

A Software-Agnostic Agent-based Platform for Modelling Emerging Mobility Systems

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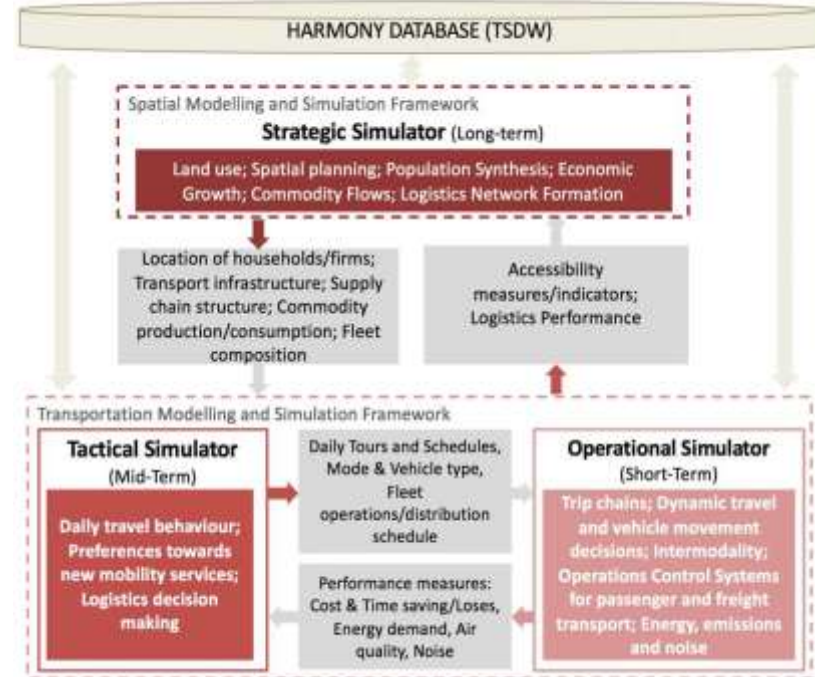


The HARMONY Project

Develop a new generation of harmonised spatial and multimodal transport planning tools which comprehensively model the dynamics of the changing transport sector and spatial organisation, enabling metropolitan area authorities to lead the transition to a low carbon new mobility era in a sustainable manner.

HARMONY Model Suite

- **Multi-scale,**
- **Software-agnostic,**
- **Land-use, activity-based, and transport network simulation model system.**
- **Integration of new and existing sub-models**



Architecture

Web-based interface

User can choose which transport interventions to compare on a concrete setting (supply, demand)



Platform core

Upon a user's request, runs a specific workflow that consists of one or more **simulators/models**

