Full HCPN Model of Train Autonomous Routes

I. Declarations

```
1) colset SwitchPos= with position|reverse timed;
2) colset orders =with Order|Convert|Lock|Occupy|Release timed;
3) colset Command= product SwitchPos*orders timed;
4) colset StateRes=with free|lock|occupy|convert|release timed;
5) colset ResourceSwitch = product SwitchPos*StateRes timed;
6) colset ResourceResult = product ResourceSwitch*orders timed;
7) colset TypeRes= with track|switch;
8) colset Approach = product TypeRes*INT;
9) colset ApproachList = list Approach timed;
10) var sw,sw':SwitchPos;
11) var or:orders;
12) var sta:StateRes;
13) var n,num,num1,num2:INT;
14) var approa:ApproachList;
15) fun TR_Time()=discrete(500, 2000);
16) fun TT_Time()=round(1000.0*exponential(9.2103));
17) fun G_Time()=round(1000.0*exponential(26.0802));
18) fun T_Handle()=discrete(0, 500);
19) fun R_Handle()=discrete(100, 300);
20) fun I_Handle()=discrete(0, 200);
21) val ChangePosition=5500;
22) val CaNewMA=1000;
```

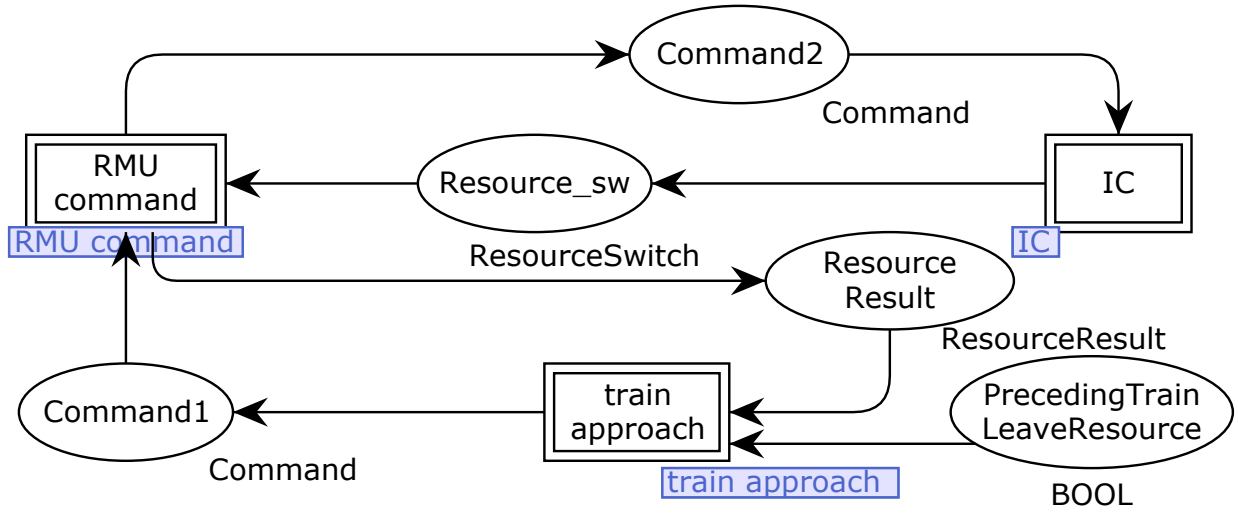

Fig. 1. Top-Level

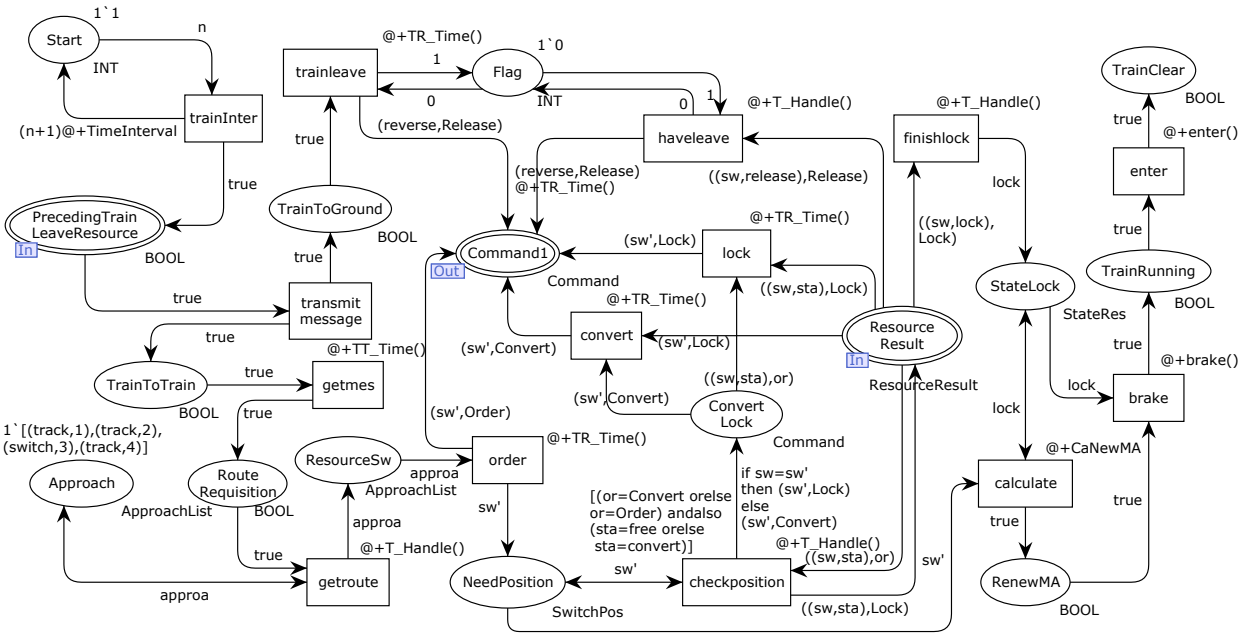

Fig. 2. train approach

