Team C-rious

Milestone 2

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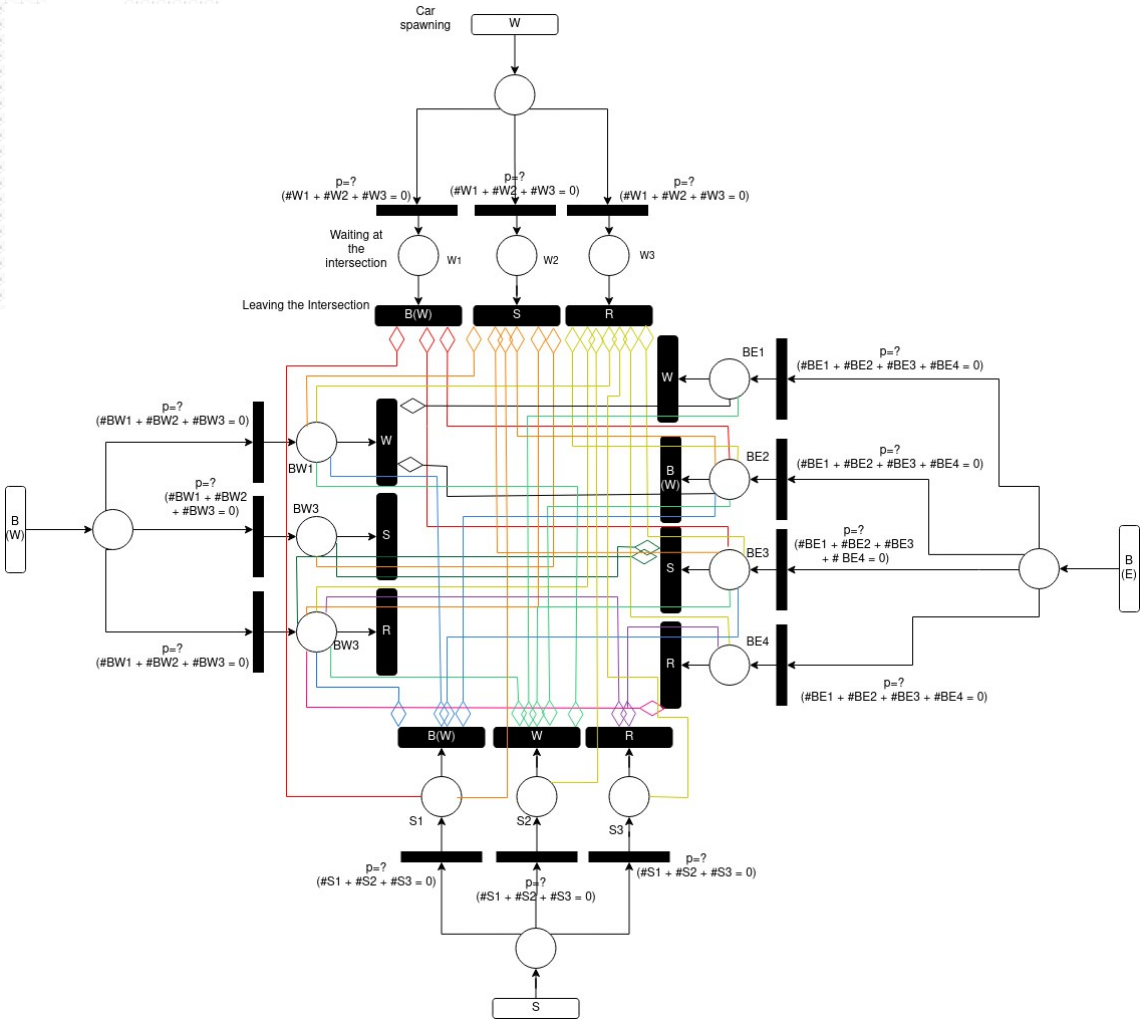
Stochastic Petri net model



Tool : draw.io

Stochastic Petri net model

- Vehicles come from Braunschweiger Straße West (B(W))*, Schöninger Straße (S)*, Wolfenbüttler Straße (W)* or Braunschweiger Straße East (B(E))
  *(* - Two-way Roads)*
- Vehicles cannot come from Rottendorfer Straße (R) as it's One-way.
- Every street except Rottendorfer Straße (R) can spawn a vehicle.

  The vehicle then determines where it wants to travel based on a probability and only if no other vehicle is waiting (as guaranteed by the guardian function).

