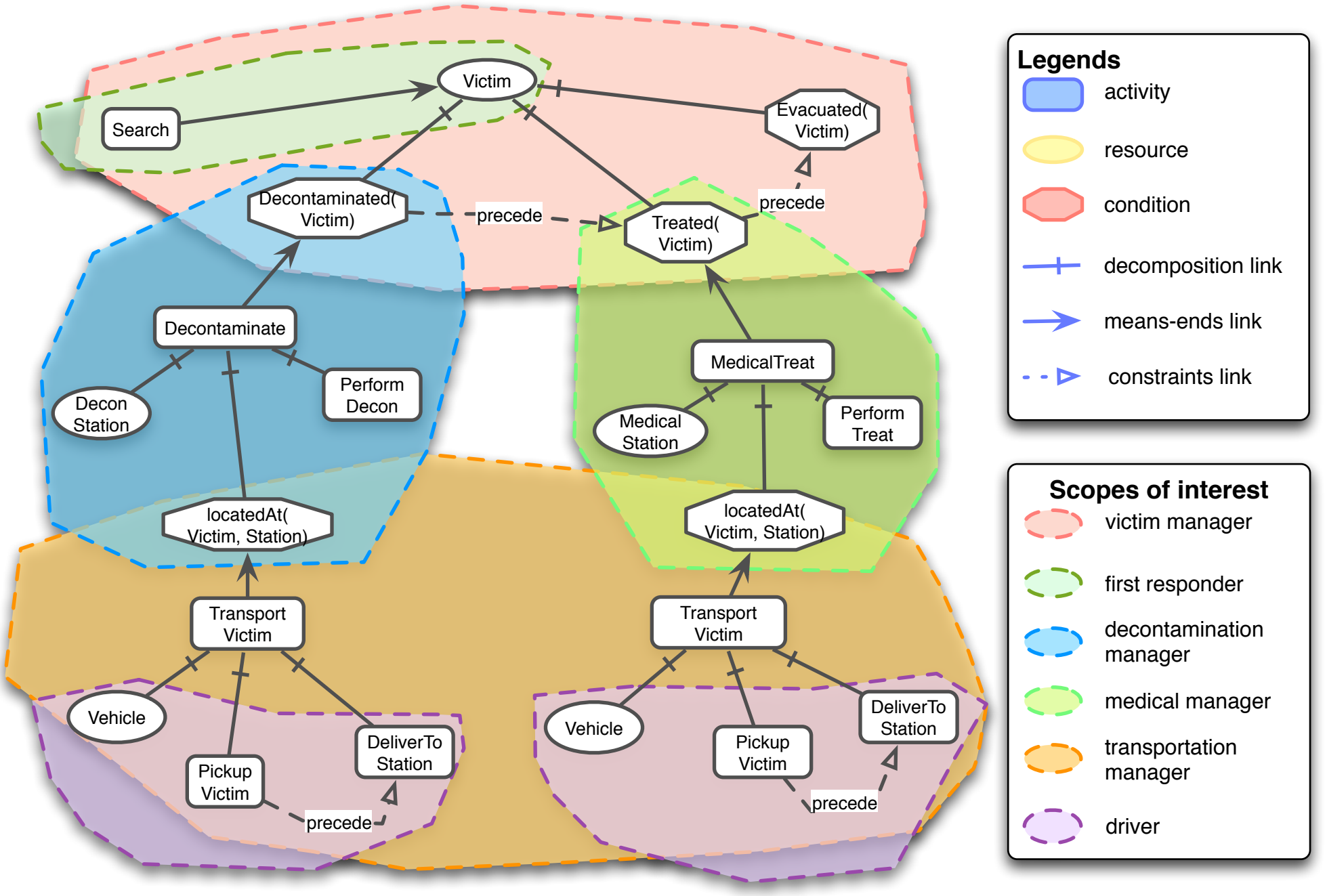
(4) only the changes in a user's local scope are notified

