



RObot based Autonomous Refuse handling

Volvo Transport Solutions

Per-Lage Götvall

Manager Transport System Robotics

The fundamental questions that initiated ROAR

- Investigating the state of the art within Robotics technologies, having a 10 year horizon
 - Is it likely that an autonomous truck shall be loaded/un-loaded by humans?
 - Is it likely that the autonomous excavator will be assisted by humans?
 - Is it likely that the service we do on our trucks will be done by humans?
 - Is it likely that all those technically advanced inventions made by young, technically skilled entrepreneurs will all die?



Volvo Academic Preferred Partner, APP, project proposal: Develop a "Proof of Concept"

Why Refuse as the application?

- Refuse handling is one of several common Volvo truck applications
- Refuse handling is easy to show case
- Refuse handling is an area that is of concern in many different part of society
- Possible to have incremental development of
- High visibility



Project participants

- APP:s

- Mälardalens högskola, Robotics.  MÄLARDALENS HÖGSKOLA
ESKILSTUNA VÄSTERÅS

- Chalmers, Dept. Signal and systems.  **CHALMERS**

- Penn State University, Robotics



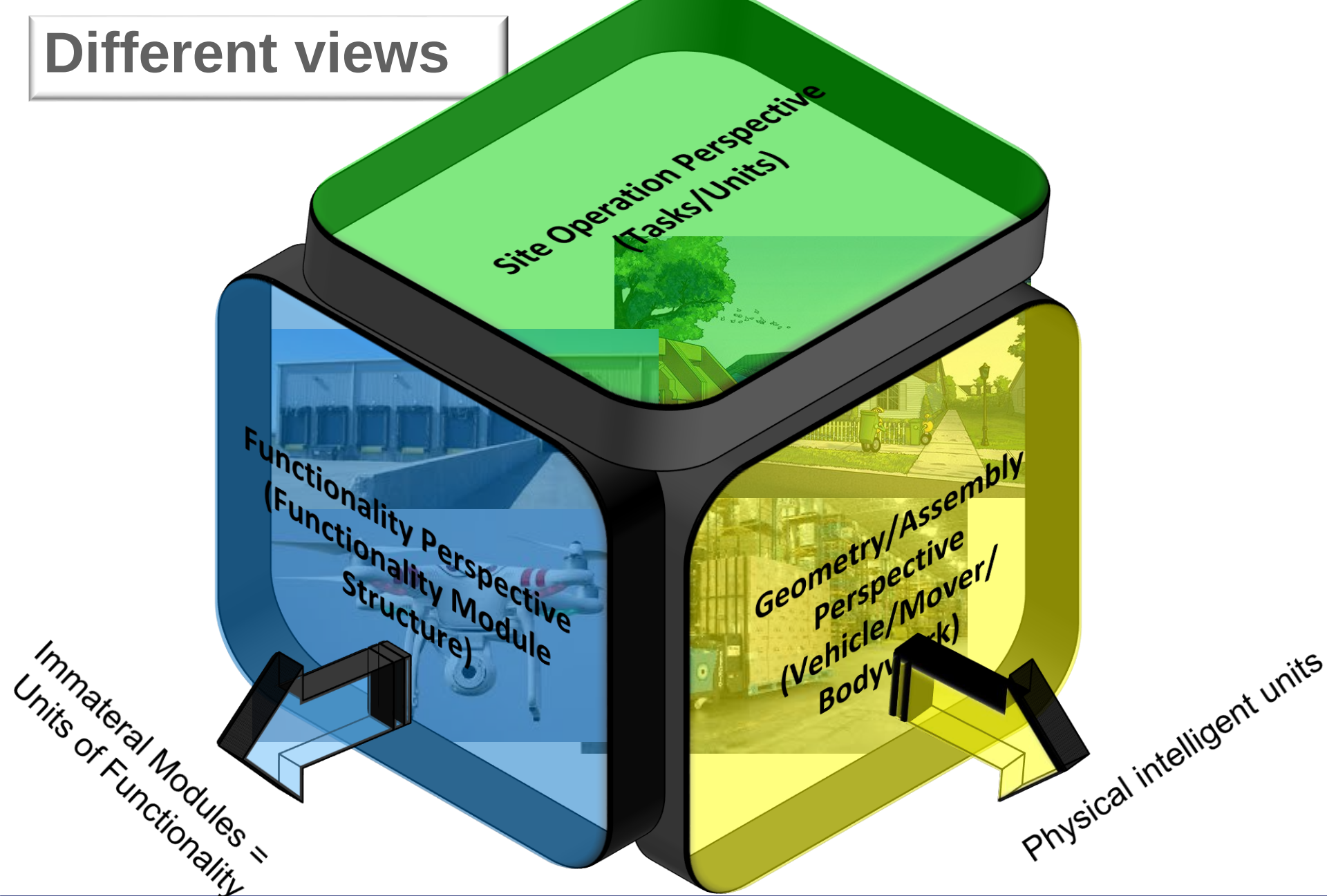
- Industry:

