

Model OpMod/GlobalOperation

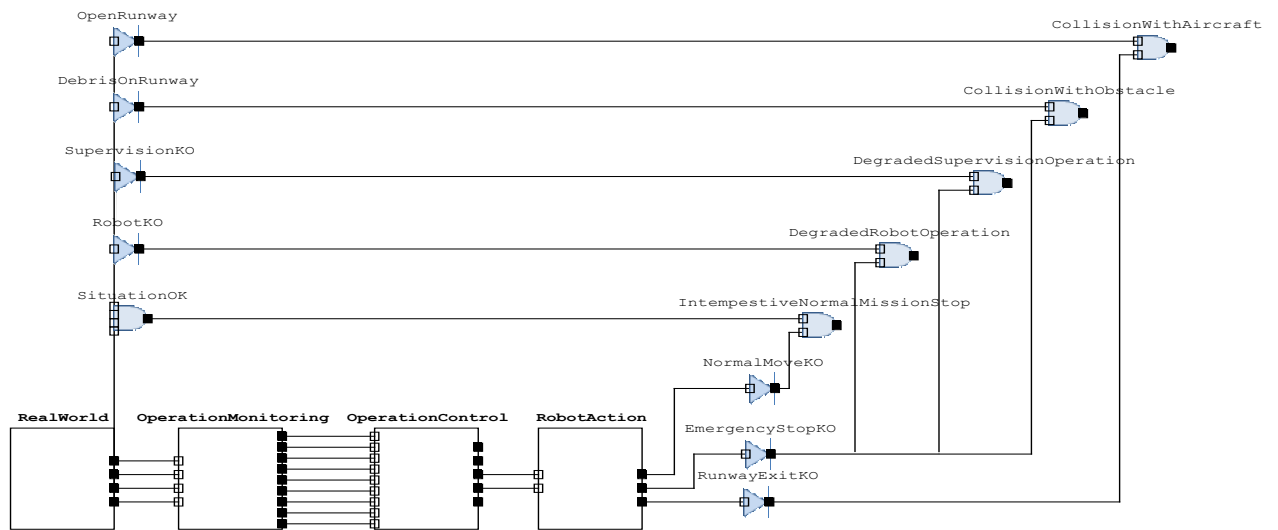
Identification

- Project name : OpMod/GlobalOperation
- System name : OpMod/GlobalOperation/LightInspectionV5
- Version : 1
- Created : 4/16/18 9:00 PM - admin
- Modify : 5/15/18 4:03 PM - admin

Content

Name	Model	Equip
CollisionWithObstacle	Operator/Bool/and2;1	No
SituationOK	Operator/Bool/and4;1	No
DebrisOnRunway	Operator/Bool/neg;1	No
RealWorld	RobotLightInspection/MissionPhases/EnvironmentV5;1	Yes
RobotAction	RobotLightInspection/MissionPhases/ActionV5;1	Yes
OperationControl	RobotLightInspection/MissionPhases/ControlV5;1	Yes
OperationMonitoring	RobotLightInspection/MissionPhases/MonitoringV5;1	Yes
OpenRunway	Operator/Bool/neg;1	No
SupervisionKO	Operator/Bool/neg;1	No
RobotKO	Operator/Bool/neg;1	No
EmergencyStopKO	Operator/Bool/neg;1	No
RunwayExitKO	Operator/Bool/neg;1	No
NormalMoveKO	Operator/Bool/neg;1	No
CollisionWithAircraft	Operator/Bool/and2;1	No
DegradedSupervisionOperation	Operator/Bool/and2;1	No
DegradedRobotOperation	Operator/Bool/and2;1	No
IntempestiveNormalMissionStop	Operator/Bool/and2;1	No

Description



List of synchronizations

- None :

Equipments

Model of equipment : RobotLightInspection/MissionPhases/EnvironmentV5

1. Identification

- Family name : RobotLightInspection/MissionPhases
- Model name : EnvironmentV5
- Version : 1
- Created : 4/16/18 9:30 PM - admin
- Modify : 5/15/18 3:33 PM - admin
- Comment :

Perfect observation of the initial status of :

- runway and obstacle, (objects external to the system)

- ATC, supervisor, robot (objects internal of the system)

To be implemented: status evolution of internal object + may be of external object