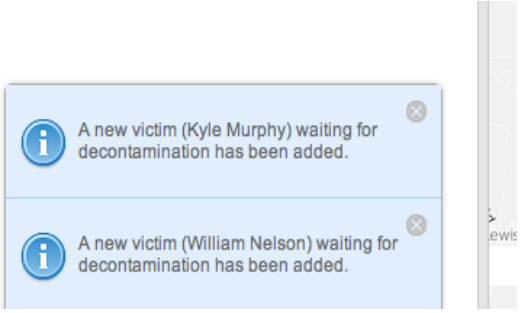

RescueVictim
and
Victim
Search
Decontaminate
Decon Station
and
Triage
Perform Decon
Medical Treatment
Medical Station
Perform Aid
Evacuate
Priority
or
EvacTo Hospital
EvacTo Shelter
Hospital
Shelter
Perform Evac
Perform Evac
Decon Station
Victim
DS
Victim
DS
Victim
Decon Station
Incident Area (IA)
MS
Medical Station
H
Hospital
S
Shelter
S
Shelter


System boundary
user input
Subscription Module
new subscriptions
Subscription Repository
stored subscriptions
Notification Module
notifications
Inference Module
derived state changes
Dependency Model
propagation rules
Rule Repository
association rules
changes in local scope
initial state changes
Interpretation Module
events

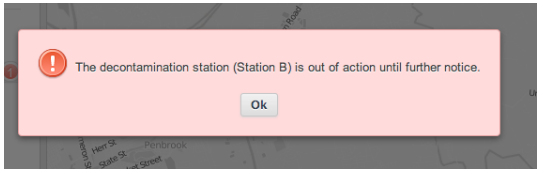

Local scope of actor 1
Victim
Rescue
Evacuated(Victim)
Decontaminated(Victim)
Treated(Victim)
Local scope of actor 2
Decontaminate
Decon Station
Perform Decon
locatedAt(Victim, Station)
Transport Victim
Vehicle
Pickup Victim
DeliverTo Station
Local scope of actor 3


Decontamination manager
Decontaminated(Victim)
Decontaminate
Decon Station
Perform Decon
Transportation manager
Transport Victim
locatedAt(Victim, Station)
Driver
Assign Driver
Deliver Victim
Vehicle
Pickup Victim
DeliverTo Station
Driver
Environment
1. Event Detection
traffic jam

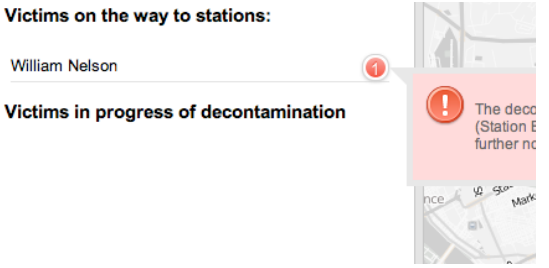

Victim
Search
Evacuated(
Victim)
Decontaminated(
Victim)
precede
Treated(
Victim)
precede
Decontaminate
MedicalTreat
Decon
Station
Perform
Decon
Medical
Station
Perform
Treat
locatedAt(
Victim, Station)
locatedAt(
Victim, Station)
Transport
Victim
Transport
Victim
Vehicle
Pickup
Victim
DeliverTo
Station
precede
Vehicle
Pickup
Victim
DeliverTo
Station
precede
Legends
activity
resource
condition
decomposition link
means-ends link
constraints link
Scopes of interest
victim manager
first responder
decontamination
manager
medical manager
transportation
manager
driver



