## Generating Simulated Event Log:

In this project, the goal is to generate an event log by simulating the discovered petri net from the real event log. The real event log is being transformed into the enriched Petri net including all the information (time, the flow of activities, …). The discovered Petri net and information will be used to generate an event log. The user can change some information such as service time of activities or arrival rate of the process and perform the simulation (generating an event log) for a specific period of time.

1. Import an event log (.csv and .xes)
2. Discover process model in the form of Petri net
    a. Choices, redundancy, and sequences should be clear for simulation
3. Enrich the discovered Petri net with the performance information
    a. Extract arrival rate of the process
    b. Extract all activities service time
    c. Extract the number of resources for each activity
    d. All other needed information for simulation
4. Set a system clock, which is set to the start time of the simulation (by user)
5. Set number of cases to be run and generated (by user)
6. Generate cases and service time based on the event log (random function following real event log)
7. Giving the option to user to change the parameters
8. Generate a simulated event log (.csv file)

## Reference Material:

- Reference:
    - https://westergaard.eu/2010/07/cpn-simulation-in-prom/
    - A. Rozinat, R.S. Mans, M. Song, and W.M.P. van der Aalst *International Journal on Software Tools for Technology Transfer (STTT), Volume 10, Number 1, Pages 57-74*
- Youtube video on how to use PRoM plugin:
    - https://www.youtube.com/watch?v=T31sLvfQD0E&feature=youtu.be
- PRoM Package
    - For idea (accepting CPN model from CPN tools)
        - https://svn.win.tue.nl/repos/prom/Packages/CPNet
- Discrete event simulation library
    - Simpy
        - https://simpy.readthedocs.io/en/latest/index.html
- Technical aspects:
    - Coding in Python using pm4py as the basic
    - Expectations:
        - Getting the algorithm/logic is important.
        - Generating simulated event logs which follow the real process
    - Do not reinvent the wheel. Use the existing pm4py for the steps that you need.