

Welcome

**Team Simulus** 

Motivation

Design

Collaboration

Question

Features -Map Editor

Features

Future Worl

References

# 7CCSMGPR - Traffic Simulation Project

#### **Team Simulus**

King's College London

https://github.com/leorohr/simulus

27 March 2015



### Motivation

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Motivation

Design

Collaboration

Question

Question

Features

Features

Future Wor

Reference

- $\bullet$  London congestion cost \$8.5bn in 2013, rising to \$14.5bn by 2030  $^1$
- Road construction is expensive
- Simulation to the rescue!



## Aims

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Motivation

Aims

Design

Collaboration

Demonstrati

Questions

Features -Map Editor

Future Wo

References

#### Must

- Individual Vehicles
- Vehicle Entrance and Exit
- Vehicle Behaviour
- Statistics Delay, Average Speed, Congestion
- Traffic Management Policies traffic signal timing, speed limit, etc

#### Should

- Emergency Services
- User Maps (Map Editor)

#### Could

- Save/Load User Maps
- External Map Source e.g. Google Maps

#### Won't

• Pre-existing Traffic Simulators or Libraries



# Design

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Motivatio

Aims

Design

Collaboration

Demonstra

Question

Map Edito

Future Wor

References

### Discrete Prototype

- Logical simplicity
- Limitation: discrete space
- Unrealistic!

### Continuous space + Cellular Automata

- Hybrid approach: Continuous space on top of grid
- More realistic traffic simulation
- Supported by additional map editor



### Collaboration

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 ${\sf Collaboration}$ 

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Questions

Map Edito

Future Wor

References

#### Collaboration

- Utilising Github facility
- Flexible Roles

### Working Policy

- Cooperation
- Responsibility
- Self-organisation



### Demo

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Motivatio

Aims

Design

Collaboration

Demonstration

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Question

Map Edito

Future Wo

References

#### Use case scenarios

- Traffic engineering
- Road maintenance planned
- Simulate



## Questions

Welcome

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Motivatio

Δims

Design

Collaboration

Demonstratio

#### Questions

Map Edito

Simulator

Future Wor

References



# Features - Map Editor

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Design

Collaboration

Question

Features -

Map Editor Features -

Future Wor

References

- Create road networks
- Import and export as 2D array (represented as XML) for simulation
- Map validation
- Flood fill
- Intuitive Click and Drag controls



### Features - Simulator

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Design

Collaboration

Questions

Features -

Simulator

References

- Different types of vehicles
- Different individual driving behaviours
- Overtaking vehicles
- Emergent phenomena
- Intersections
- Road Blockages
- Traffic phasing control



## Future Work

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Future Work

- System Architecture(MVC) not fully adhered to
- More thorough testing
- Road expansion



### References

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References

1 Sarah Gordon and Jim Pickard. London's \$8.5bn traffic jam slows down growth.

http://www.ft.com/cms/s/0/a50158ee-52de-11e4-a236-00144feab7de.html, 2014.