

Developing & Deploying Conceptual Design Tools for Factory Planning

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The Trolley Problem



Centre for Modelling and Simulation - independent digital engineering consultancy based at Bristol & Bath Science Park.

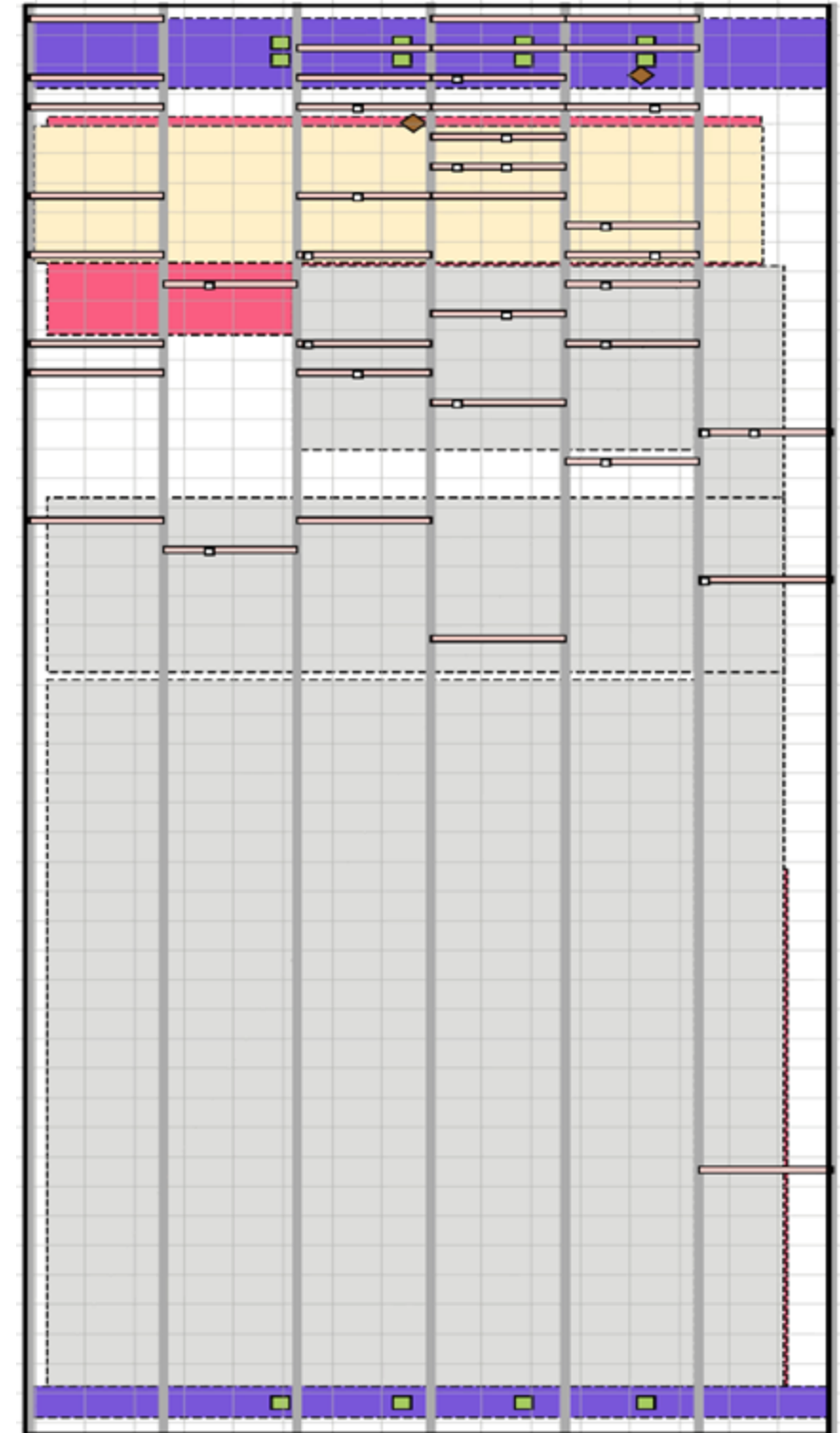
Collaborations across industry, academia and research organisations.

Recent project with commercial clients – aim to demonstrate viability of a novel overhead gantry crane concept to deliver components across a factory.