- Volvo Group Trucks Technology

- Renova, Gothenburg based refuse company  **Renova**

- GeesinkNorba, bodybuilder

Different views



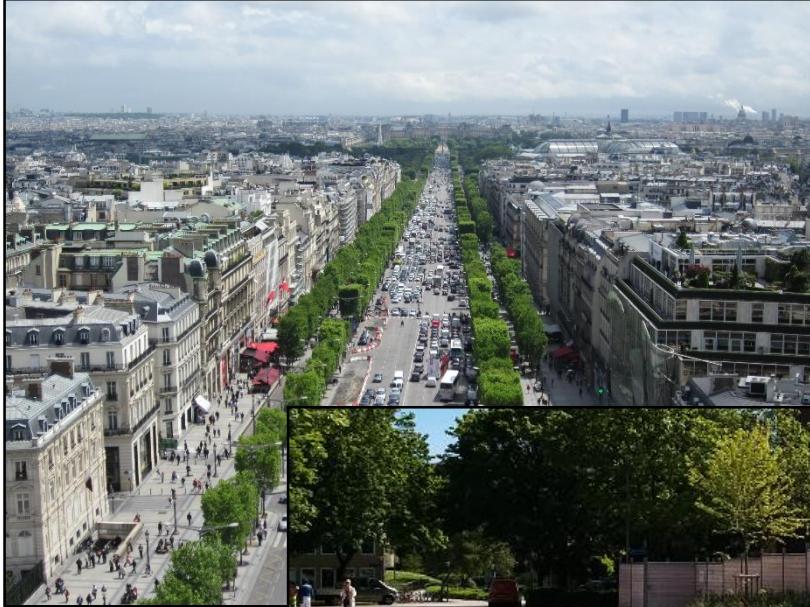
