TP2: creation of a BPMN to PN transformation tool

The objective of this practical work is the development of a graphical tool for the transformation of Business Process Model and Notation (BPMN) to Petri Nets (PNs). This approach is based on graph transformation.

- Practical work contains three steps:

1- Meta-modeling of BPMN source and PNs target models

2- Proposal of the rules of transformation (graph grammar).

3- Running the transformation on BPMN.

1. Meta-modeling of BPMN :

- ***BPMN.model***: This is the abstract syntax of BPMN.

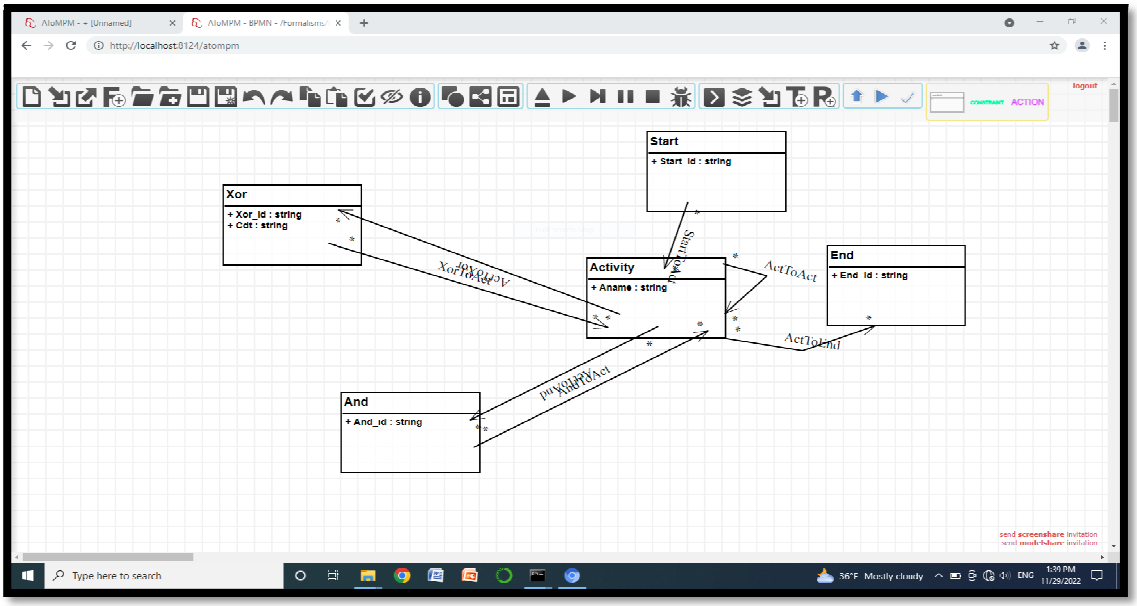


Figure1: Abstract syntax of BPMN.

- ***BPMN.defaultIcons.model*** : This is the concrete syntax of BPMN.

