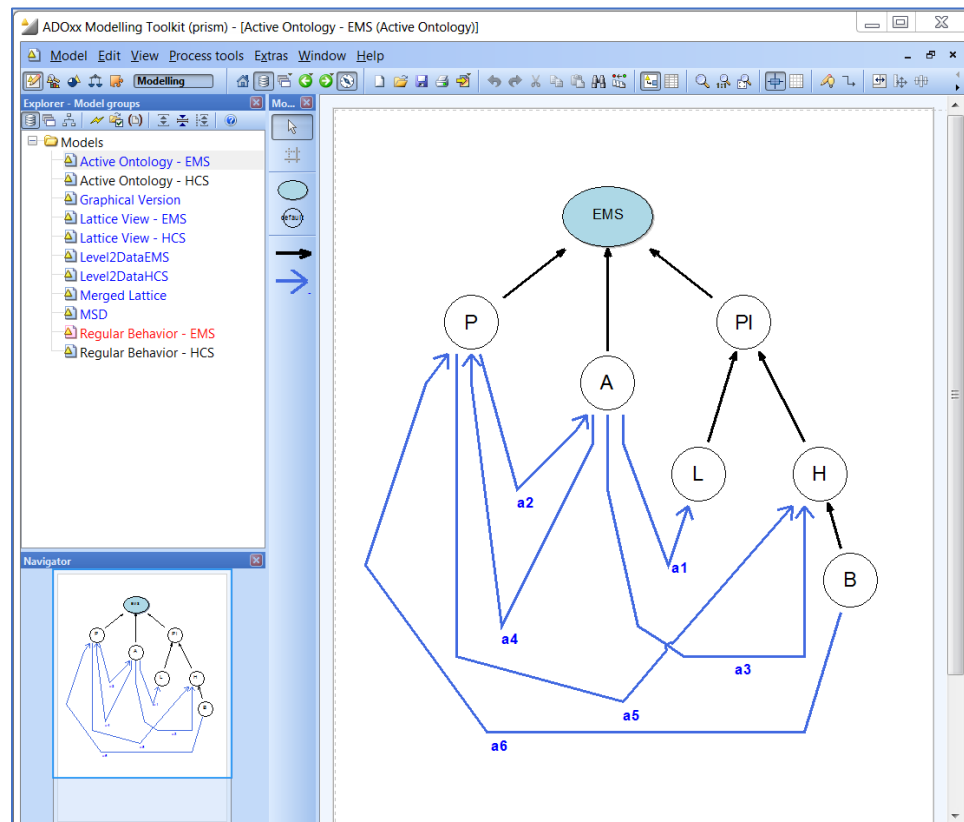


# EMS\_PRISM

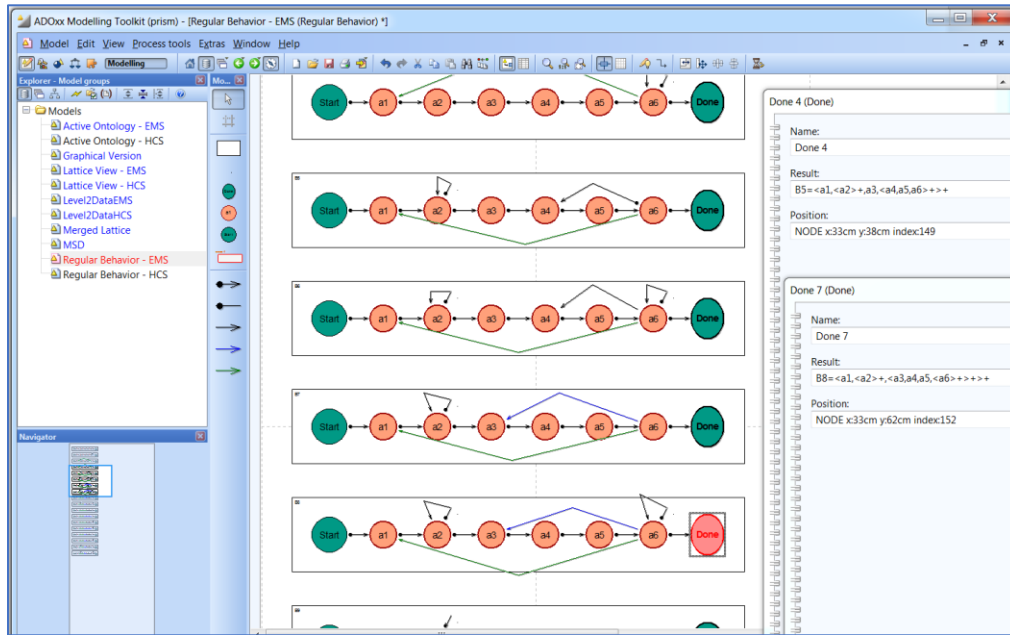
## Step 1: Active Ontology

- ① Actors: There are 4 different kinds of actors:
  - i. Patient ( $P$ ): Person to be transported.
  - ii. Ambulance ( $A$ ): Actor to deliver Patient.
  - iii. Location ( $L$ ): Place for Patient to be delivered from.
  - iv. Hospital ( $H$ ): Place for Patient to be delivered to.
- ② Interactions: There are 6 kinds of interactions:
  - i.  $a_1 = \langle A, L \rangle$ : Ambulance goes to Location.
  - ii.  $a_2 = \langle P, A \rangle$ : Patient gets on.