Truck



Truck lift



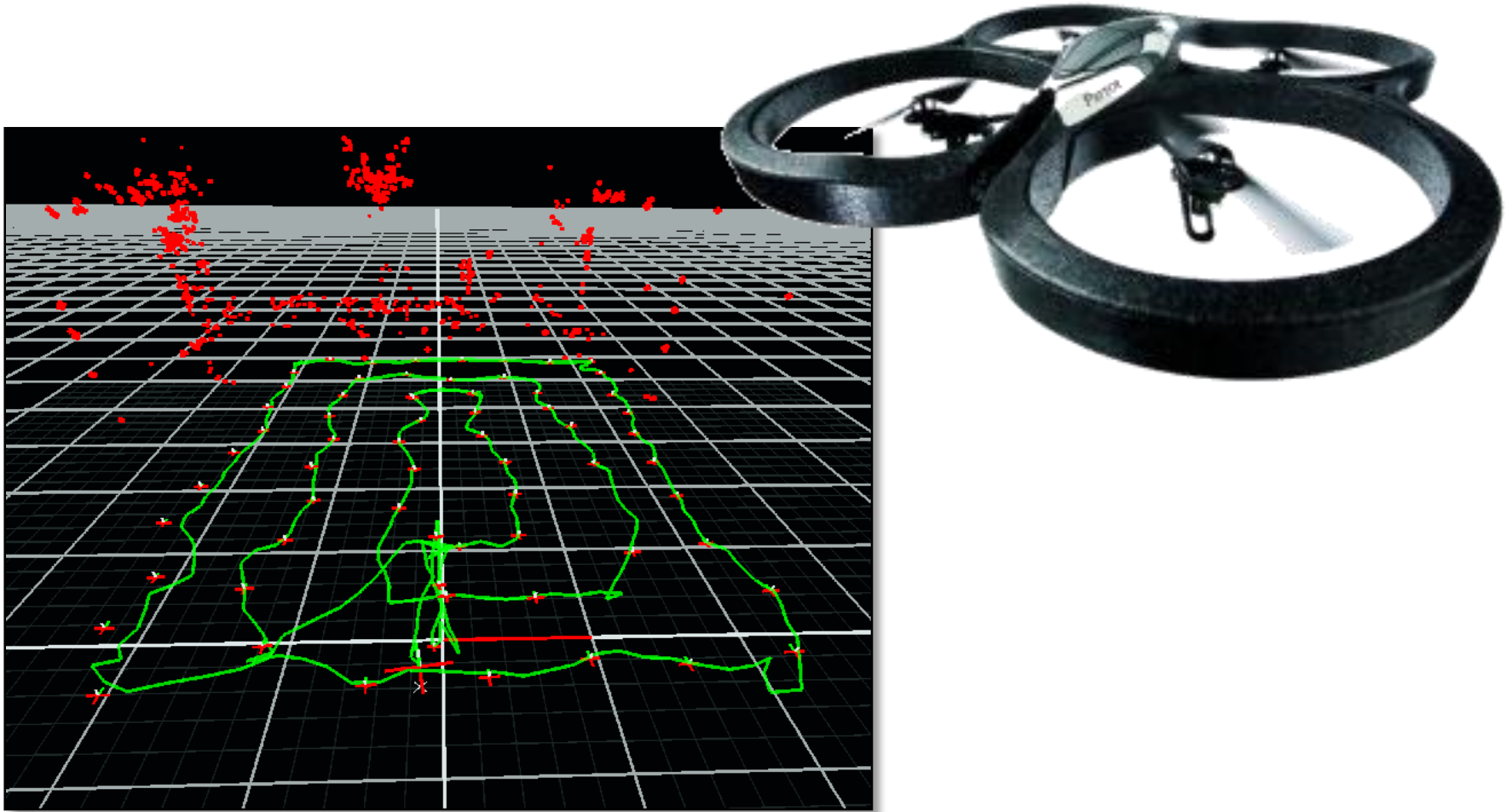
Environment



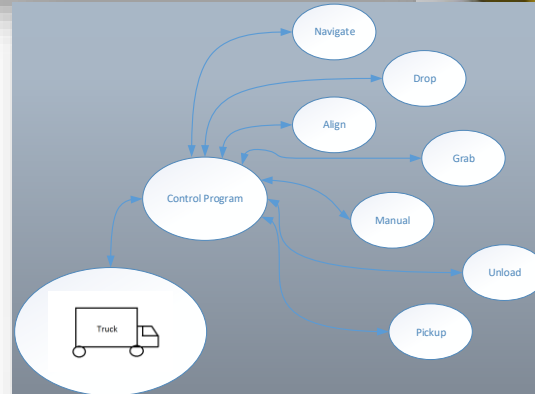
Bins