  If the vehicle is not held back by another car (which is allowed to move first) then it immediately leaves the intersection.

Assumptions and Justifications

- Simplification: The vehicle leaves the system without using time transition because the petri net becomes way more complex without gaining anything useful from it.
- Everything on the street is a vehicle.
- Pedestriants are not considerd into our simulation. As it implies to a small amount from the existing data.
- We also assume that our vehicle will drive according to the rules which is not always a given.

Quantities to be Measured

- Troughput (number of units)
- Waiting time
- Inter-arrival time
- Total turns in any direction

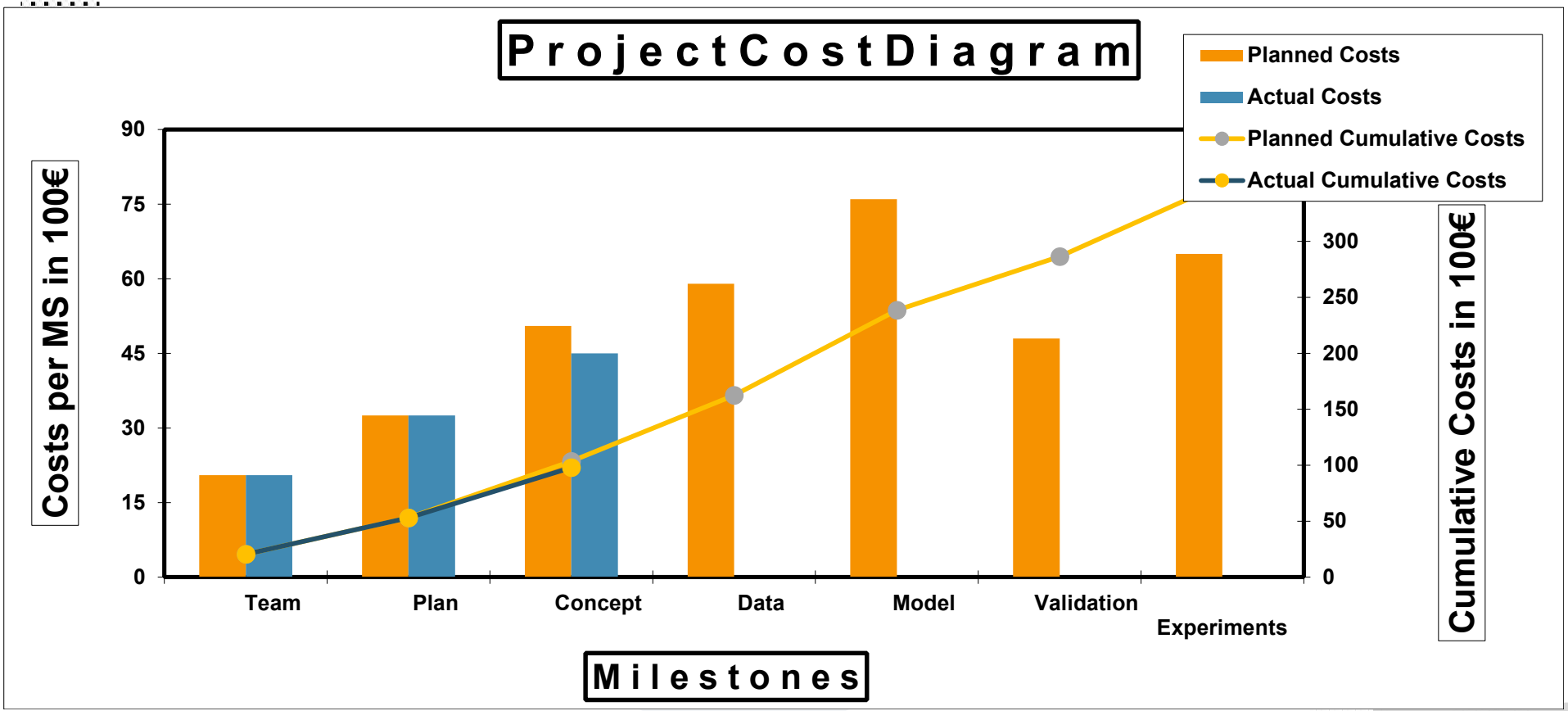
Quantities in simulation results

- Troughput (number of units)