2. General

- Width : 80
- Height : 80
- Icon file :
- Affichage du cadre : true

3. Ports

Name	Type	Direction	X	Y
RobotSafe	bool	out	20.0	74.0
SupervisionSafe	bool	out	30.0	74.0
RunwayClear	bool	out	40.0	74.0
RunwayClosed	bool	out	50.0	74.0

4. Icons

- None :

5. List of synchronizations

- None :

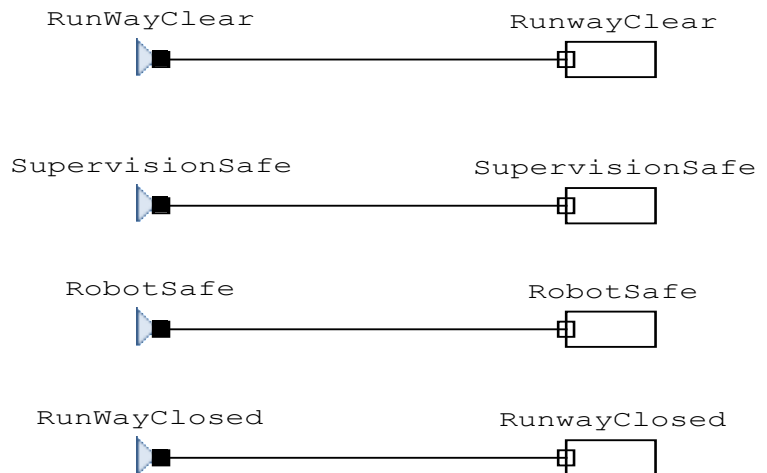
6. Code Altarica

- None :

7. Equipment content

Name	Model	Equipment
SupervisionSafe	Operation/Task_alone_perfo/ExternalCondition;1	No
RunWayClosed	Operation/Task_alone_perfo/ExternalCondition;1	No
RobotSafe	Operation/Task_alone_perfo/ExternalCondition;1	No
RunWayClear	Operation/Task_alone_perfo/ExternalCondition;1	No

8. Description



Model of equipment : RobotLightInspection/MissionPhases/ControlV5

1. Identification

- Family name : RobotLightInspection/MissionPhases
- Model name : ControlV5
- Version : 1
- Created : 4/16/18 9:28 PM - admin
- Modify : 4/18/18 10:49 AM - admin
- Comment :

Control priority rules

1: emergency stop (if runway unclear or robot unsafe or supervisor unsafe)

2: runway exit (if runway open)

3: nominal mode (other case)

2. General

- Width : 80
- Height : 80

- Icon file :
- Affichage du cadre : true

3. Ports

Name	Type	Direction	X	Y
K_ATC_RunwayClosed	bool	in	4.0	0.0
K_Supervisor_RunwayClosed	bool	in	12.0	0.0
K_ATC_SupervisionSafe	bool	in	20.0	0.0
K_Supervisor_SupervisionSafe	bool	in	28.0	0.0
K_Robot_SupervisionSafe	bool	in	36.0	0.0
K_Supervisor_RobotSafe	bool	in	44.0	0.0
K_Robot_RobotSafe	bool	in	52.0	0.0
K_Supervisor_RunwayClear	bool	in	60.0	0.0
K_Robot_RunwayClear	bool	in	68.0	0.0
D_ATC_RunwayClose	bool	out	20.0	74.0
D_Robot_EmergencyStop	bool	out	30.0	74.0
D_Robot_RunwayExit	bool	out	40.0	74.0
D_Supervisor_EmergencyStop	bool	out	50.0	74.0
D_Supervisor_RunwayExit	bool	out	60.0	74.0

4. Icons

- None :

5. List of synchronizations

- None :