  - iii.  $a_3 = \langle A, H \rangle$ : Ambulance goes to Hospital.
  - iv.  $a_4 = \langle A, P \rangle$ : Patient gets off Ambulance.
  - v.  $a_5 = \langle P, H \rangle$ : Patient goes to Hospital.
  - vi.  $a_6 = \langle H, B \rangle$ : Hospital sends Bill to Patient.



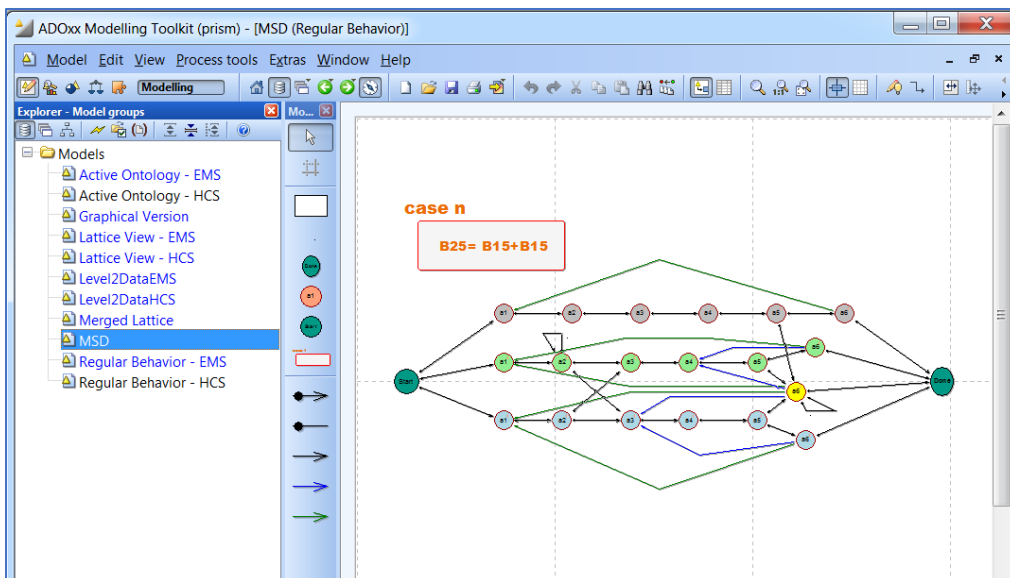
## Step 2: Regular Behavior

Each collective behavior is defined based on four kinds of actors, represented as  $B(L, A, H, P)$ . Then, there are two types of behaviors for each actor. For instance, Ambulance as a main actor, represented as  $B(n, 1, n, n)$  for 1 Ambulance and  $B(n, n, n, n)$  for  $n$  Ambulances.