- Waiting time
- Total time

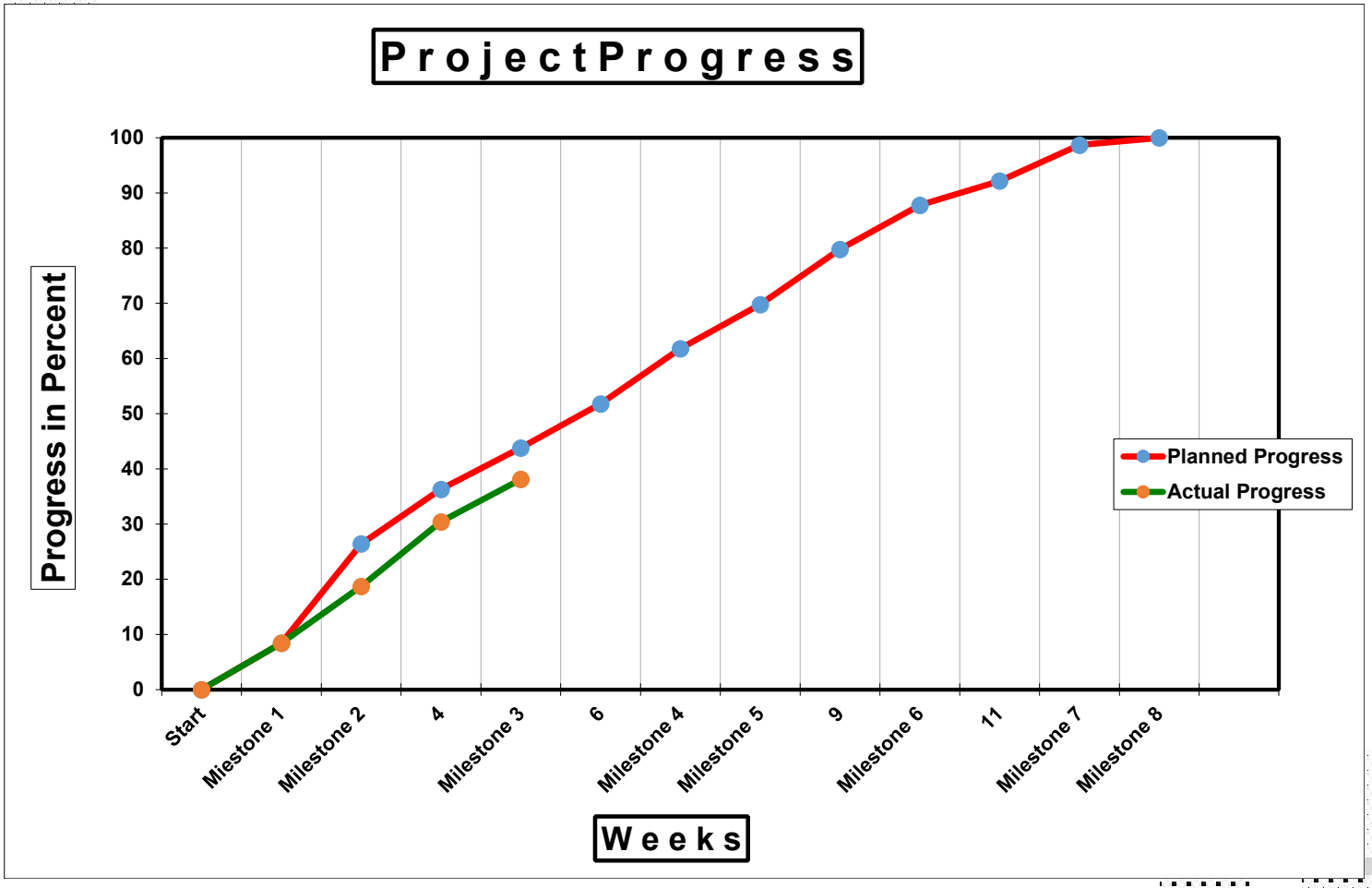
Experiments List

1) Current System VS Five-way roundabout
   (waiting time and troughput)
2) Five-way roundabout VS Four-way roundabout
   (waiting time and troughput)
3) Current System VS both Roundabouts:
   Which can clear a traffic jam fastest?
4) With x* the amound of traffic, Current System VS Five-way roundbaout
   (waiting time and troughput)

Cost Analysis



Project Progress



Lessons Learned

- Conceptual Model is often an iterative process that involves feedback
- Different kind of plans are good for different things
- Keep the model open, to integrate any new idea (later into the project)
- A better conceptual model reduces labour load by reducing unnecessary data to examine and work with.

Any Questions?