



Team C-rious

Milestone 2

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Content

- Stochastic Petri net model
- Assumptions and Justifications
- Quantities to be Measured
- Quantities in simulation result
- Experiments List
- Cost Analysis and progress
- Lessons Learned

The diagram illustrates a multi-stage pipeline with feedback loops. It starts with a block labeled B and W . The output of this block goes into a circular node. From this node, three paths emerge, each leading to a thick vertical bar representing a delay or storage element. The top path is labeled $p=?$ and $(\#BW1 + \#BW2 + \#BW3 = 0)$. The middle path is labeled $p=?$ and $(\#BW1 + \#BW2 + \#BW3 = 0)$. The bottom path is labeled $p=?$ and $(\#BW1 + \#BW2 + \#BW3 = 0)$. Each path then leads to a circular node labeled $BW1$, $BW3$, and $BW3$ respectively. These nodes are part of a larger system enclosed in a red box, which contains multiple feedback loops represented by colored lines (yellow, green, blue, purple) connecting the outputs back to the inputs of the BW nodes.

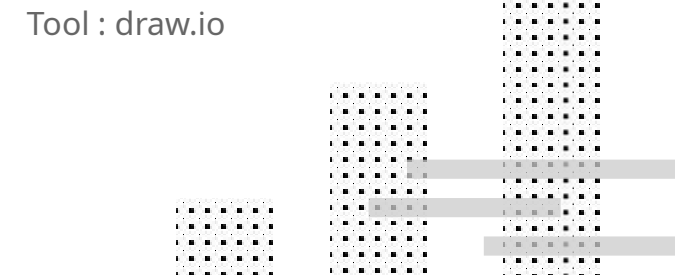


Figure 1: A 3D visualization of the 1000 Genomes Project data. It shows three stacked grids of colored dots representing genetic data from different populations. The top grid is labeled 'YRI' (Yoruba in Ibadan, Nigeria), the middle 'CEU' (European), and the bottom 'JPT' (Japanese). Each grid has 1000 columns and 1000 rows. The colors represent different alleles, with a legend on the right showing a color scale from 0 to 1000.

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.
- Pedestrians are not considered 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