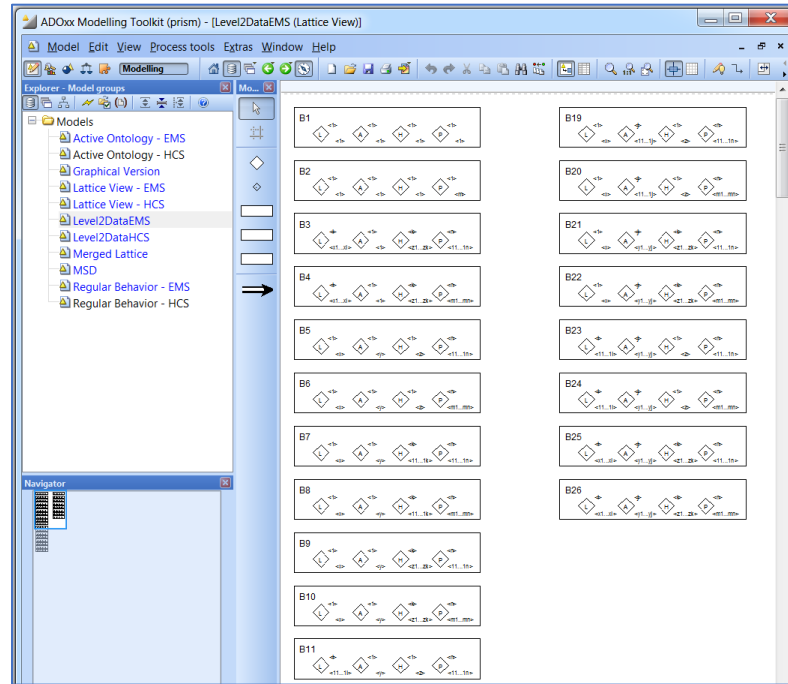
## Step 3: Multi-State Diagram

A Multi-State Diagram (MSD) describes the behavior of a single object in response to a series of events in a system.



## Step 4: Abstract Behavior

Regular behaviors from Step 2 are abstracted with respect to a number of actors and their capability. For example,  $B_8 = \langle a_1, \langle a_2 \rangle^+, \langle a_3, a_4, a_5, \langle a_6 \rangle^+ \rangle^+ \rangle^+$  in Step 2 equals to  $B_8 = (L_x^1, A_y^1, H_{1 \dots 1k}^k, P_{m_1 \dots m_n}^n)$  in abstract behavior. Inclusion Relations are calculated for the main actor.



Result of inclusion relationship based on 1 Patient

Inclusion Relationship of P1 view:

B1 is subset of B2.

Close  
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Result of inclusion relationship based on n Patients

Inclusion Relationship of Pn view:

B3 is subset of B4,B17,B18,B25,B26.  
 B4 is subset of B17,B18,B25,B26.  
 B5 is subset of B6,B9,B10,B17,B18,B21,B22,B25,B26.  
 B6 is subset of B9,B10,B17,B18,B21,B22,B25,B26.  
 B7 is subset of B8,B9,B10,B17,B18,B21,B22,B25,B26.  
 B8 is subset of B9,B10,B17,B18,B21,B22,B25,B26.  
 B9 is subset of B10,B17,B18,B21,B22,B25,B26.  
 B10 is subset of B17,B18,B21,B22,B25,B26.  
 B11 is subset of B13,B15,B16,B17,B18,B23,B24,B25,B26.  
 B12 is subset of B14,B15,B16,B17,B18,B25,B26.  
 B13 is subset of B15,B16,B17,B18,B23,B24,B25,B26.  
 B14 is subset of B15,B16,B17,B18,B25,B26.  
 B15 is subset of B16,B17,B18,B25,B26.  
 B16 is subset of B17,B18,B25,B26.  
 B17 is subset of B18,B25,B26.  
 B18 is subset of B25,B26.  
 B19 is subset of B20,B21,B22,B25,B26.  
 B20 is subset of B21,B22,B25,B26.  
 B21 is subset of B22,B25,B26.  
 B22 is subset of B25,B26.  
 B23 is subset of B24,B25,B26.  
 B24 is subset of B25,B26.  
 B25 is subset of B26.

Close  
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Find next  
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## Step 5: Behavior Lattice

All the notions of the abstract behaviors follow the semantic notion of the behaviors, behavior lattice and the ontology. Level 2 data, which are defined in the previous section, are organized in the form of  $n:2$ -lattice.