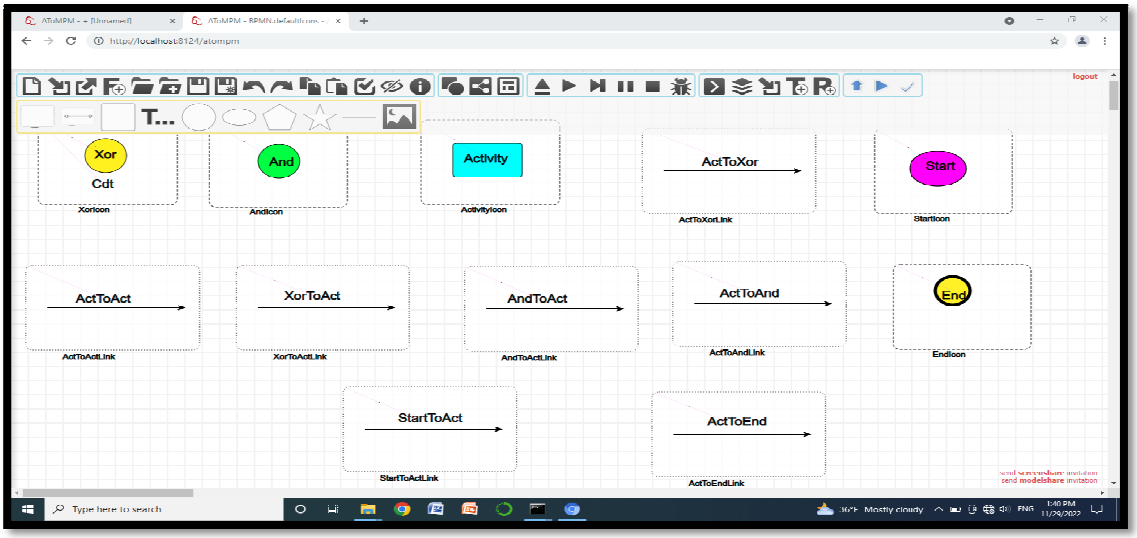


Figure2: Concrete syntax of BPMN.

2. Rules for BPMN to PNs transformation

In this part, you use the Transformation Editor Toolbar to create a transformation rule or process. The idea of BPMN to PNs transformation composed of three categories:

- **The creation rules (5 rules)**
  - Activities are transformed into transitions.
  - XOR connectors are transformed into places.
  - The AND connectors are transformed into places.
  - Start and End are transformed into places.

- **The connection rules (7 rules)**

- **Deletion rules (5 rules):**
  - Delete activities, XOR connectors, AND connectors, Start and End.

In order to implement this transformation you must use the 17 transformation rules