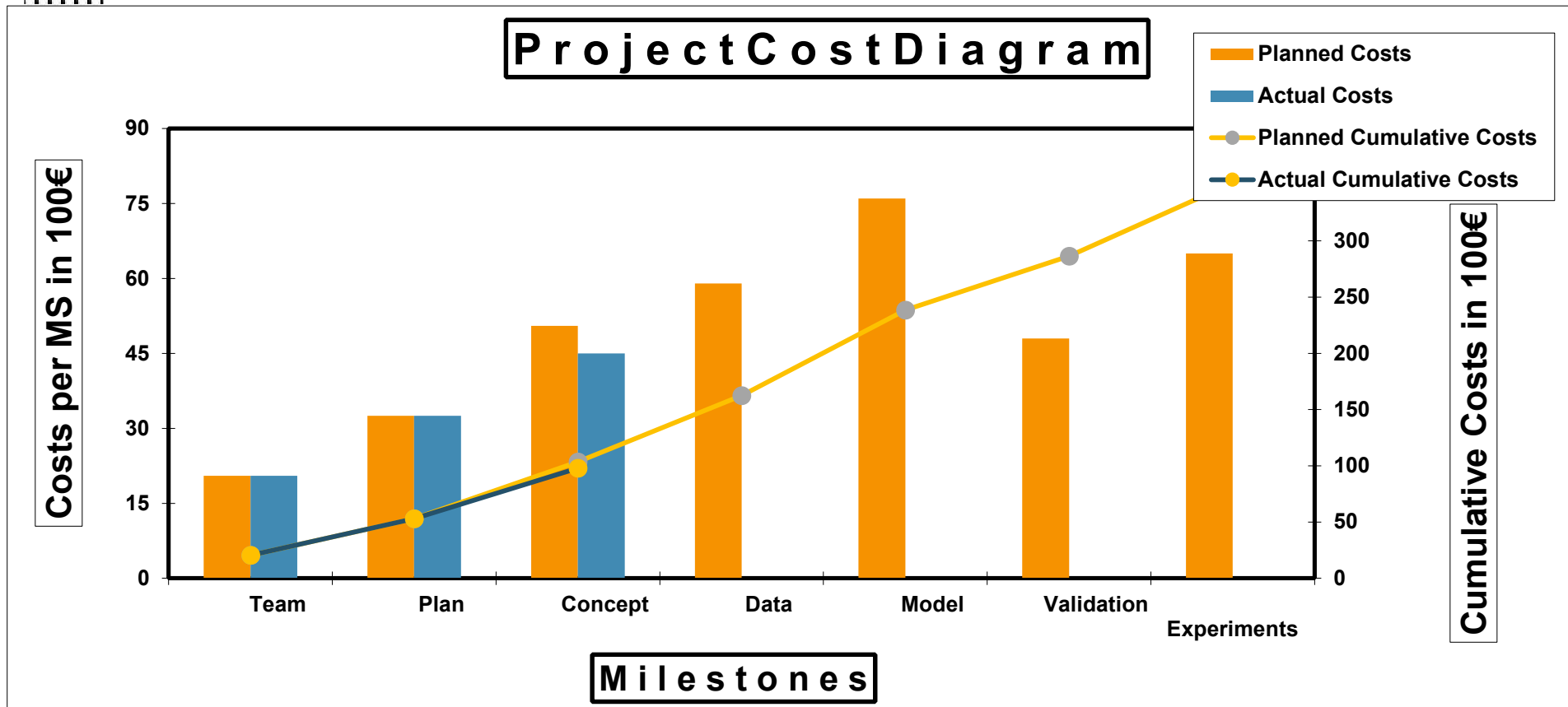
Quantities in simulation results

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

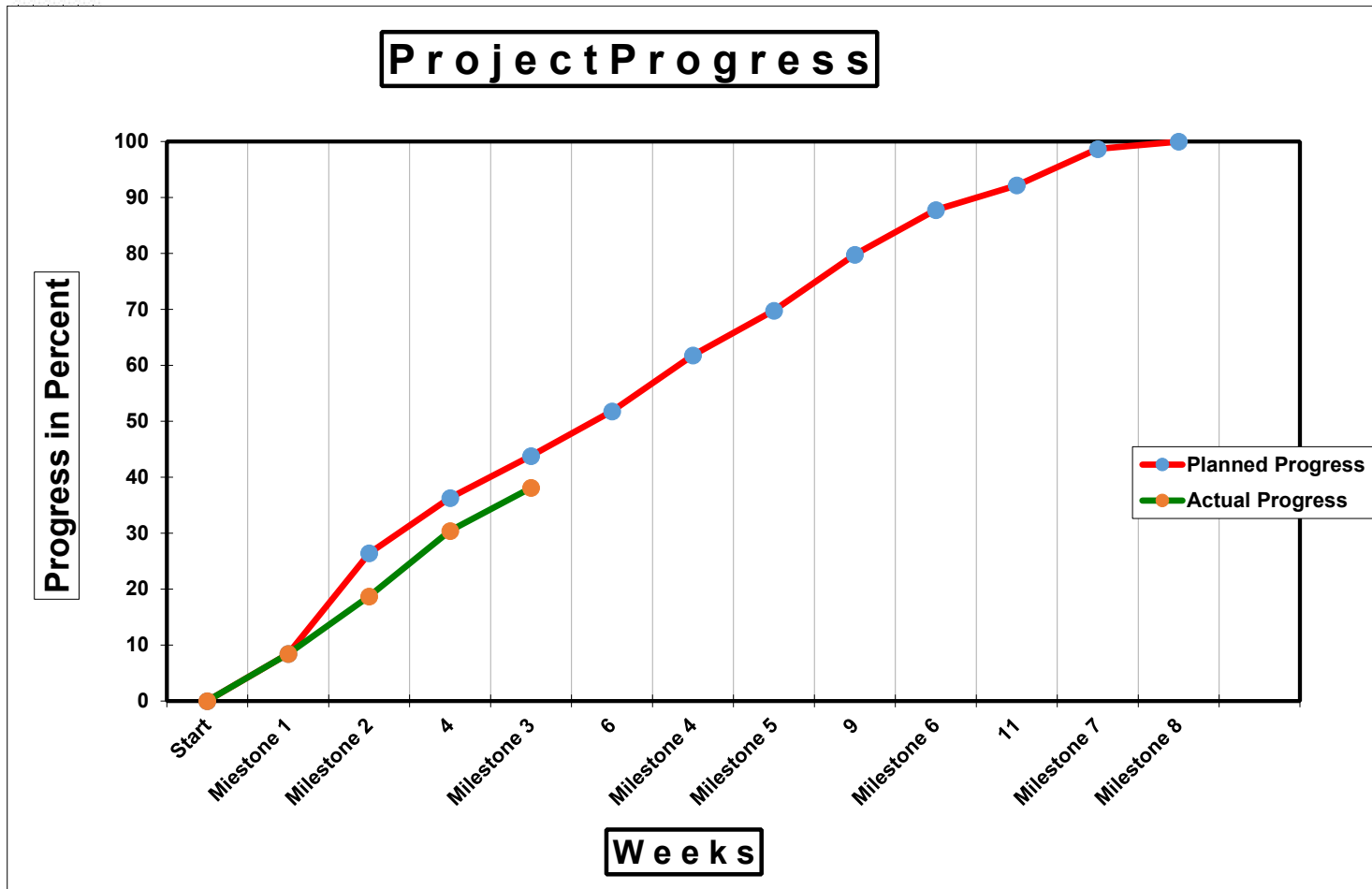
Experiments List

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

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?