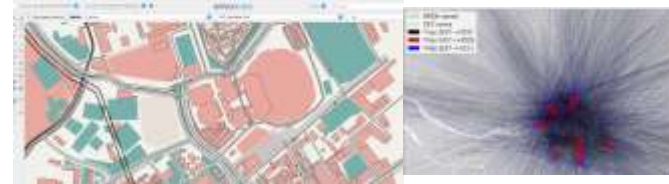
```
server = Flask(__name__)
UPLOAD_FOLDER = 'static/uploads'
server.config['UPLOAD_FOLDER'] = UPLOAD_FOLDER
server.config['MAX_CONTENT_LENGTH'] = 16 * 1024 * 1024
server.secret_key = "HierarchySuperSecretKey"
cors = CORS(server)

gunicorn_logger = logging.getLogger('gunicorn.error')
server.logger.handlers = gunicorn_logger.handlers
server.logger.setLevel(gunicorn_logger.level)

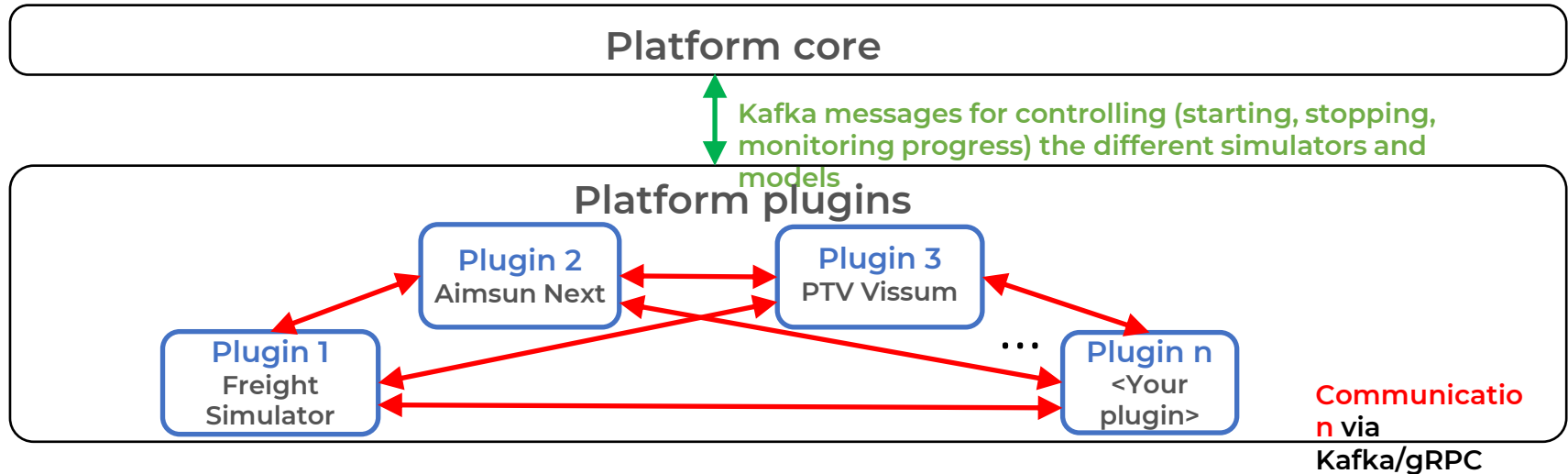
app = App(__name__)
```

Platform plugins

Simulators and models that can be plugged in to the platform and used in **workflows**



Communication

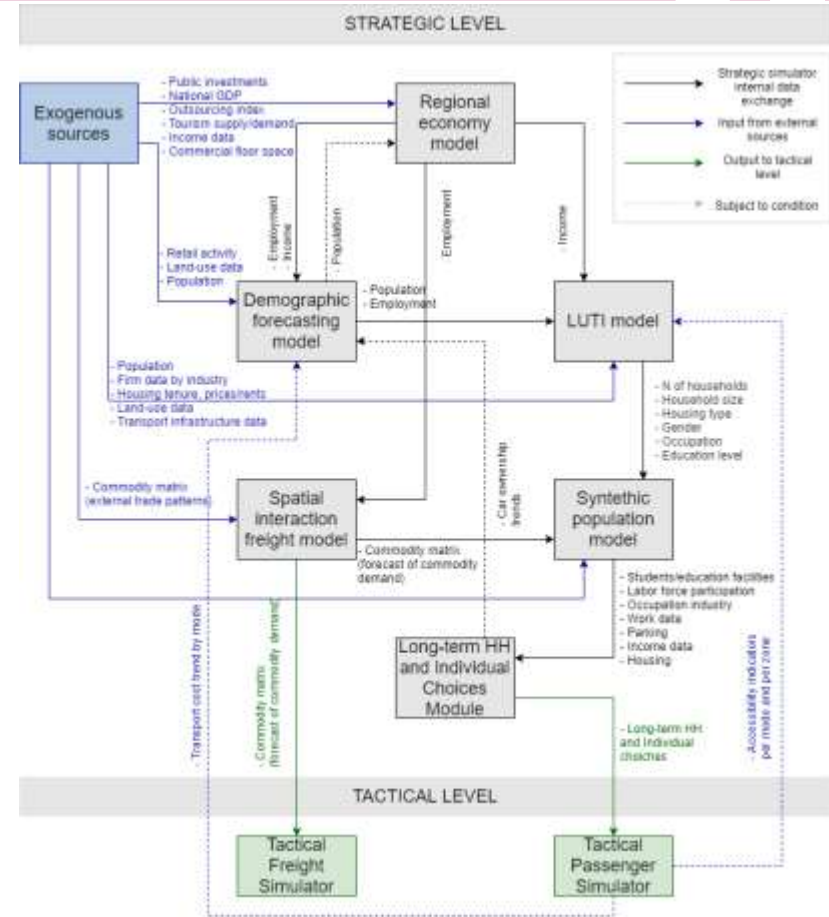


Each plugin:

- needs to be able to communicate with the platform core via a number of messages
- can be written in any programming language/environment
- can be and be open or closed source

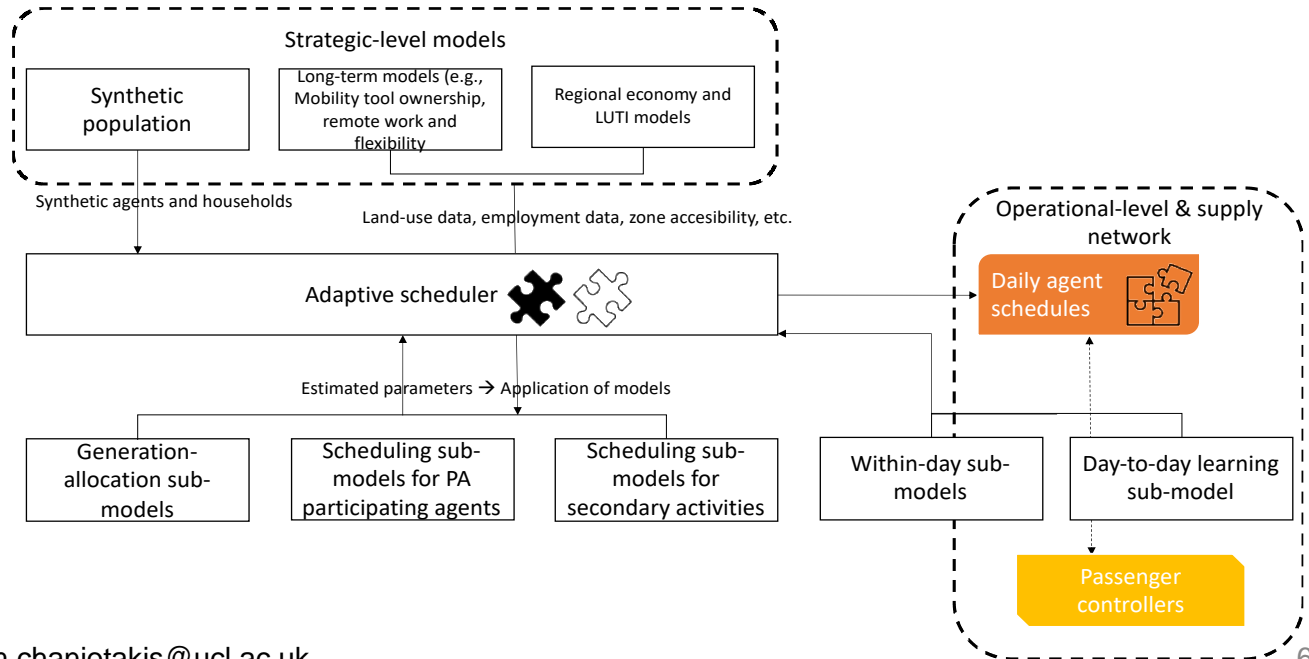
Strategic Level

- Long-term
- Includes economic and spatial aspects