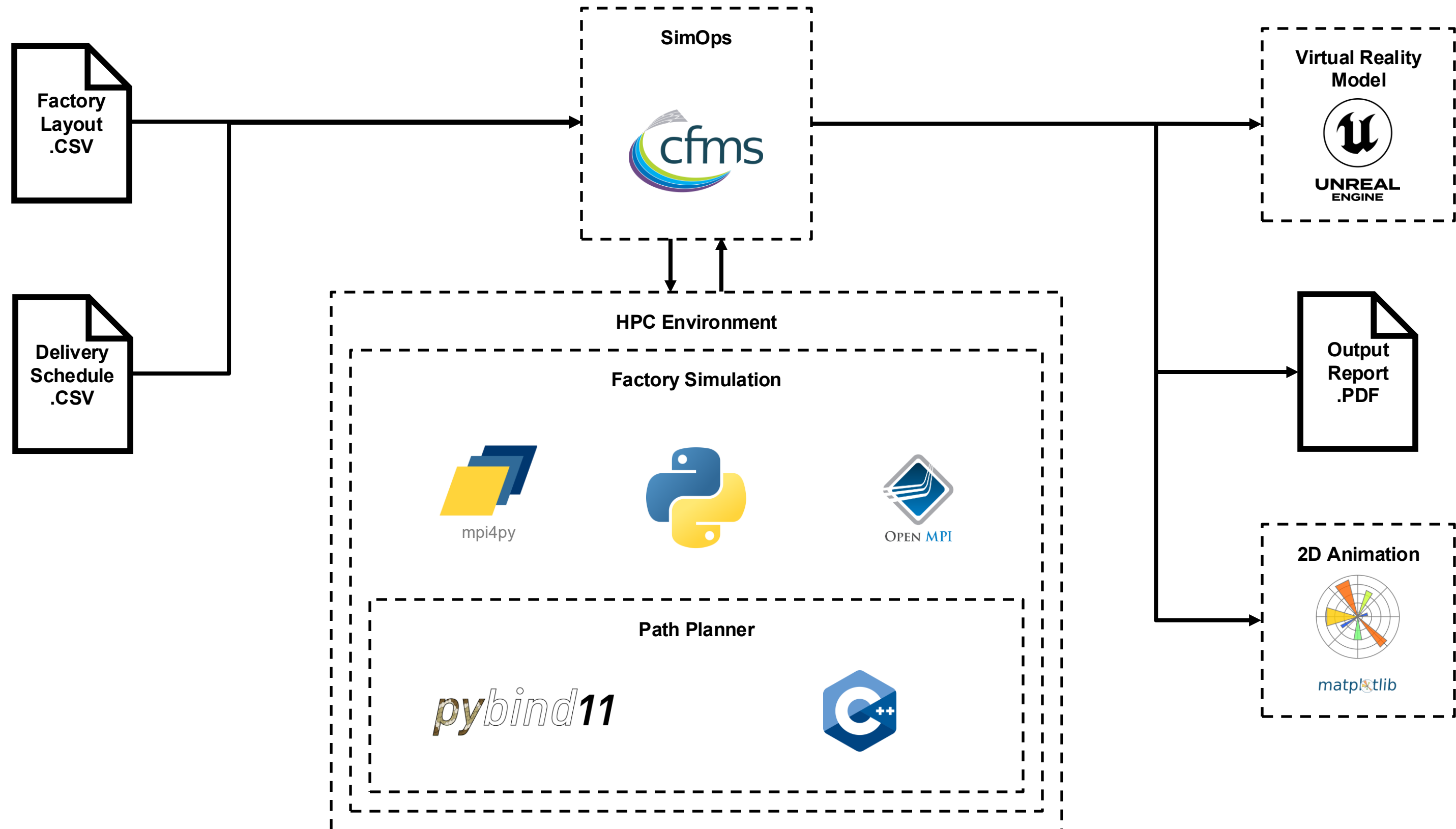
System made up of dozens of cranes (trolleys) - each of which can move *from* and *to* any point in the factory.

Need to plan hundreds of simultaneous movements for each delivery schedule, subject to numerous constraints.

Clients soon realised that solving this problem by hand is unfeasible – e.g. more than 10^{75} possible initial layouts!



Solution Overview



Deployment & Use Cases



Large-scale design
space exploration
leading to refinement
of system design



Scenario modelling -
e.g. mechanical failure
- to demonstrate
system robustness



Automated reports
for use by domain
experts - e.g.
operations research



Web portal provides
client easy access to
run simulations on
demand



VR model used at
stakeholder events
to showcase
concept



Possibilities
Unlimited

