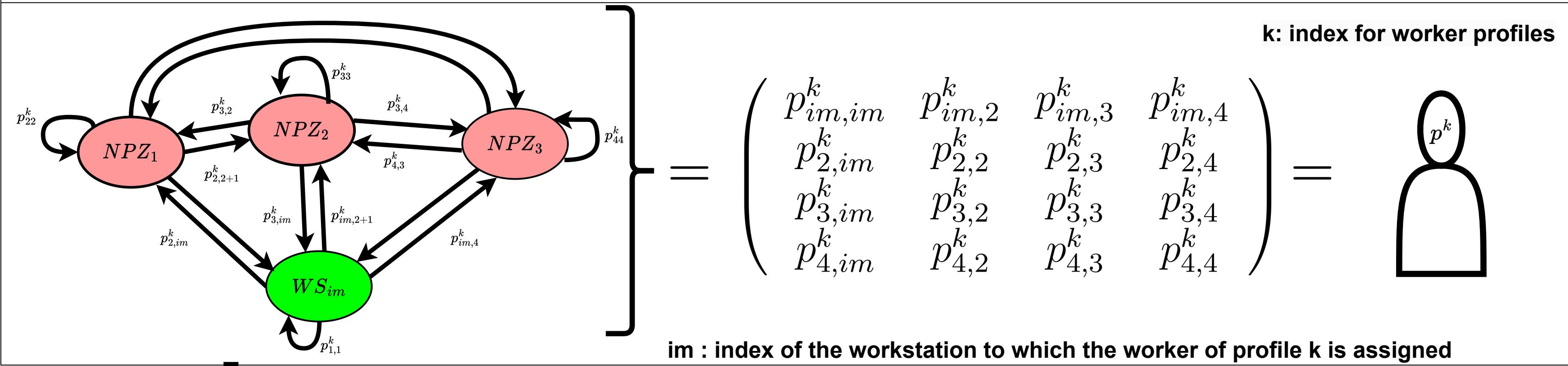
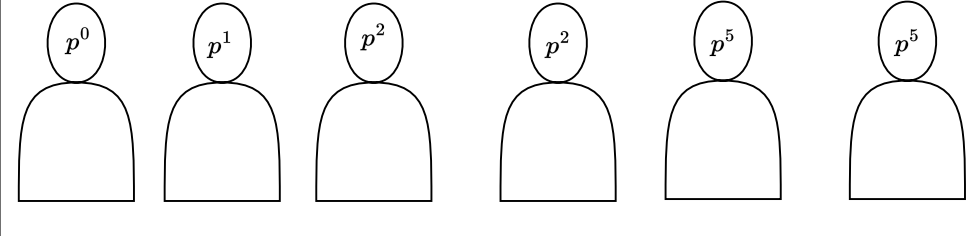


Incorporating Uncertain Human Behaviour in Production Scheduling for Enhanced Productivity in Industry 5.0 context

Model 1 of simulation: Markov process (NPZ :Non-Productive , WS : workstation )

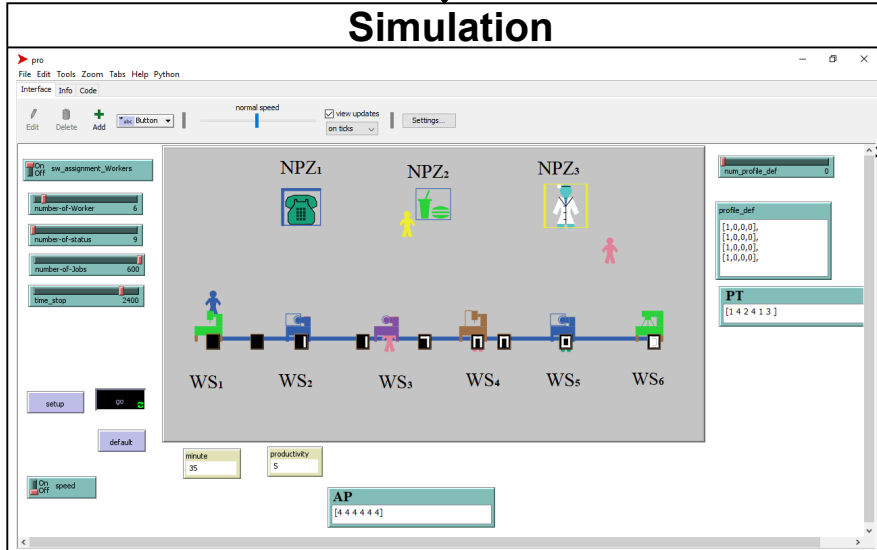


Example of a scenario



Manual assignment

Simulation



Model 2 behavior of workers

$\alpha_k$ : average continuous working time of the worker k

$\gamma_k$ : average absence time of the worker k after a period of working time

Mixed Integer Nonlinear Programming model

Optimal solution:  
1- Workers assignment  
2- Production tasks scheduling

Max throughput