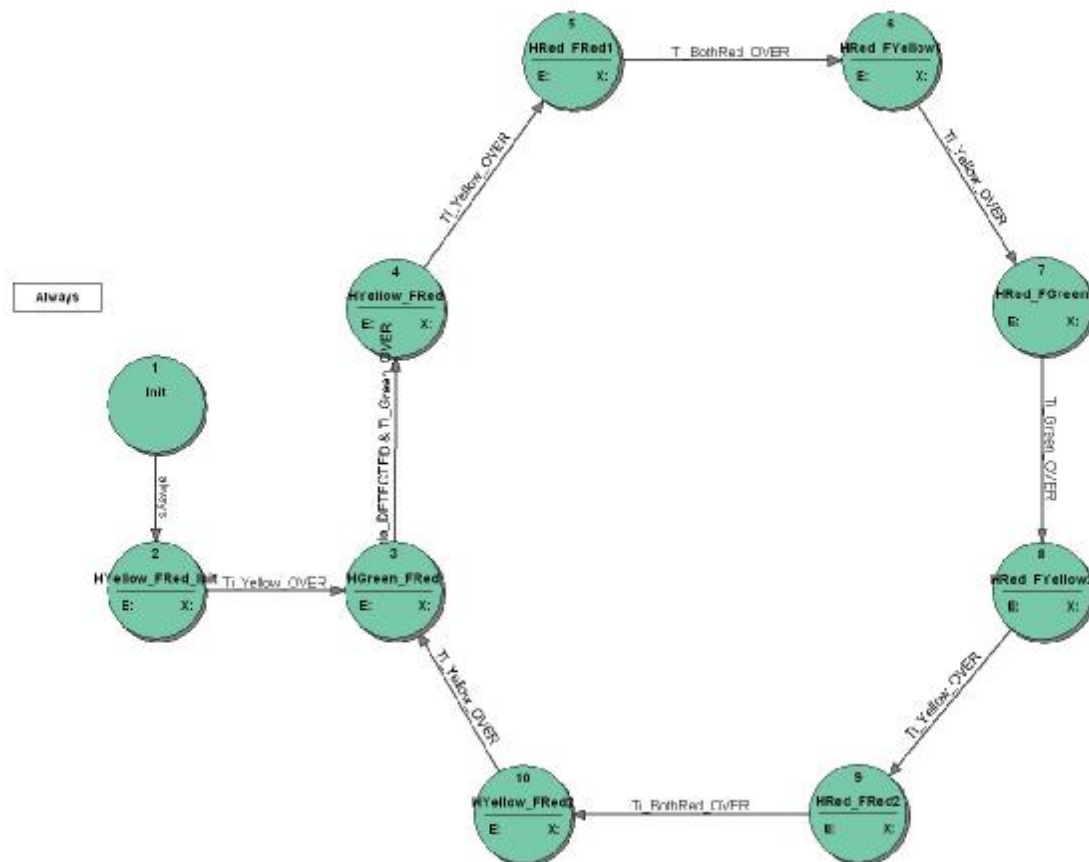


## VFSM: Intersection

### VFSM type: Intersection(user v fsm)

The state machine Intersection realizes a standard traffic light algorithmus changing periodically green - yellow - red lights for crossing roads. This standard algorithm is in force if the sensor detects a vehicle on the Farm road, otherwise the Highway has the green light all the time. The names of the states correspond to the lamps state, for instance: HGreen\_FRed means the Highway has a green light and the Farm road has a red light.



Prefix: INT

IOid name: MyCmd (type: CMD-IN)

IOid name: Ti\_BothRed (type: TI)

-->Virtual Input: Ti\_BothRed\_OVER (OVER)  
 -->Virtual Output: Ti\_BothRed\_ResetStart (ResetStart)  
 -->Virtual Output: Ti\_BothRed\_Stop (Stop)

IOid name: Ti\_Green (type: TI)

-->Virtual Input: Ti\_Green\_OVER (OVER)  
 -->Virtual Output: Ti\_Green\_ResetStart (ResetStart)  
 -->Virtual Output: Ti\_Green\_Stop (Stop)

IOid name: Ti\_Init (type: TI)

-->Virtual Input: Ti\_Init\_OVER (OVER)

-->Virtual Output: Ti\_Init\_ResetStart (ResetStart)

-->Virtual Output: Ti\_Init\_Stop (Stop)

**IOid name: Ti\_Yellow (type: TI)**

-->Virtual Input: Ti\_Yellow\_OVER (OVER)

-->Virtual Output: Ti\_Yellow\_ResetStart (ResetStart)

-->Virtual Output: Ti\_Yellow\_Stop (Stop)

**IOid name: Di\_Detector (type: DI)**

-->Virtual Input: Vehicle\_DETECTED (HIGH)

**IOid name: Do\_FarmroadGreen (type: DO)**

-->Virtual Output: FarmroadGreen\_Off (Low)

-->Virtual Output: FarmroadGreen\_On (High)

**IOid name: Do\_FarmroadRed (type: DO)**

-->Virtual Output: FarmroadRed\_Off (Low)