6. Code Altarica

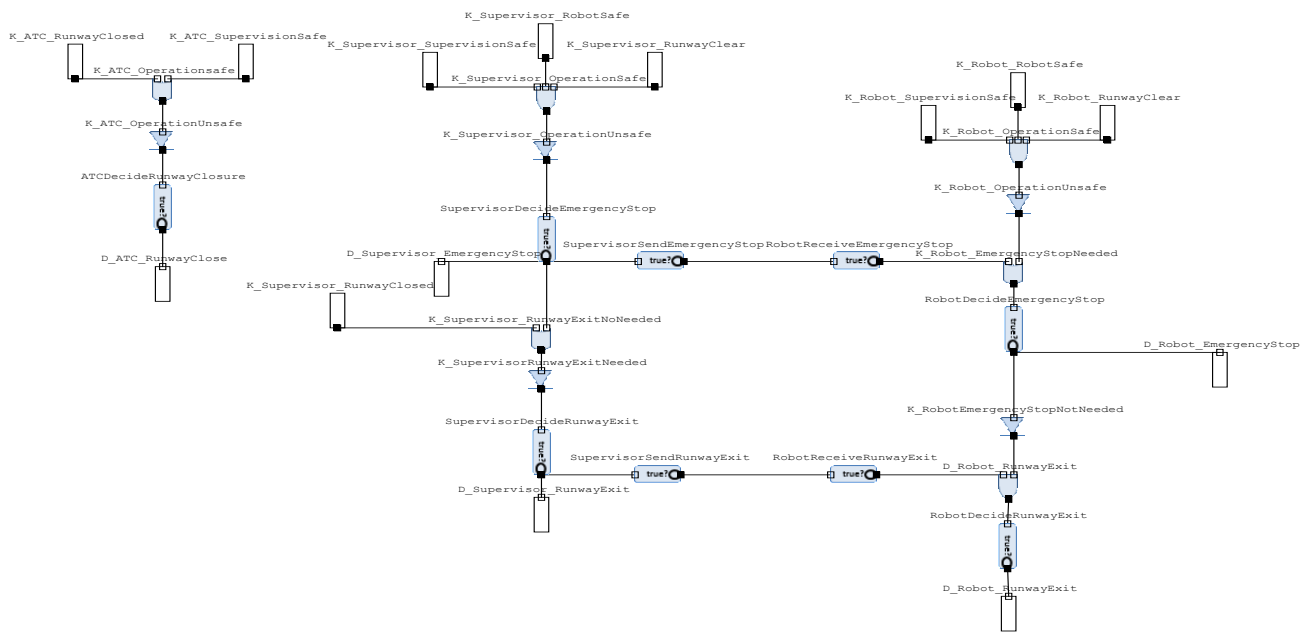
- None :

7. Equipment content

Name	Model	Equipment
D_Robot_RunwayExit	Operator/Bool/and2;1	No
ATCDecideRunwayClosure	Block/Bool/obsI;1	No
SupervisorDecideEmergencyStop	Block/Bool/obsI;1	No
RobotDecideEmergencyStop	Block/Bool/obsI;1	No
SupervisorDecideRunwayExit	Block/Bool/obsI;1	No
RobotReceiveEmergencyStop	Block/Bool/obsI;1	No
SupervisorSendEmergencyStop	Block/Bool/obsI;1	No

K_ATC_Operationsafe	Operator/Bool/or2;1	No
K_ATC_OperationUnsafe	Operator/Bool/neg;1	No
K_Supervisor_OperationSafe	Operator/Bool/and3;1	No
K_Supervisor_RunwayExitNoNeeded	Operator/Bool/or2;1	No
K_SupervisorRunwayExitNeeded	Operator/Bool/neg;1	No
K_Supervisor_OperationUnsafe	Operator/Bool/neg;1	No
K_Robot_OperationSafe	Operator/Bool/and3;1	No
K_Robot_OperationUnsafe	Operator/Bool/neg;1	No
K_Robot_EmergencyStopNeeded	Operator/Bool/or2;1	No
RobotReceiveRunwayExit	Block/Bool/obsI;1	No
SupervisorSendRunwayExit	Block/Bool/obsI;1	No
K_RobotEmergencyStopNotNeeded	Operator/Bool/neg;1	No
RobotDecideRunwayExit	Block/Bool/obsI;1	No

8. Description



Model of equipment : RobotLightInspection/MissionPhases/MonitoringV5

1. Identification

- Family name : RobotLightInspection/MissionPhases
- Model name : MonitoringV5
- Version : 1
- Created : 4/16/18 9:25 PM - admin

- Modify : 5/15/18 3:36 PM - admin
- Comment :