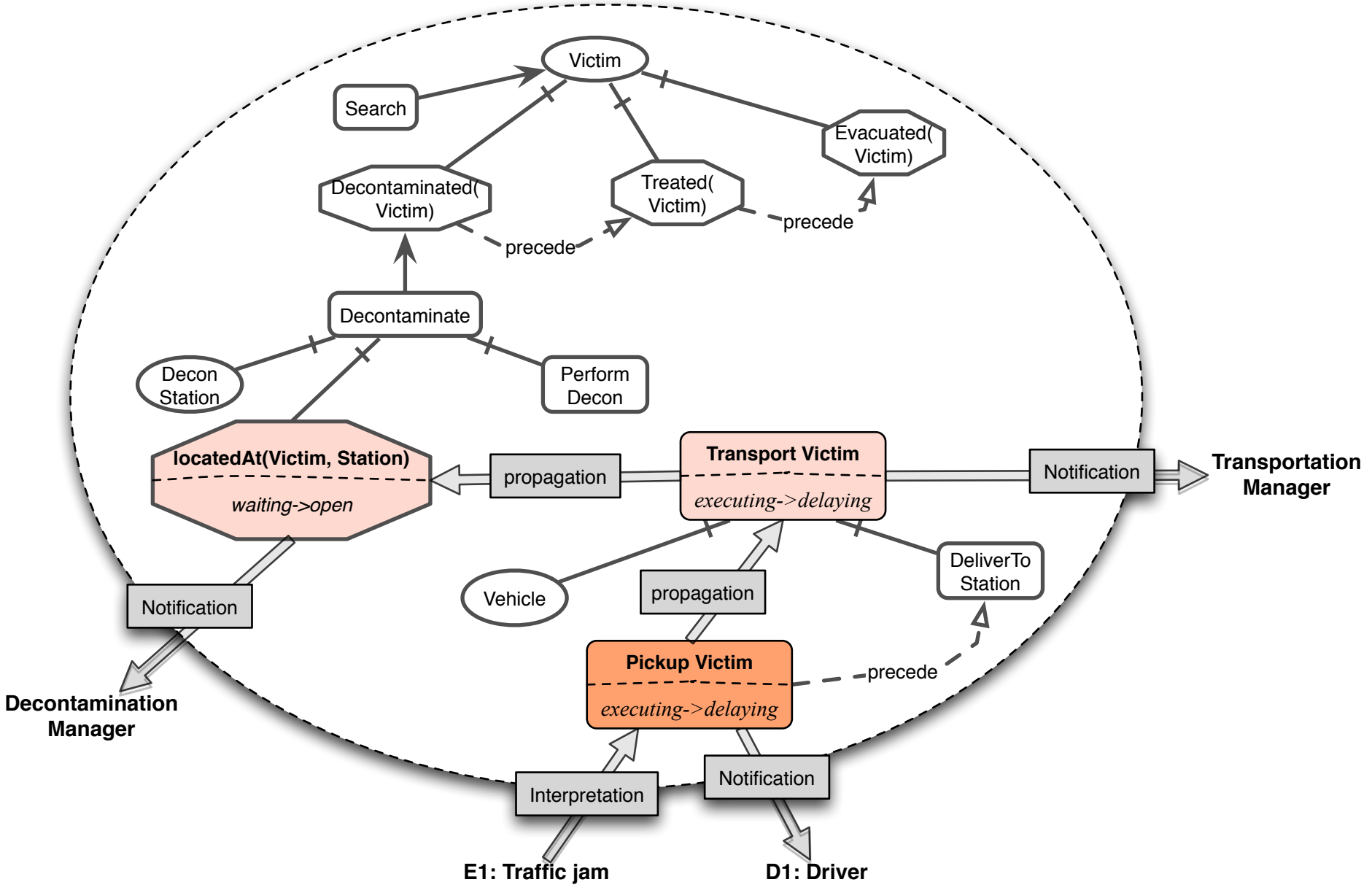
a. banner

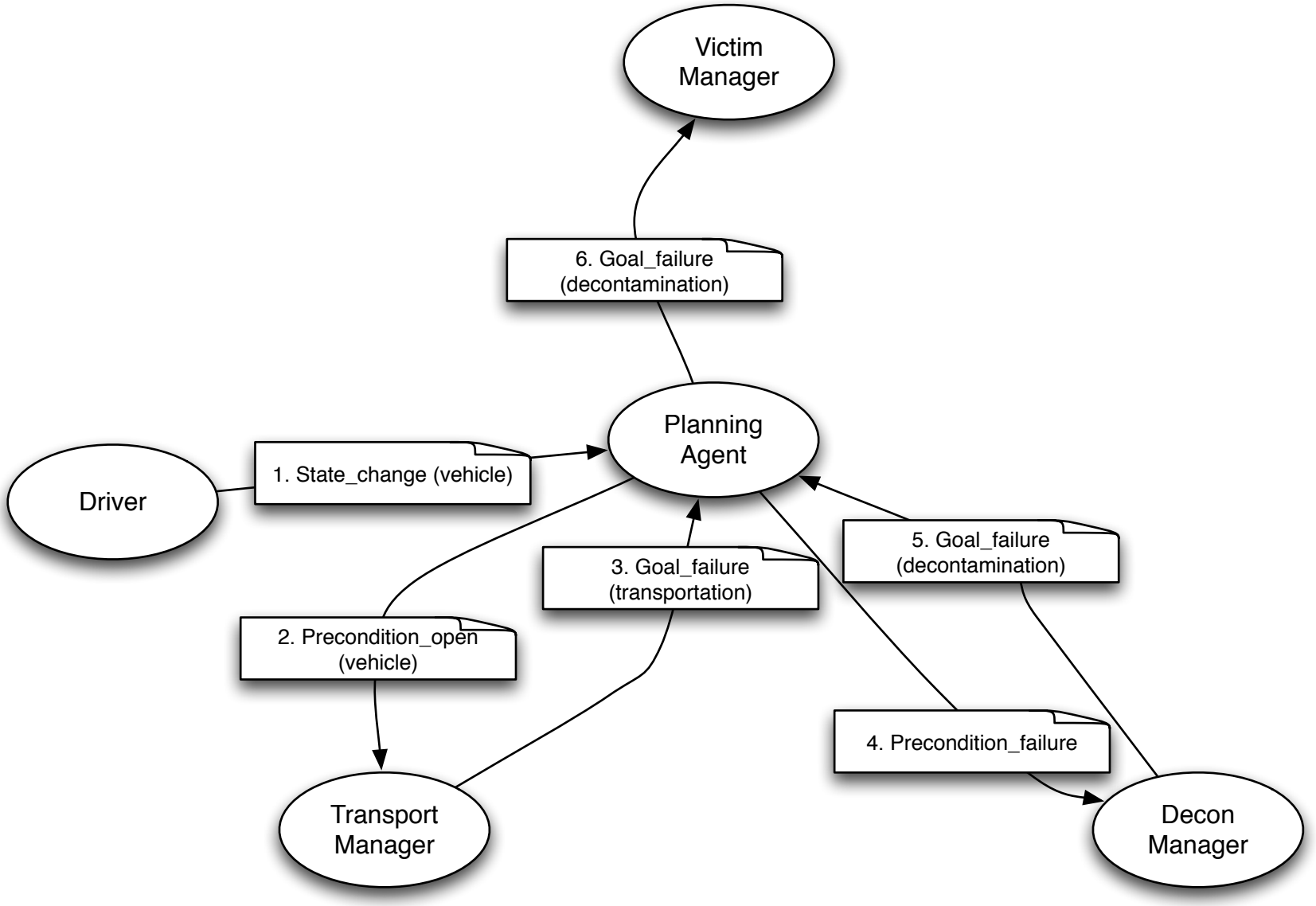


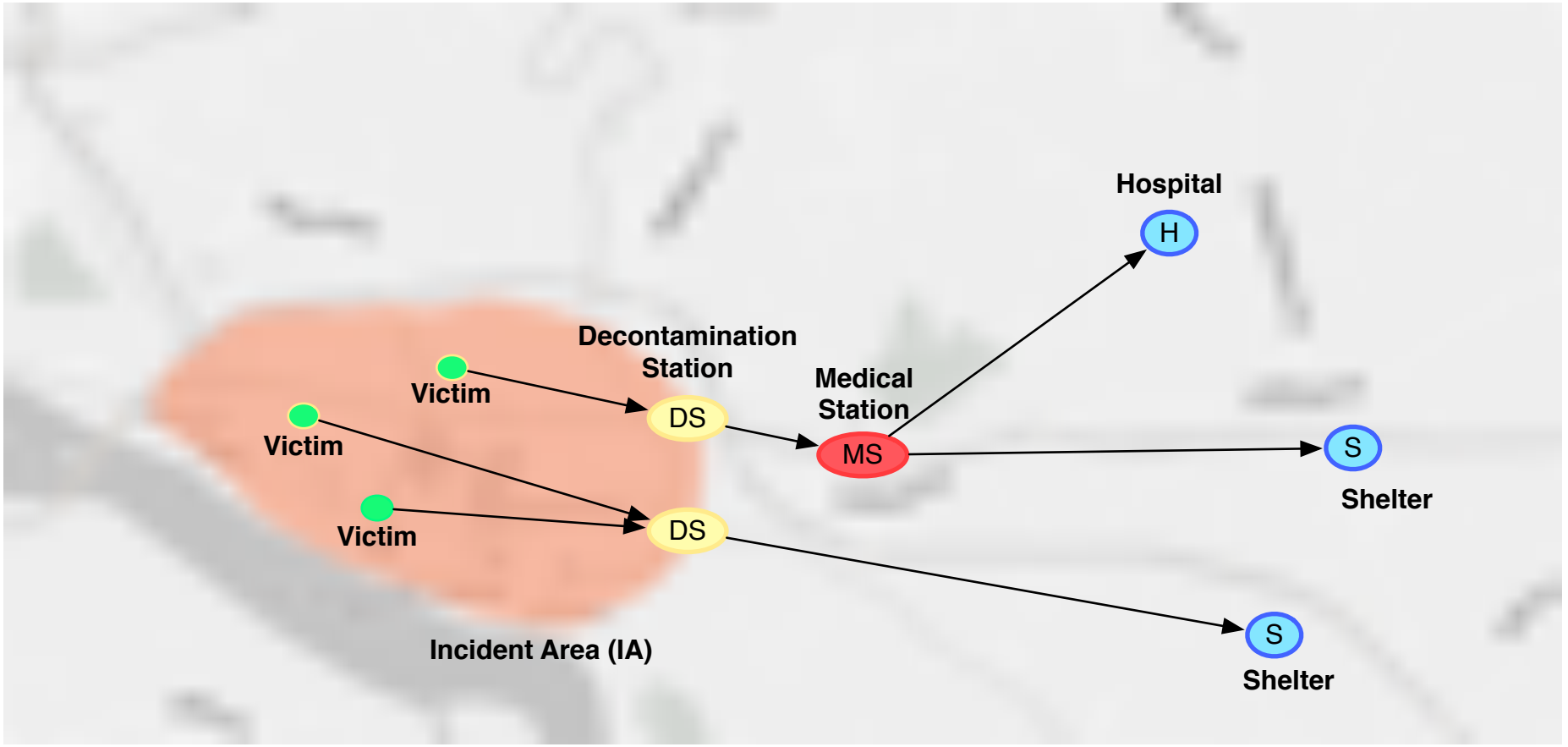
b. alert