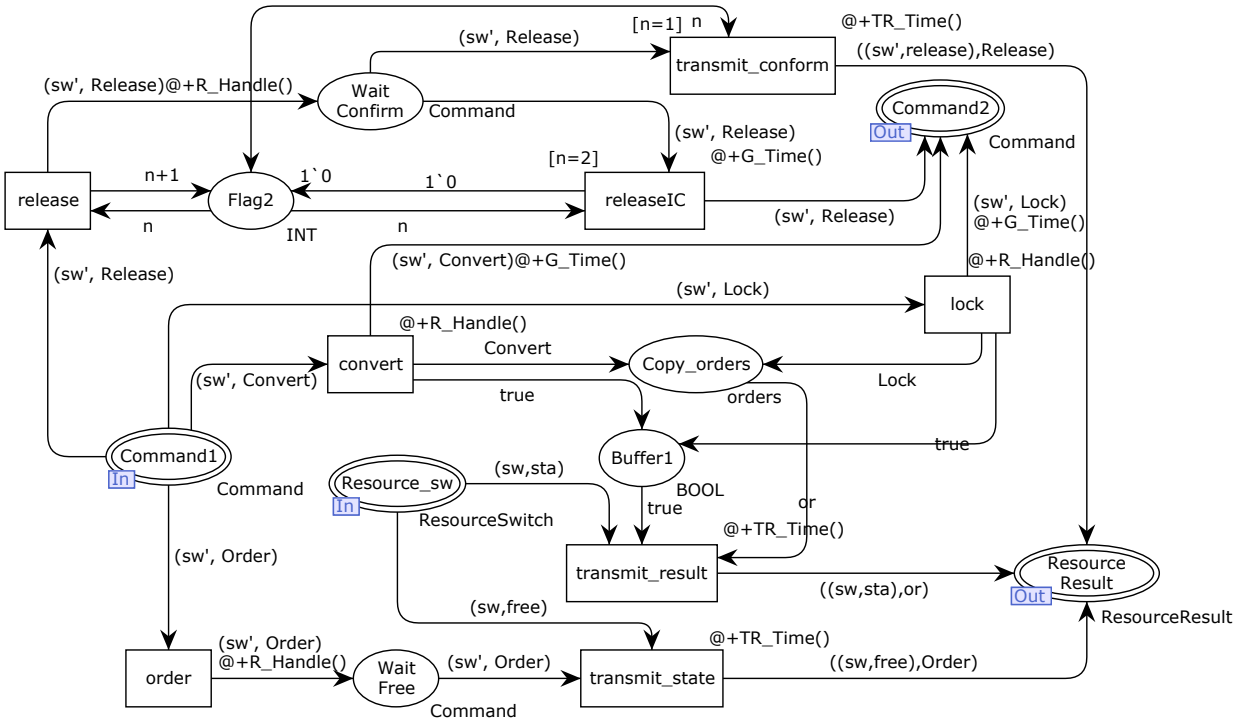

Fig. 3. RMU command

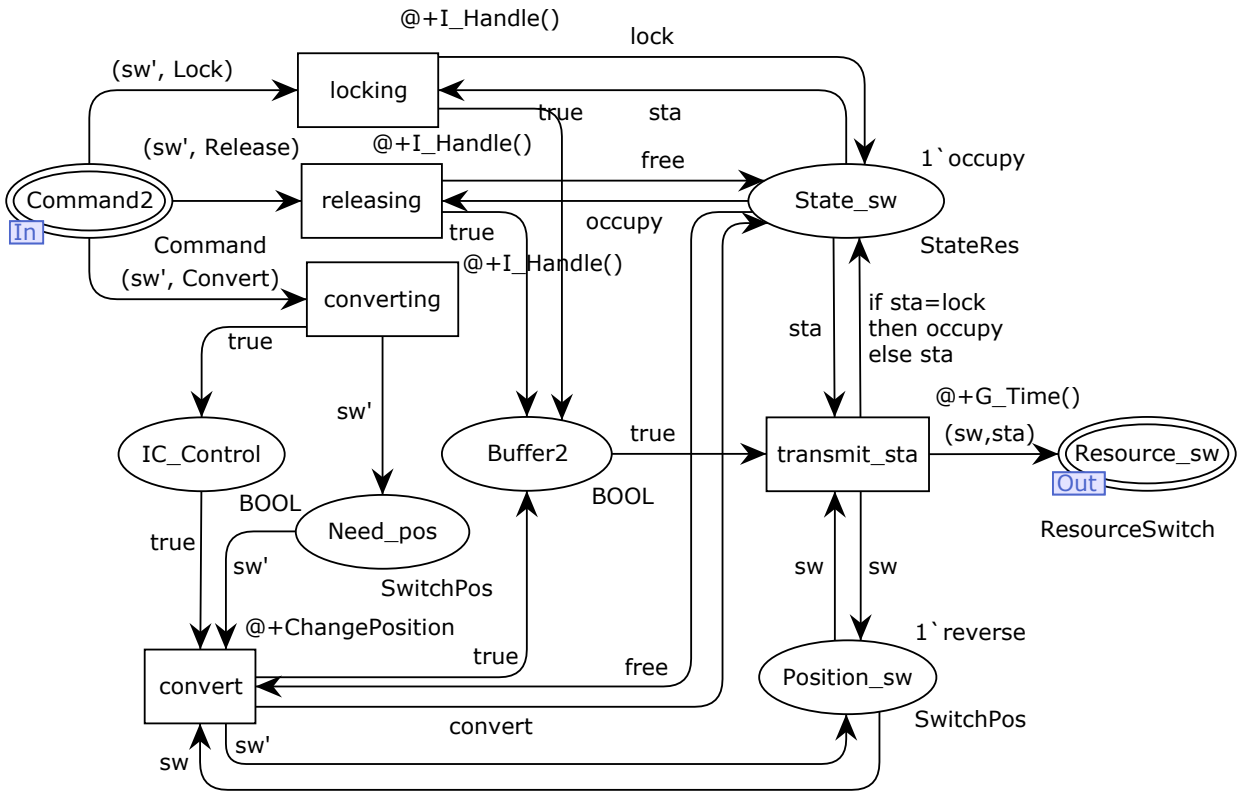
@+I_Handle()
lock
(sw', Lock)
locking
true
sta
(sw', Release)
@+I_Handle()
free
1`occupy
Command2
In
releasing
State_sw
occupy
true
StateRes
Command
@+I_Handle()
(sw', Convert)
converting
if sta=lock
then occupy
else sta
sta
true
@+G_Time()
sw'
IC_Control
Buffer2
true
transmit_sta
(sw,sta)
Resource_sw
Out
BOOL
BOOL
ResourceSwitch
Need_pos
true
sw'
SwitchPos
sw
sw
@+ChangePosition
1`reverse
true
free
convert
Position_sw
convert
SwitchPos
sw'
sw

Fig. 4. IC