This version does not implement the monitoring of the obstacle persistency

2. General

- Width : 80
- Height : 80
- Icon file :
- Affichage du cadre : true

3. Ports

Name	Type	Direction	X	Y
RobotSafe	bool	in	20.0	0.0
SupervisionSafe	bool	in	30.0	0.0
RunwayClear	bool	in	40.0	0.0
RunwayClosed	bool	in	50.0	0.0
K_ATC_RunwayClosed	bool	out	4.0	74.0
K_S_RunwayClosed	bool	out	12.0	74.0
K_ATC_SupervisionSafe	bool	out	20.0	74.0
K_S_SupervisionSafe	bool	out	28.0	74.0
K_R_SupervisionSafe	bool	out	36.0	74.0
K_S_RobotSafe	bool	out	44.0	74.0
K_R_RobotSafe	bool	out	52.0	74.0
K_S_RunwayClear	bool	out	60.0	74.0
K_R_RunwayClear	bool	out	68.0	74.0

4. Icons

- None :

5. List of synchronizations

- None :

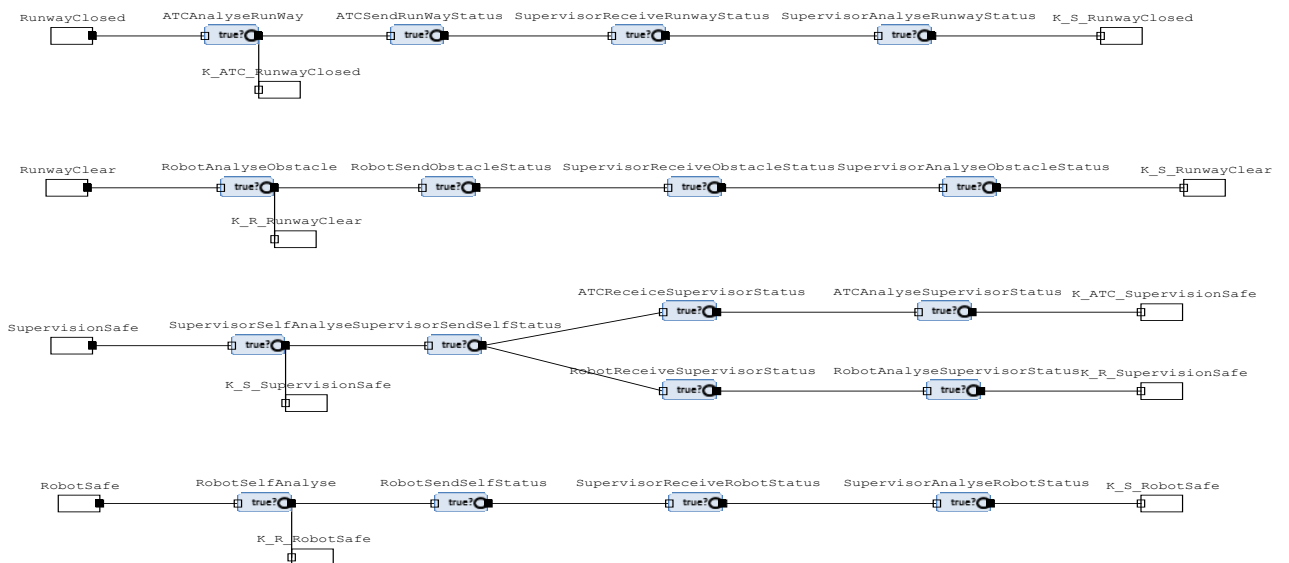
6. Code Altarica

- None :

7. Equipment content

Name	Model	Equipment
SupervisorAnalyseRobotStatus	Block/Bool/obsI;1	No
SupervisorReceiveRobotStatus	Block/Bool/obsI;1	No
SupervisorSelfAnalyse	Block/Bool/obsI;1	No
SupervisorAnalyseRunwayStatus	Block/Bool/obsI;1	No
SupervisorReceiveRunwayStatus	Block/Bool/obsI;1	No
SupervisorAnalyseObstacleStatus	Block/Bool/obsI;1	No
SupervisorReceiveObstacleStatus	Block/Bool/obsI;1	No
ATCAnalyseRunWay	Block/Bool/obsI;1	No
ATCSendRunWayStatus	Block/Bool/obsI;1	No
SupervisorSendSelfStatus	Block/Bool/obsI;1	No
ATCReceiceSupervisorStatus	Block/Bool/obsI;1	No
ATCAnalyseSupervisorStatus	Block/Bool/obsI;1	No
RobotSendSelfStatus	Block/Bool/obsI;1	No
RobotSelfAnalyse	Block/Bool/obsI;1	No
RobotAnalyseObstacle	Block/Bool/obsI;1	No
RobotSendObstacleStatus	Block/Bool/obsI;1	No
RobotReceiveSupervisorStatus	Block/Bool/obsI;1	No
RobotAnalyseSupervisorStatus	Block/Bool/obsI;1	No