2.1.The creation rules

Activity to transition

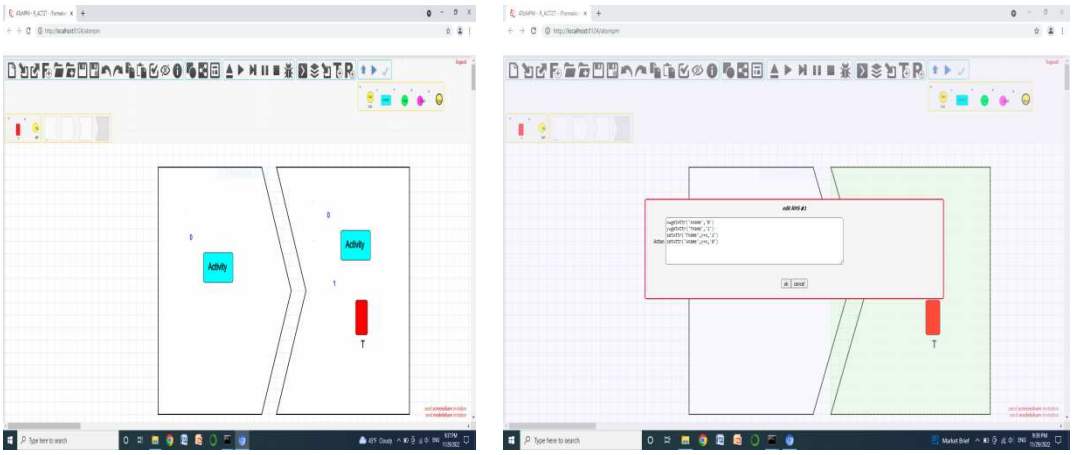


Figure3: Activity to transition

Start *** END**

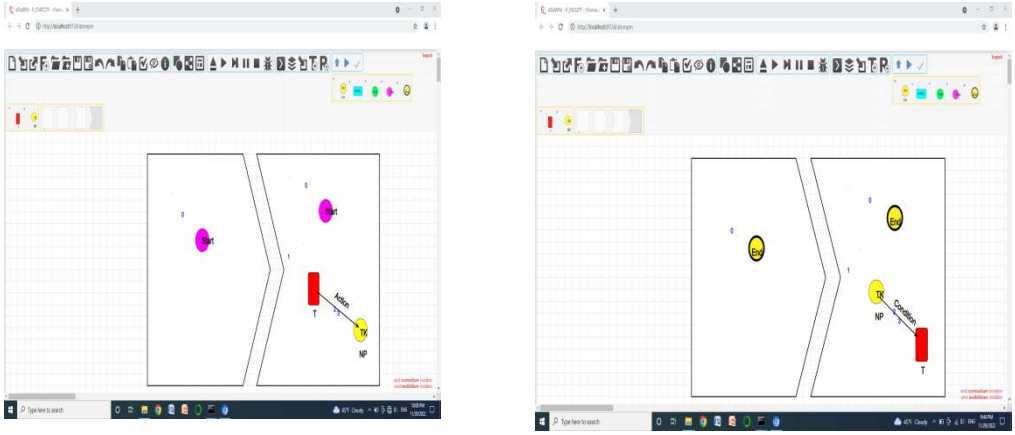


Figure4 : Start and End

XOR **AND**

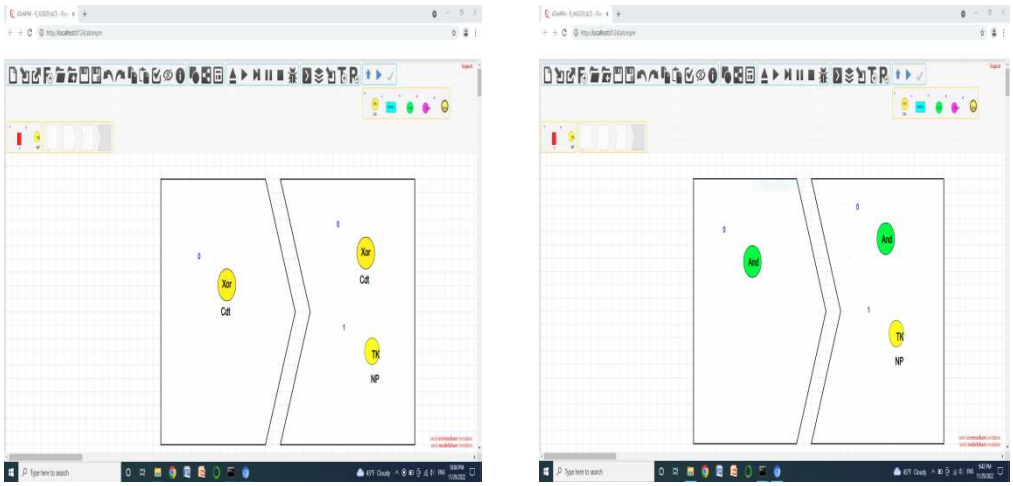


Figure5: XOR and AND

2.2.The connection rules.