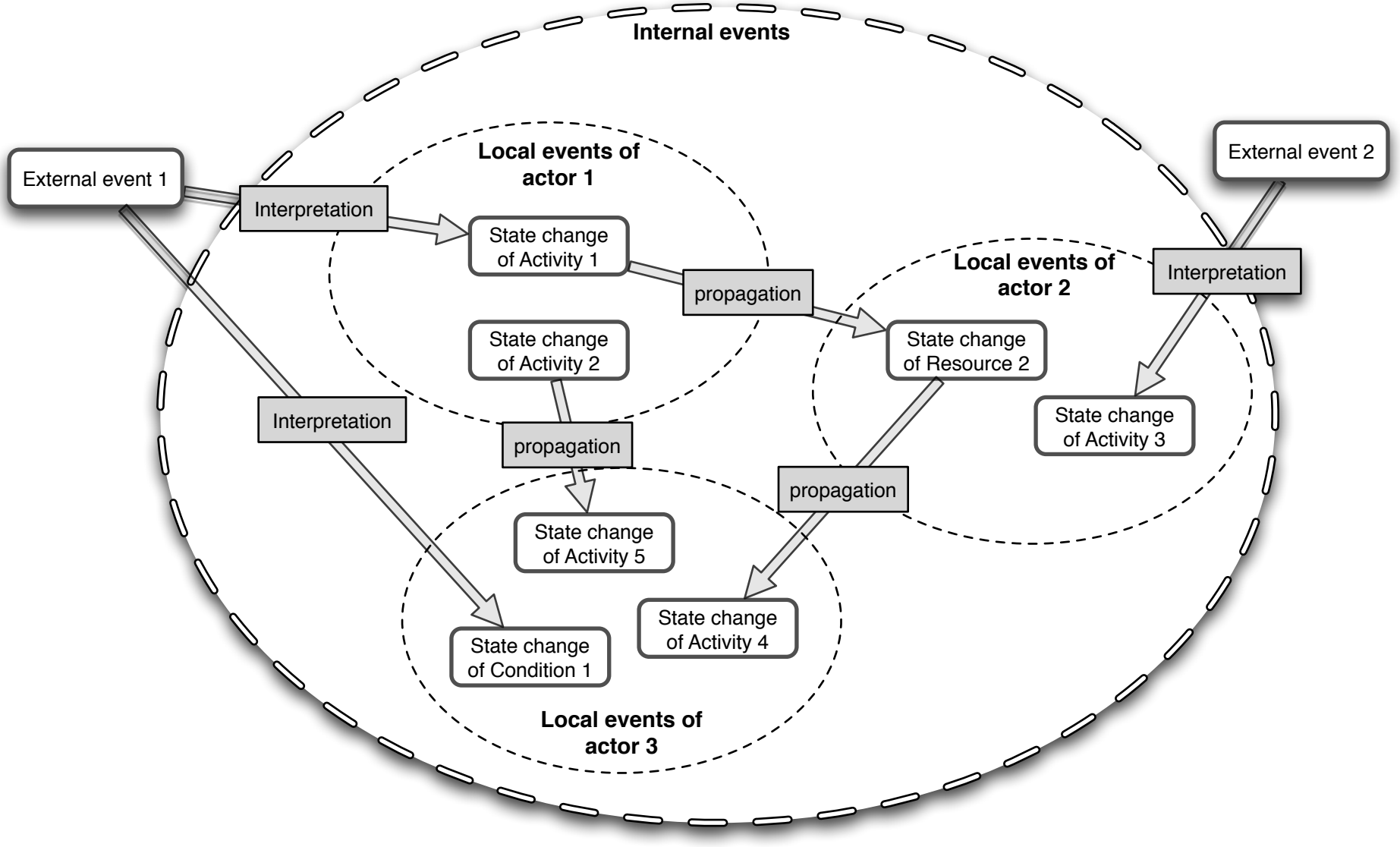


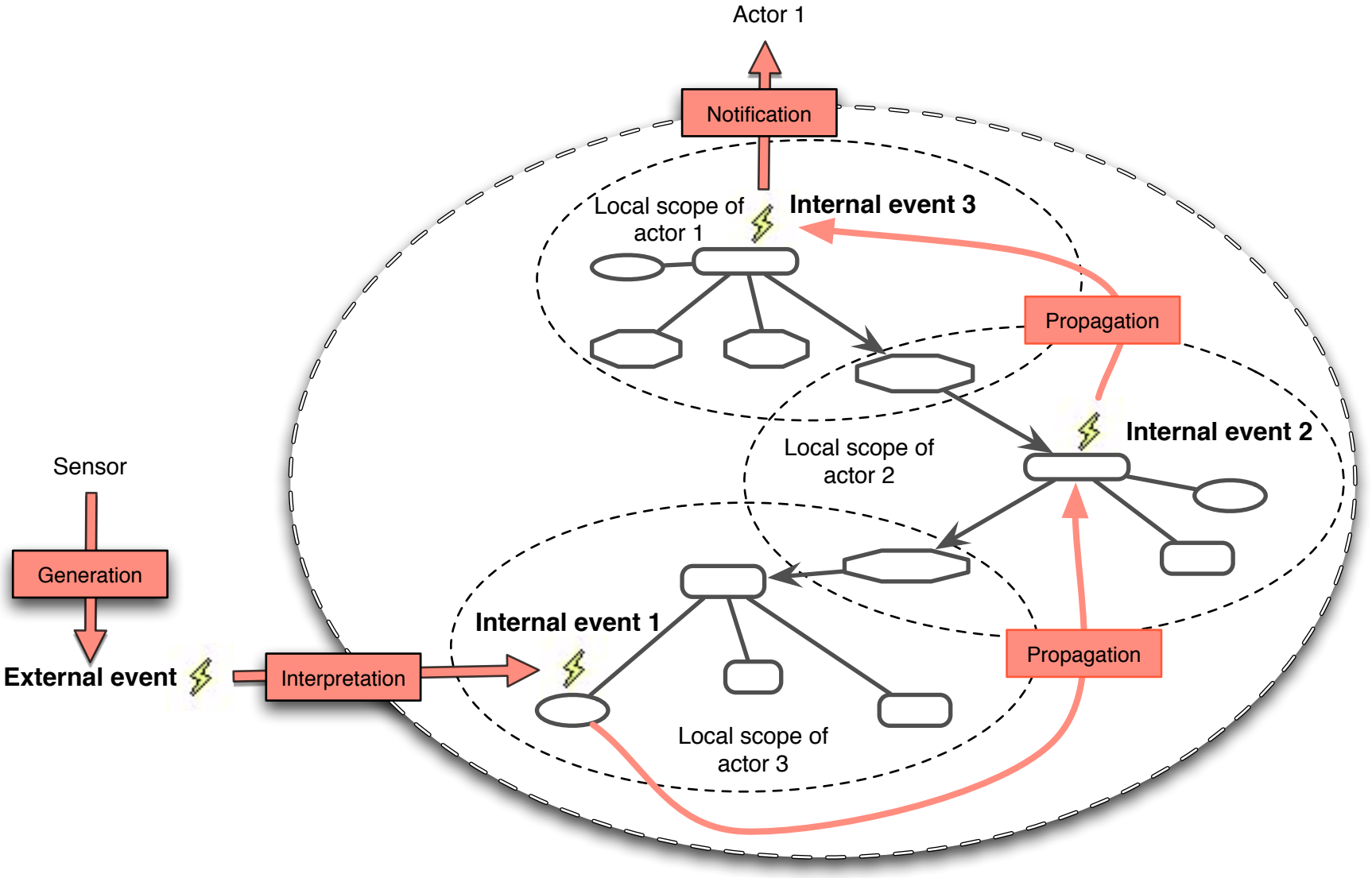
c. badge

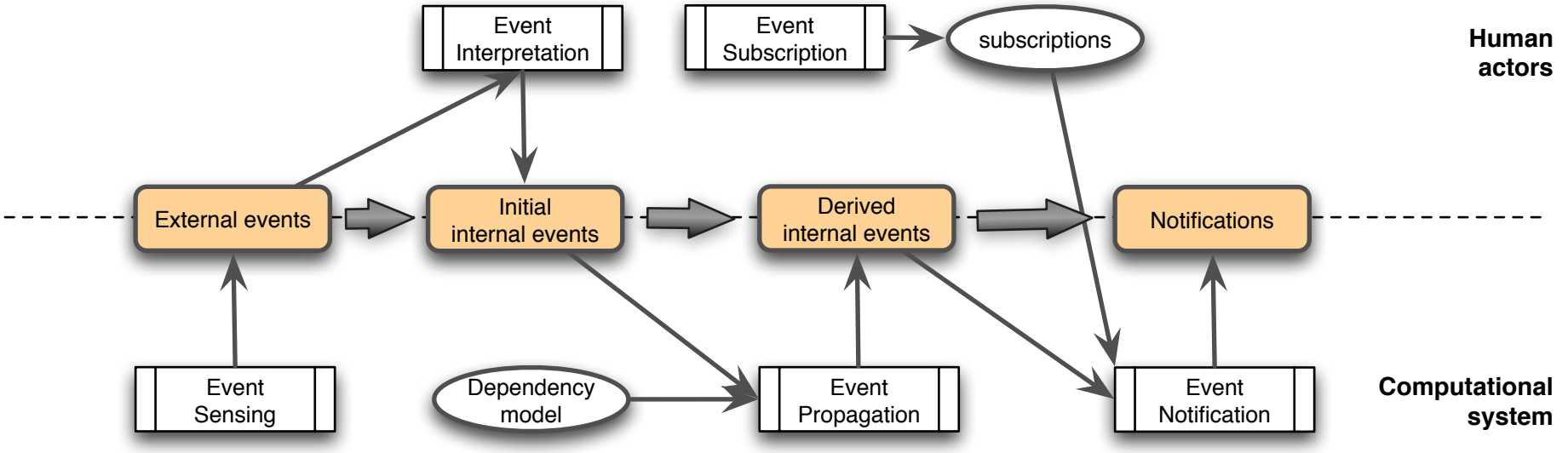

Victim
Search
Evacuated(Victim)
Decontaminated(Victim)
Treated(Victim)
precede
precede
Decontaminate
Decon Station
Perform Decon
locatedAt(Victim, Station)
waiting->open
propagation
Transport Victim
executing->delaying
Notification
Transportation Manager
Notification
Vehicle
propagation
DeliverTo Station
Pickup Victim
executing->delaying
precede
Decontamination Manager
Interpretation
Notification
E1: Traffic jam
D1: Driver