8. Description



Model of equipment : RobotLightInspection/MissionPhases/ActionV5

1. Identification

- Family name : RobotLightInspection/MissionPhases
- Model name : ActionV5
- Version : 1
- Created : 4/16/18 9:29 PM - admin
- Modify : 5/15/18 3:28 PM - admin
- Comment :

3 terminal actions according to situation:

- nominal mode move / end operation
- emergency stop
- runway exit

2. General

- Width : 80
- Height : 80
- Icon file :
- Affichage du cadre : true

3. Ports

Name	Type	Direction	X	Y
D_REmergencyStop	bool	in	30.0	0.0
D_RRunWayExit	bool	in	40.0	0.0
OutRobotRunwayExit	bool	out	20.0	74.0
OutRobotEmergencyStop	bool	out	30.0	74.0
OutRobotlNormalMove	bool	out	40.0	74.0

4. Icons

- None :

5. List of synchronizations

- None :

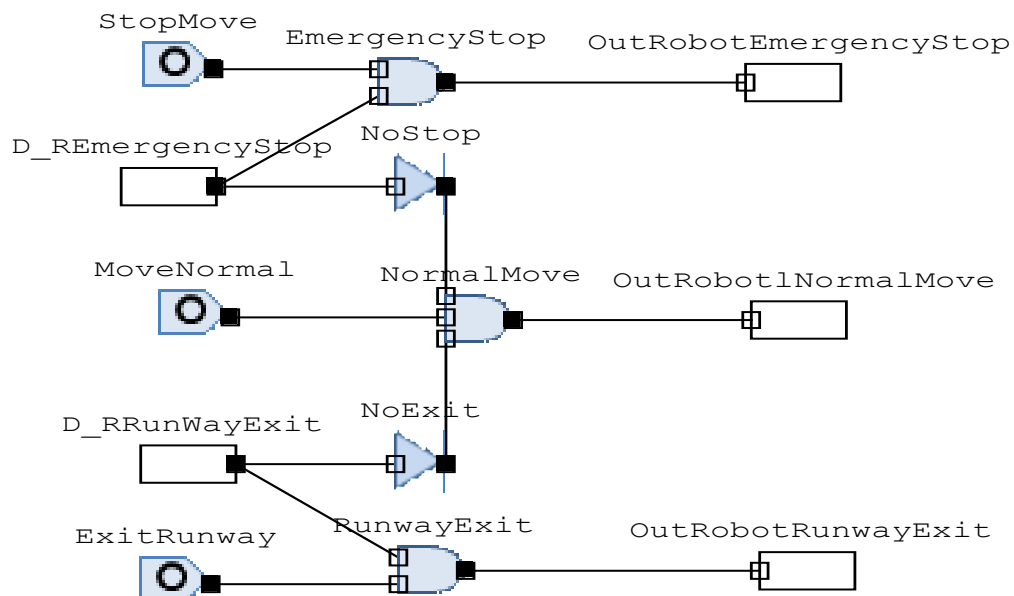
6. Code Altarica

- None :

7. Equipment content

Name	Model	Equipment
NormalMove	Operator/Bool/and3;1	No
NoStop	Operator/Bool/neg;1	No
EmergencyStop	Operator/Bool/and2;1	No
StopMove	Block/Bool/func0;1	No
ExitRunway	Block/Bool/func0;1	No
MoveNormal	Block/Bool/func0;1	No
RunwayExit	Operator/Bool/and2;1	No
NoExit	Operator/Bool/neg;1	No

8. Description



Components

Model of component : Operator/Bool/and3

1. Identification

- Family name : Operator/Bool
- Model name : and3
- Version : 1
- Created : 4/16/18 9:39 PM - admin
- Modify : 4/16/18 9:40 PM - admin

2. General

- Width : 30
- Height : 24
- Icon file : generic/and_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
O	bool	out	24.0	9.0
I1	bool	in	0.0	0.0
I2	bool	in	0.0	8.0
I3	bool	in	0.0	16.0



4. States

- None :

5. Events

- None :