A- Act2Act

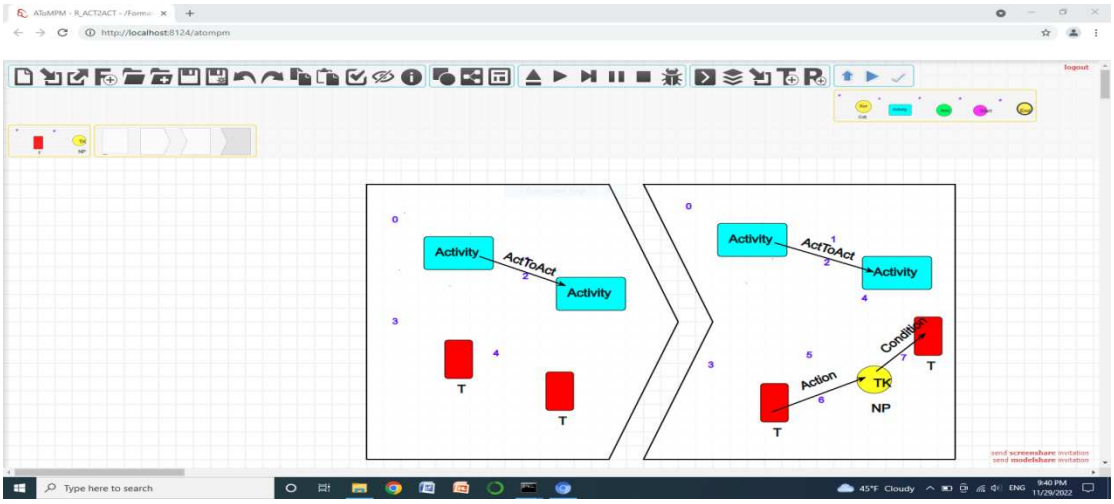


Figure06 : Rule Act2Act

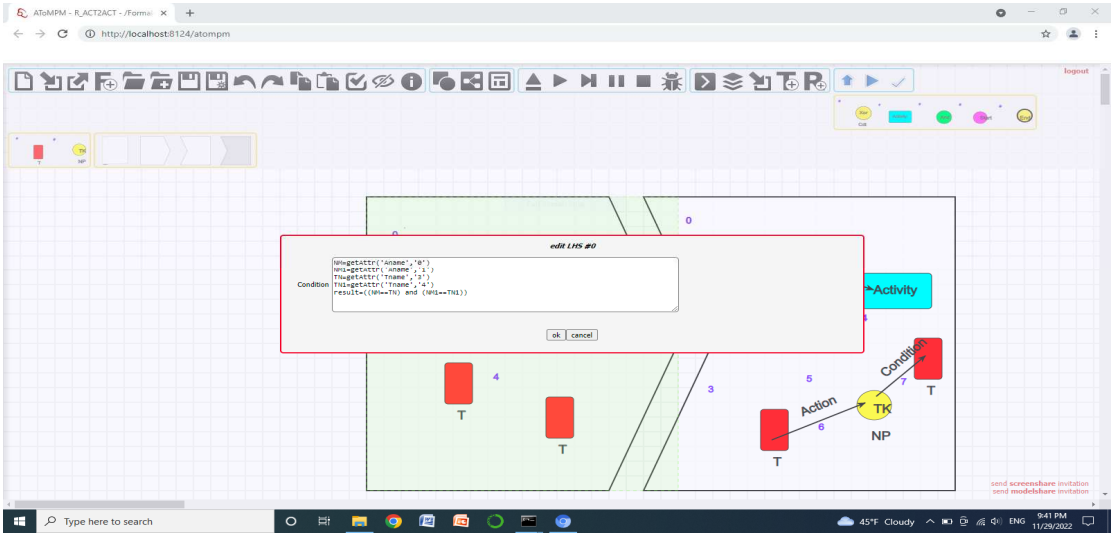


Figure07: The condition part of the rule Act2Act

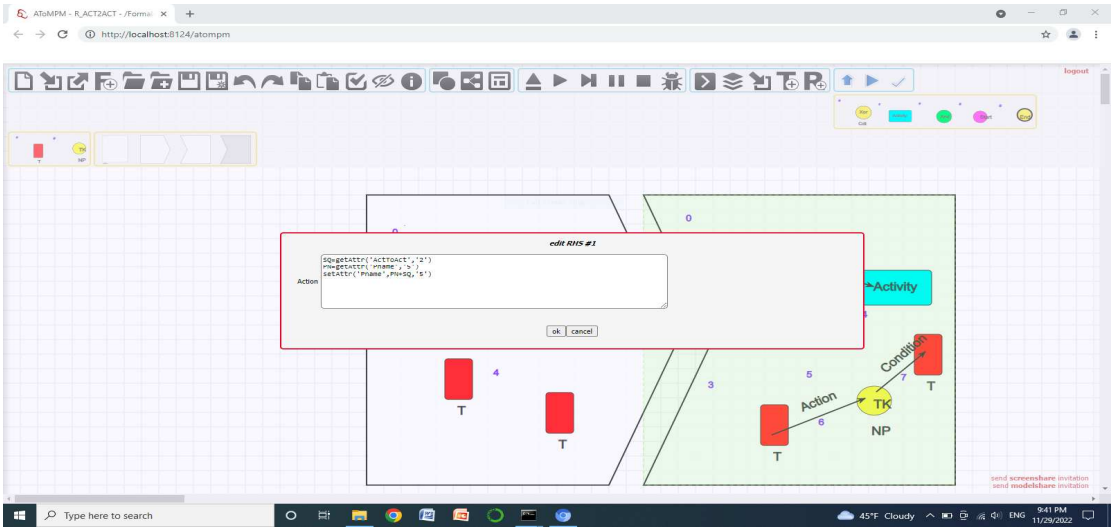


Figure08: The action part of the rule Act2Act