-->Virtual Output: FarmroadRed\_On (High)

**IOid name: Do\_FarmroadYellow (type: DO)**

-->Virtual Output: FarmroadYellow\_Off (Low)

-->Virtual Output: FarmroadYellow\_On (High)

**IOid name: Do\_HighwayGreen (type: DO)**

-->Virtual Output: HighwayGreen\_Off (Low)

-->Virtual Output: HighwayGreen\_On (High)

**IOid name: Do\_HighwayRed (type: DO)**

-->Virtual Output: HighwayRed\_Off (Low)

-->Virtual Output: HighwayRed\_On (High)

**IOid name: Do\_HighwayYellow (type: DO)**

-->Virtual Output: HighwayYellow\_Off (Low)

-->Virtual Output: HighwayYellow\_On (High)

**State transition table, state ' Init ':**

*On startup FSM goes always to the to the state HYellow\_FRed\_Init.*

<b>Init</b>	<b>EntryAction:</b>	
	<b>ExitAction:</b>	
HYellow_FRed_Init	always	

**State transition table, state ' HYellow\_FRed\_Init ':**

*The Highway yellow lamp and the Farm road red lamp are switched on for a while: the duration being defined by the Ti\_Yellow timer.*

<b>HYellow_FRed_Init</b>	<b>EntryAction:</b>	HighwayYellow_On FarmroadRed_On Ti_Yellow_ResetStart
	<b>ExitAction:</b>	Ti_Yellow_Stop
HGreen_FRed	Ti_Yellow_OVER	

**State transition table, state ' HGreen\_FRed ':**

*The Highway has a free way: the Highway green light is on and the yellow is off. This situation stays stable until a vehicle is detected on the Farm road. The minimum duration of this phase is determined by the Ti\_Green timer.*

<b>HGreen_FRed</b>	<b>EntryAction:</b>	HighwayGreen_On HighwayYellow_Off Ti_Green_ResetStart
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	<b>ExitAction:</b>	Ti_Green_Stop
HYellow_FRed	Vehicle_DETECTED and Ti_Green_OVER	

**State transition table, state ' HYellow\_FRed ':**

*The state determines the yellow phase for the Highway: the Highway green lamp is switched off and the yellow lamp is switched on but the Farm road red lamp does not change - it stays still on.*

<b>HYellow_FRed</b>	<b>EntryAction:</b>	HighwayGreen_Off HighwayYellow_On Ti_Yellow_ResetStart
	<b>ExitAction:</b>	Ti_Yellow_Stop
HRed_FRed1	Ti_Yellow_OVER	

**State transition table, state ' HRed\_FRed1 ':**

*Both roads see the red light.*

<b>HRed_FRed1</b>	<b>EntryAction:</b>	HighwayYellow_Off HighwayRed_On Ti_BothRed_ResetStart
	<b>ExitAction:</b>	Ti_BothRed_Stop
HRed_FYellow1	Ti_BothRed_OVER	

**State transition table, state ' HRed\_FYellow1 ':**

*The Farm road has the yellow phase, the Highway sees already the red lamps.*

<b>HRed_FYellow1</b>	<b>EntryAction:</b>	FarmroadRed_Off FarmroadYellow_On Ti_Yellow_ResetStart
	<b>ExitAction:</b>	Ti_Yellow_Stop
HRed_FGreen	Ti_Yellow_OVER	

**State transition table, state ' HRed\_FGreen ':**

*The Farm road has a free way: the Highway red light and the Farm road green light are on. The duration of this phase is determined by the Ti\_Green timer.*

<b>HRed_FGreen</b>	<b>EntryAction:</b>	FarmroadYellow_Off FarmroadGreen_On Ti_Green_ResetStart
	<b>ExitAction:</b>	Ti_Green_Stop
HRed_FYellow2	Ti_Green_OVER	

**State transition table, state ' HRed\_FYellow2 ':**

*The state determines the yellow phase for the Farm road: the Farm road green lamp is switched off and the yellow lamp is switched on but the Highway red lamp does not change - it stays still on.*

<b>HRed_FYellow2</b>	<b>EntryAction:</b>	FarmroadGreen_Off FarmroadYellow_On Ti_Yellow_ResetStart
	<b>ExitAction:</b>	Ti_Yellow_Stop
HRed_FRed2	Ti_Yellow_OVER	

**State transition table, state ' HRed\_FRed2 ':**

*Both roads see the red light.*

<b>HRed_FRed2</b>	<b>EntryAction:</b>	FarmroadYellow_Off
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		FarmroadRed_On Ti_BothRed_ResetStart
	<b>ExitAction:</b>	Ti_BothRed_Stop
HYellow_FRed2	Ti_BothRed_OVER	

**State transition table, state 'HYellow\_FRed2':**

*The Highway has the yellow phase, the Farm eoad sees already the red lamps.*

<b>HYellow_FRed2</b>	<b>EntryAction:</b>	HighwayRed_Off HighwayYellow_On Ti_Yellow_ResetStart
	<b>ExitAction:</b>	Ti_Yellow_Stop
HGreen_FRed	Ti_Yellow_OVER	

**Total number of states: 10**