6. Icons

N°	Icone	Icon file
1	generic/and_green.gif	
2	generic/and_red.gif	

7. Code Altarica

```
node Operator_Bool_and3
flow
  icone : [1,2] : out ;
  O : bool : out ;
  I1 : bool : in ;
  I2 : bool : in ;
  I3 : bool : in ;
assert
O = (I1 and I2 and I3);
icone = case {I1 and I2 and I3 : 1, else 2};
edon
```

8. List of used operators

- None :

Model of component : Operator/Bool/and2

1. Identification

- Family name : Operator/Bool
- Model name : and2
- Version : 1
- Created : 7/16/17 10:42 PM - admin
- Modify : 11/23/17 12:35 AM - admin

2. General

- Width : 30
- Height : 24
- Icon file : generic/and_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
O	bool	out	24.0	9.0
I1	bool	in	0.0	4.0
I2	bool	in	0.0	14.0



4. States

- None :

5. Events

- None :

6. Icons

N°	Icone	Icon file
1	generic/and_green.gif	
2	generic/and_red.gif	

7. Code Altarica

```
node Operator_Bool_and2
flow
  icone : [1,2] : out ;
  O : bool : out ;
  I1 : bool : in ;
  I2 : bool : in ;
assert
O = (I1 and I2);
icone = case {I1 and I2 : 1, else 2};
edon
```

8. List of used operators

- None :

Model of component : Block/Bool/funcO

1. Identification

- Family name : Block/Bool
- Model name : funcO
- Version : 1
- Created : 6/16/16 2:08 PM - admin
- Modify : 11/29/17 7:29 PM - admin

2. General

- Width : 31

- Height : 23
- Icon file : generic/source_blue_circle.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
0	bool	out	25.0	10.0



4. States

Name	Type	Value
ok	bool	true

5. Events

Name	Given laws	Frb	Fmea	Comment	Attribute
fail	constant (1.6E-4)	-	-		

6. Icons

N°	Icone	Icon file
1	generic/source_green_circle.gif	
2	generic/source_red_cross.gif	

7. Code Altarica

```

node Block_Bool_func0
  flow
    icone : [1,2] : out ;
    0 : bool : out ;
  state
    ok : bool ;
  event
    fail ;
  init
    ok := true ;
  trans
  ok|- fail -> ok:=false;
  assert
  0= ok;
  icone = case {
  ok: 1,
  else 2};

```

```
extern
  law <event fail> = constant(1.6E-4) ;
edon
```

8. List of used operators

- None :

Model of component : Block/Bool/obsI

1. Identification

- Family name : Block/Bool
- Model name : obsI
- Version : 1
- Created : 9/1/17 6:19 PM - admin
- Modify : 1/17/18 8:32 AM - admin

2. General

- Width : 50
- Height : 25
- Icon file : generic/obs_true_blue_circle.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
I	bool	in	0.0	9.0
O	bool	out	44.0	9.0





4. States

Name	Type	Value
S	Quality/Statement/OSTsf;1	ok

5. Events

Name	Given laws	Frb	Fmea	Comment	Attribute
stuck_on_true	constant(1e-4)	-	-		
stuck_on_false	constant(1e-5)	-	-		

6. Icons

N°	Icone	Icon file
1	generic/obs_true_green_circle.gif	
2	generic/obs_true_red_circle.gif	
3	generic/obs_true_green_cross.gif	
4	generic/obs_true_red_cross.gif	

7. Code Altarica

```
node Block_Bool_obsI
flow
  icone : [1,4] : out ;
  I : bool : in ;
  O : bool : out ;
state
  S : Quality_Statement_OStSf ;
event
  stuck_on_true, stuck_on_false ;
init
  S := ok ;
trans
S=ok |- stuck_on_true -> S:= stuck_true;
S=ok |- stuck_on_false -> S := stuck_false;
assert
O = case {S=ok : I,
          S=stuck_true : true,
          else false };
icone = case { S=ok and I: 1,
              S=ok and (not I) : 2,
              S=stuck_true : 3,
              else 4};
extern
  law <event stuck_on_true> = constant(1e-4) ;
  law <event stuck_on_false> = constant(1e-5) ;
edon
```

8. List of used operators

- None :

Model of component : Operation/Task_alone_perfo/ExternalCondition

1. Identification

- Family name : Operation/Task_alone_perfo
- Model name : ExternalCondition
- Version : 1
- Created : 5/9/16 1:52 PM - admin
- Modify : 10/6/16 2:21 PM - admin