B- Act2And and And2Act

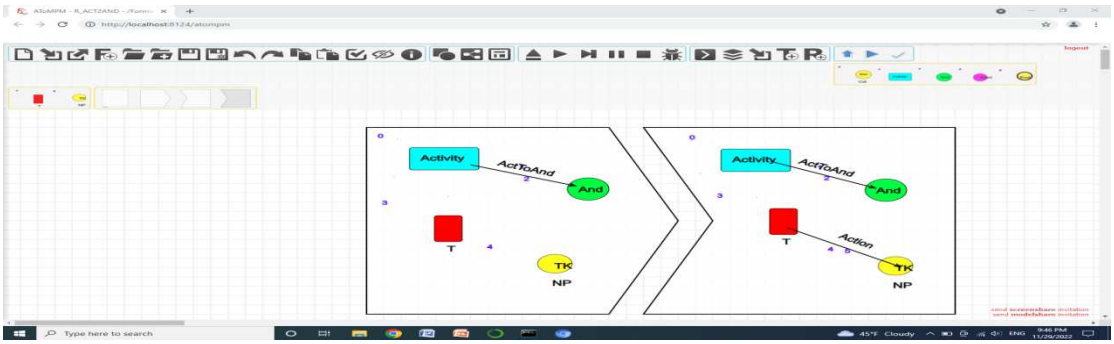


Figure09 : Rule Act2And

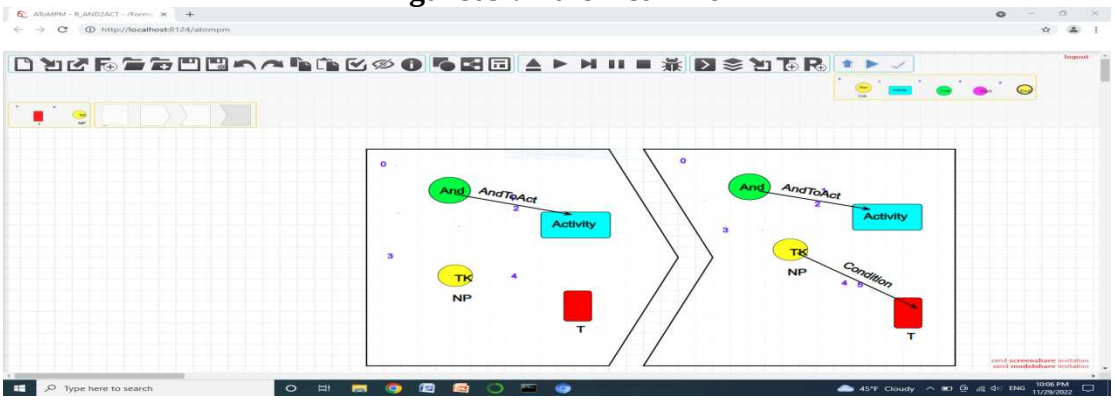


Figure10 : Rule And2Act

C- Act2Xor and Xor2Act

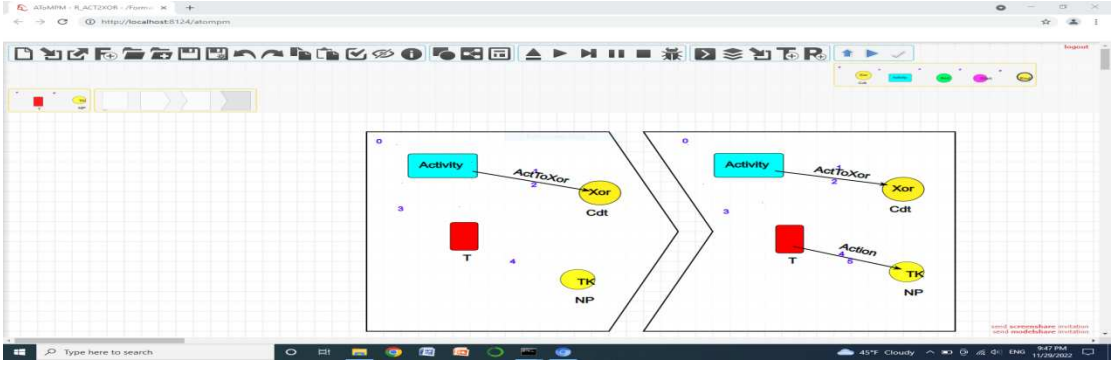


Figure11 : Rule Act2Xor