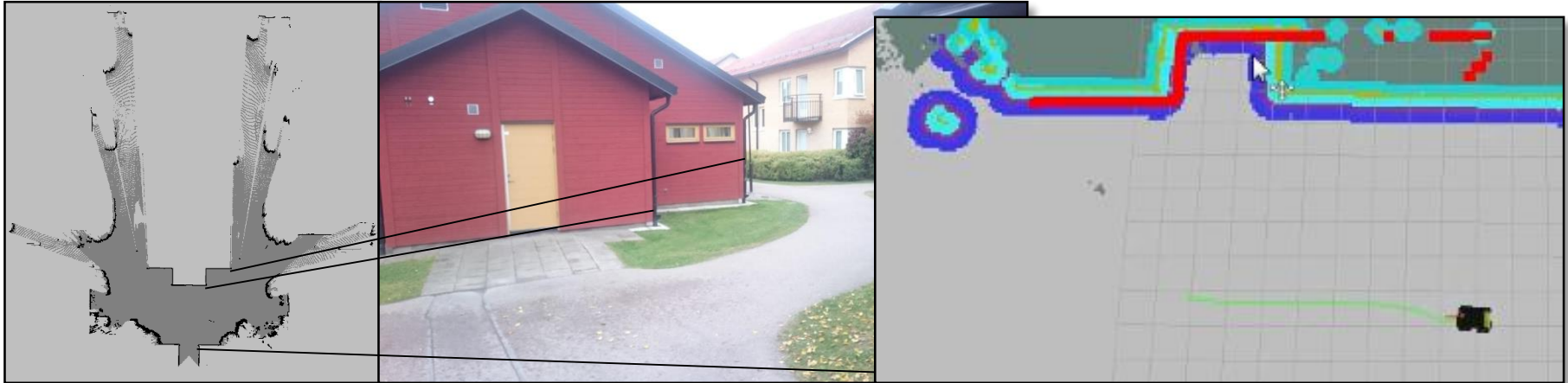
Quadcopter



ROARy



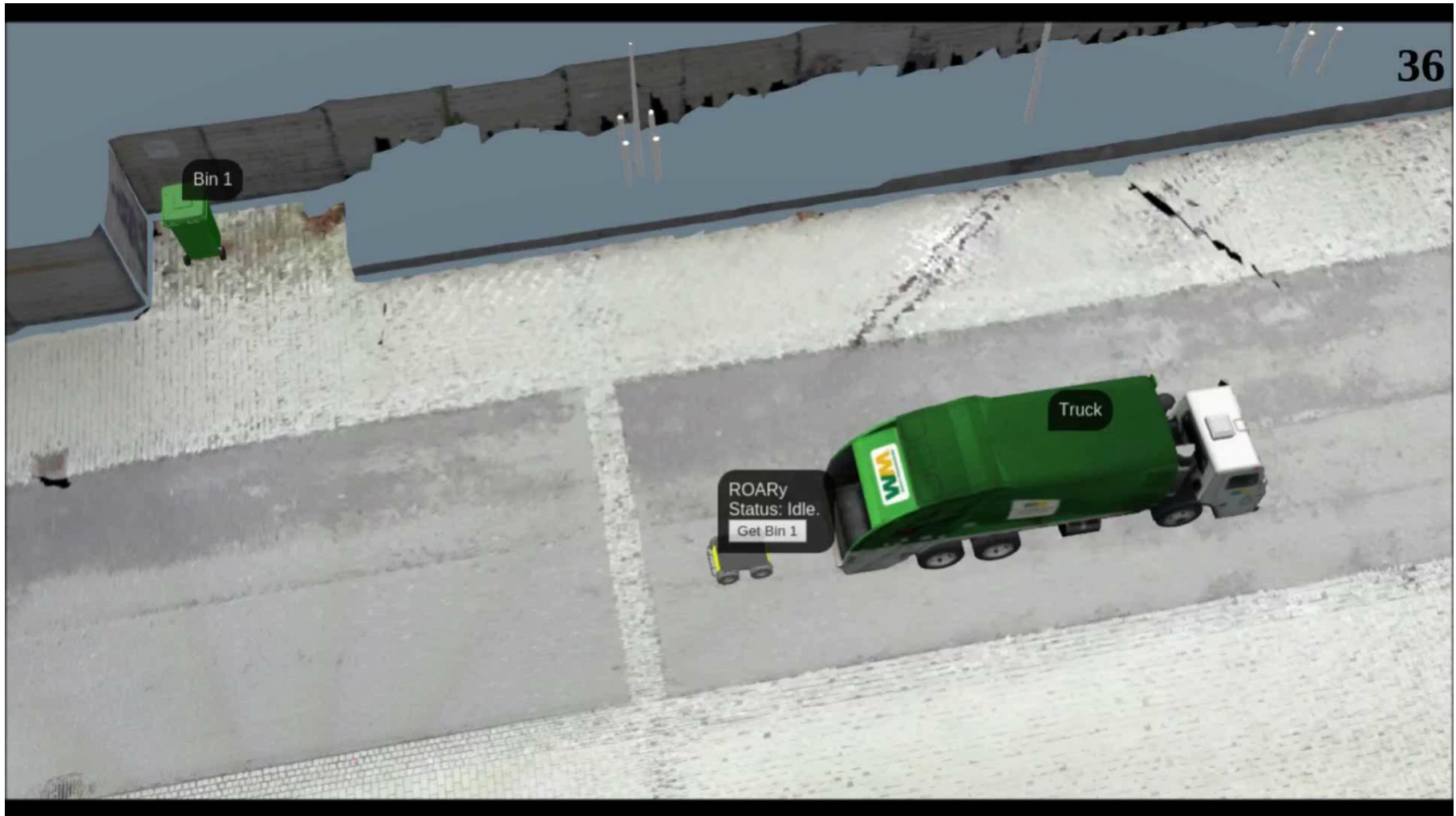
Path planner



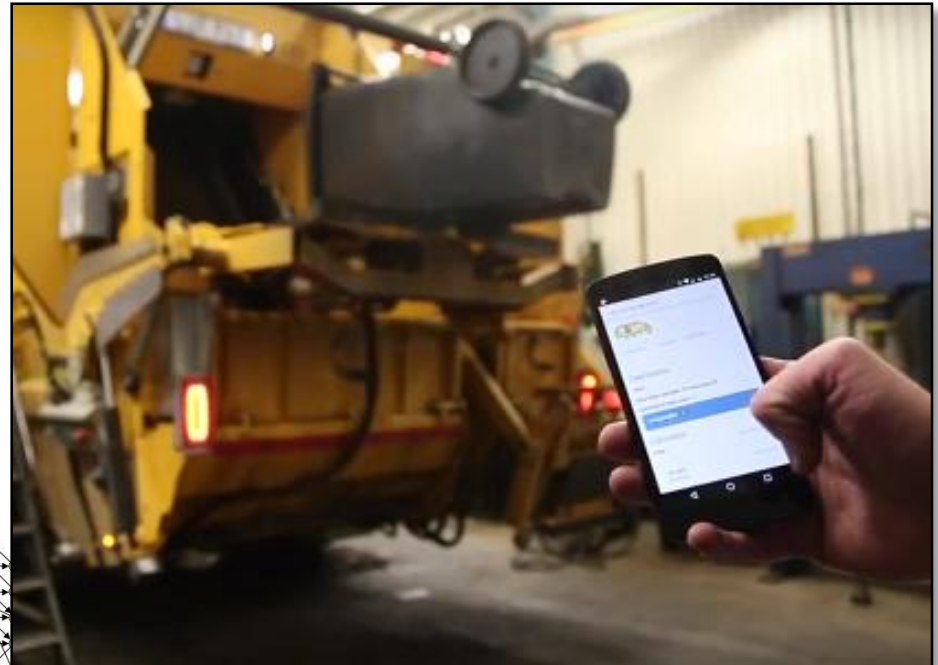