2. General

- Width : 22
- Height : 15
- Icon file : A320/triangle_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
Out_cond	bool	out	8.0	0.0



4. States

Name	Type	Value
cond	bool	true

5. Events

Name	Given laws	Frb	Fmea	Comment	Attribute
is_false	exponential(0.001)	-	-		

6. Icons

N°	Icone	Icon file
1	A320/triangle_green.gif	
2	A320/triangle_red.gif	

7. Code Altarica

```
node Operation_Task_alone_perfo_ExternalCondition
flow
  icone : [1,2] : out ;
```

```
Out_cond : bool : out ;
state
  cond : bool ;
event
  is_false ;
init
  cond := true ;
trans
cond=true |- is_false -> cond := false;
assert
Out_cond = cond ;
icone = case{
  cond:1,
  else 2};
extern
  law <event is_false> = exponential(0.001) ;
  attribute DassaultSpecialCtrlPeriod( <event is_false> ) = 9.877E08;
edon
```

8. List of used operators

- None :

Model of component : Operator/Bool/neg

1. Identification

- Family name : Operator/Bool
- Model name : neg
- Version : 1
- Created : 7/16/17 10:43 PM - admin
- Modify : 11/22/17 11:38 PM - admin

2. General

- Width : 24
- Height : 29
- Icon file : generic/neg_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
O	bool	out	18.0	12.0
I	bool	in	0.0	12.0



4. States

- None :

5. Events

- None :

6. Icons

N°	Icone	Icon file
1	generic/neg_green.gif	
2	generic/neg_red.gif	

7. Code Altarica

```
node Operator_Bool_neg
flow
  icone : [1,2] : out ;
  O : bool : out ;
  I : bool : in ;
assert
  O = not I;
icone = case {not I: 1,
              else 2};
edon
```

8. List of used operators

- None :

Model of component : Operator/Bool/and4

1. Identification

- Family name : Operator/Bool
- Model name : and4
- Version : 1
- Created : 4/17/18 3:08 PM - admin

- Modify : 4/17/18 3:11 PM - admin

2. General

- Width : 30
- Height : 24
- Icon file : generic/and_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
O	bool	out	24.0	9.0
I1	bool	in	0.0	0.0
I2	bool	in	0.0	6.0
I3	bool	in	0.0	12.0
I4	bool	in	0.0	18.0



4. States

- None :

5. Events

- None :

6. Icons

N°	Icone	Icon file
1	generic/and_green.gif	
2	generic/and_red.gif	

7. Code Altarica

```
node Operator_Bool_and4
flow
  icone : [1,2] : out ;
  O : bool : out ;
  I1 : bool : in ;
  I2 : bool : in ;
  I3 : bool : in ;
  I4 : bool : in ;
assert
```

```
O = (I1 and I2 and I3 and I4);  
icone = case {I1 and I2 and I3 and I4: 1, else 2};  
edon
```

8. List of used operators

- None :

Model of component : Operator/Bool/or2

1. Identification

- Family name : Operator/Bool
- Model name : or2
- Version : 1
- Created : 7/16/17 10:47 PM - admin
- Modify : 11/23/17 12:33 AM - admin

2. General

- Width : 28
- Height : 24
- Icon file : generic/or_blue.gif
- Affichage du cadre : false

3. Ports

Name	Type	Direction	X	Y
O	bool	out	22.0	9.0
I1	bool	in	0.0	4.0
I2	bool	in	0.0	14.0



4. States

- None :

5. Events

- None :

6. Icons

N°	Icone	Icon file
1	generic/or_green.gif	
2	generic/or_red.gif	

7. Code Altarica

```
node Operator_Bool_or2
  flow
    icone : [1,2] : out ;
    O : bool : out ;
    I1 : bool : in ;
    I2 : bool : in ;
  assert
    O = (I1 or I2);
    icone = case {I1 or I2 : 1,
      else 2};
  edon
```

8. List of used operators

- None :

Types

Enumerated types

1. Model of the type : Quality/Statement/OStSf

Identification

- Family name : Quality/Statement
- Model name : OStSf
- Version : 1
- Created : 11/22/17 12:37 PM - admin
- Modify : - admin

Definition

Field

ok
stuck_true
stuck_false