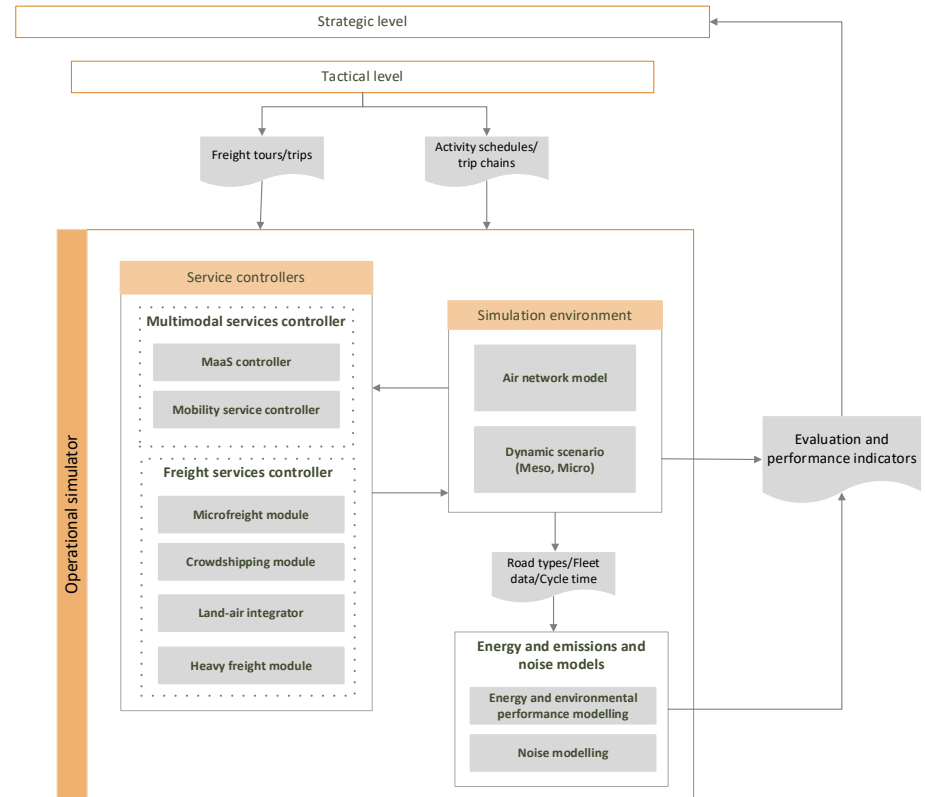
Tactical Level

- Activity-based travel demand
- Freight Demand

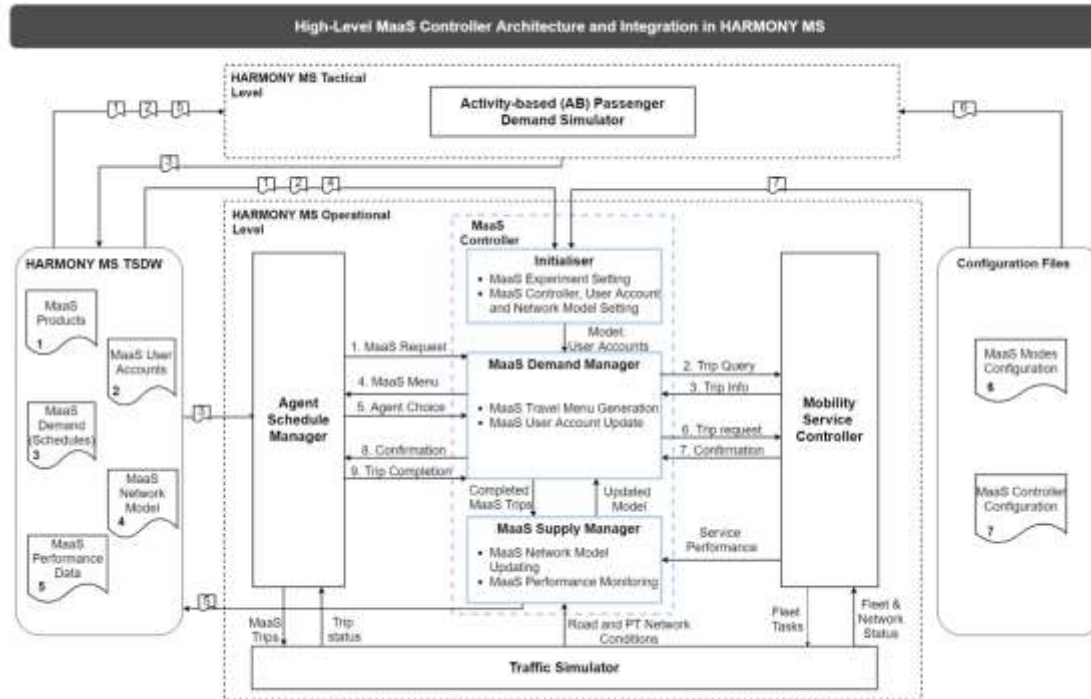


Operational Level

- Traffic Simulation
- Controllers/Managers for new mobility services



MaaS Example



Thank you!