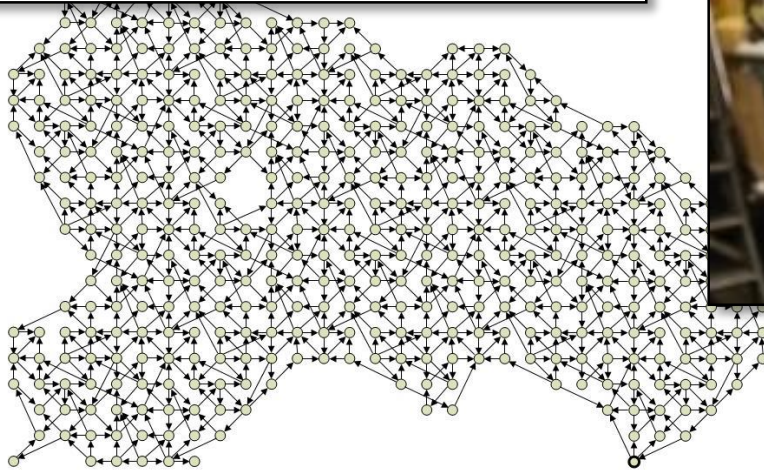
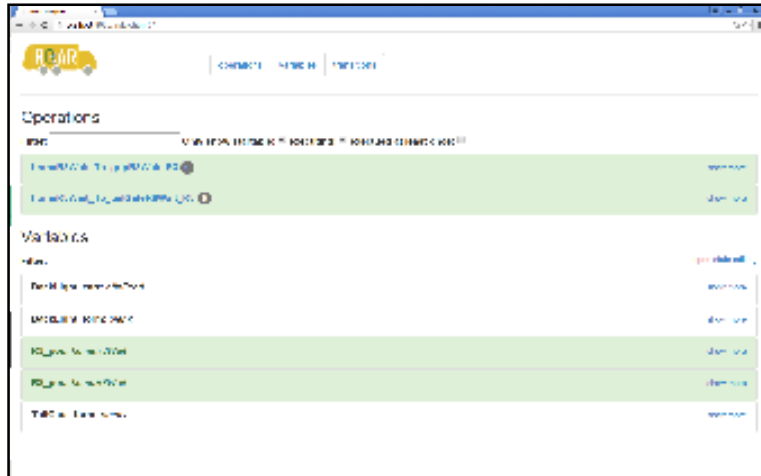
Picking up the bin

Towards the truck

Driver perspective



Task manager



System overview