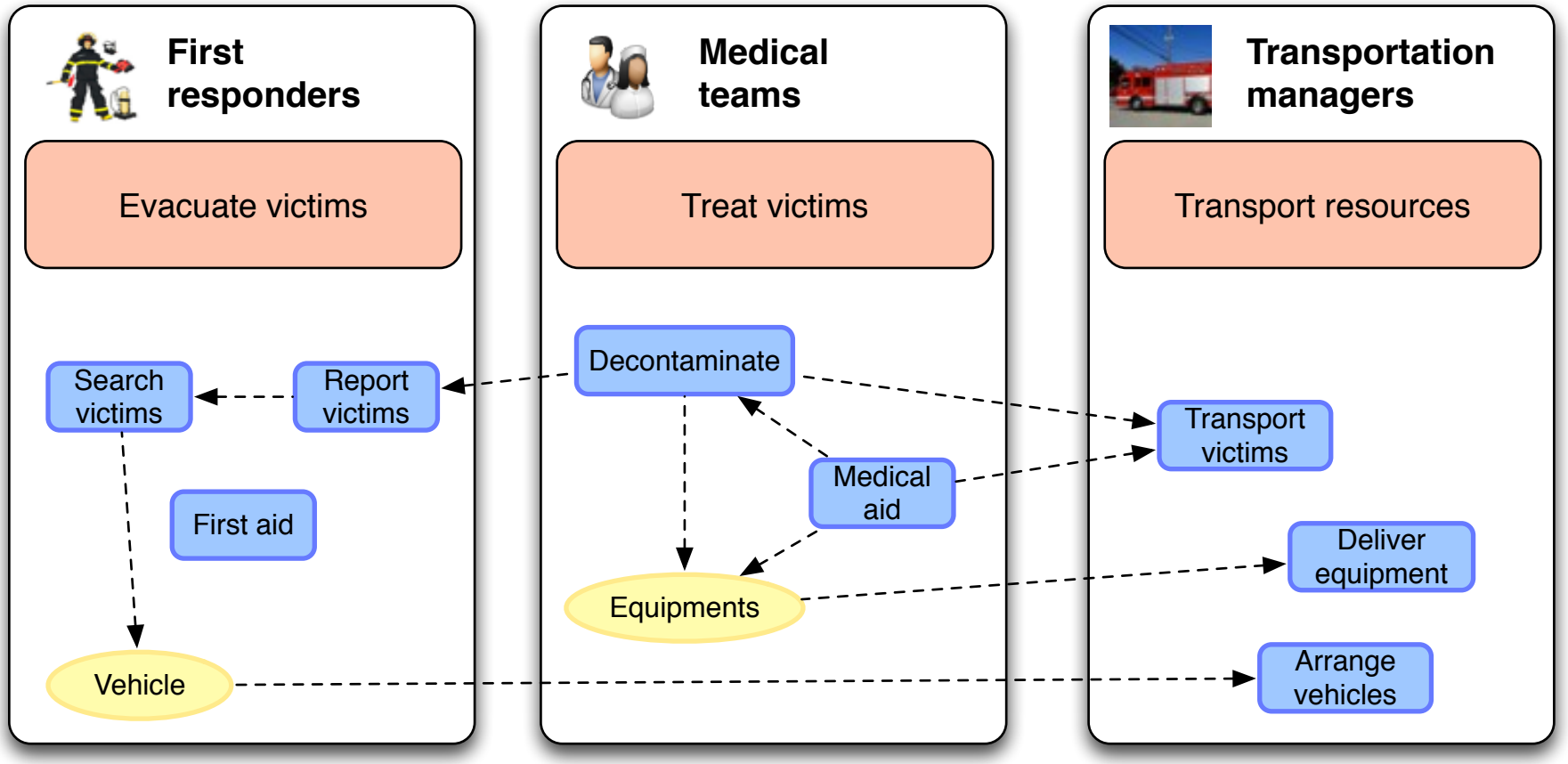

Victim Manager
6. Goal_failure (decontamination)
Planning Agent
Driver
1. State_change (vehicle)
5. Goal_failure (decontamination)
3. Goal_failure (transportation)
2. Precondition_open (vehicle)
4. Precondition_failure
Transport Manager
Decon Manager


Hospital
H
Decontamination
Station
Medical
Station
Victim
DS
MS
S
Shelter
Victim
Victim
DS
Incident Area (IA)
S
Shelter


Internal events
Local events of actor 1
Local events of actor 2
Local events of actor 3
External event 1
External event 2
Interpretation
Interpretation
Interpretation
State change of Activity 1
propagation
State change of Activity 2
propagation
State change of Resource 2
propagation
State change of Activity 3
State change of Activity 5
State change of Activity 4
State change of Condition 1


Actor 1
Notification
Local scope of actor 1
Internal event 3
Propagation
Internal event 2
Local scope of actor 2
Sensor
Generation
External event
Interpretation
Internal event 1
Propagation
Local scope of actor 3


Event Interpretation
Event Subscription
subscriptions
Human actors
External events
Initial internal events
Derived internal events
Notifications
Event Sensing
Dependency model
Event Propagation
Event Notification
Computational system


First responders
Evacuate victims
Search victims
Report victims
First aid
Vehicle
Medical teams
Treat victims
Decontaminate
Medical aid
Equipments
Transportation managers
Transport resources
Transport victims
Deliver equipment
Arrange vehicles