

360 Heurist:

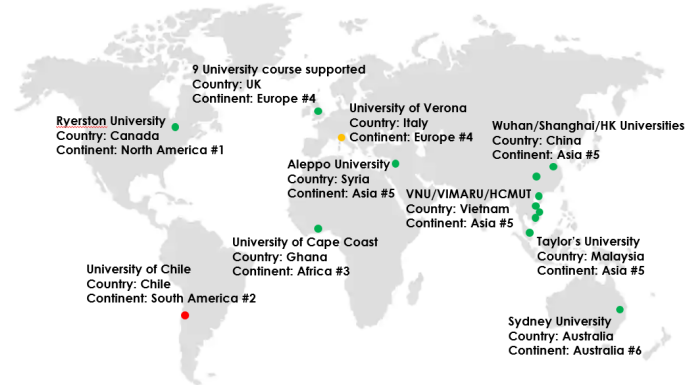
A Complex Autonomous Robotic System

ROB DEAVES
GUEST LECTURE
2022

Why am I here? Who am I? What am I going to talk about?



Visiting Professor
In Robotic
Systems Architecture



Why am I here? **Who am I?** What am I going to talk about?



- Rob Deaves, over 35 years engineering experience in:
- Robotic System Architect at Dyson

- Worked on a wide range....

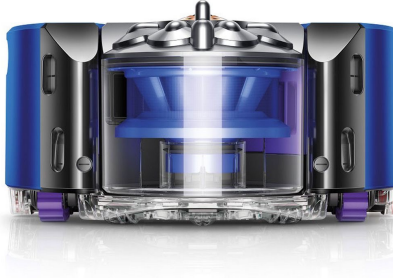


- Worked around the World..



- Lots of studying ...



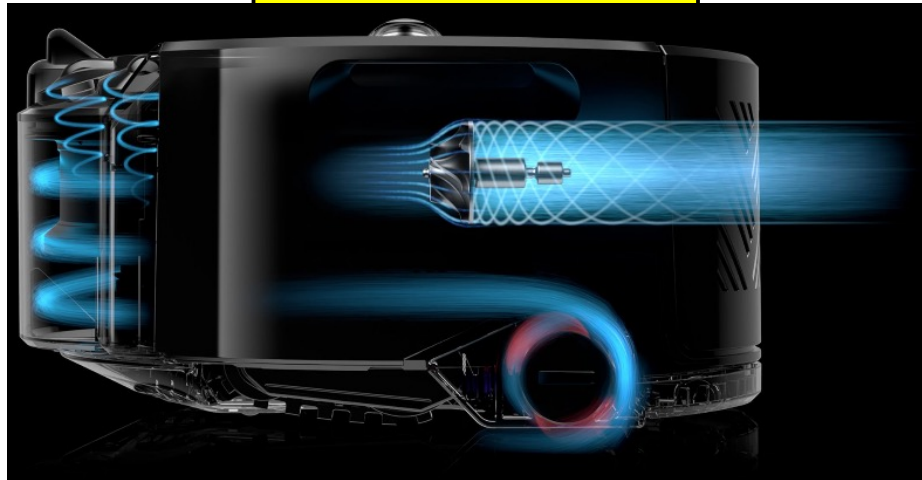


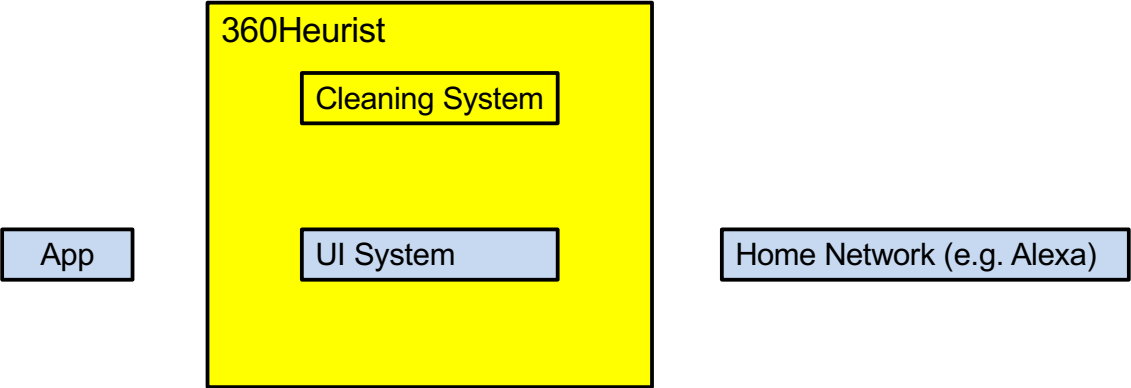
Contents:

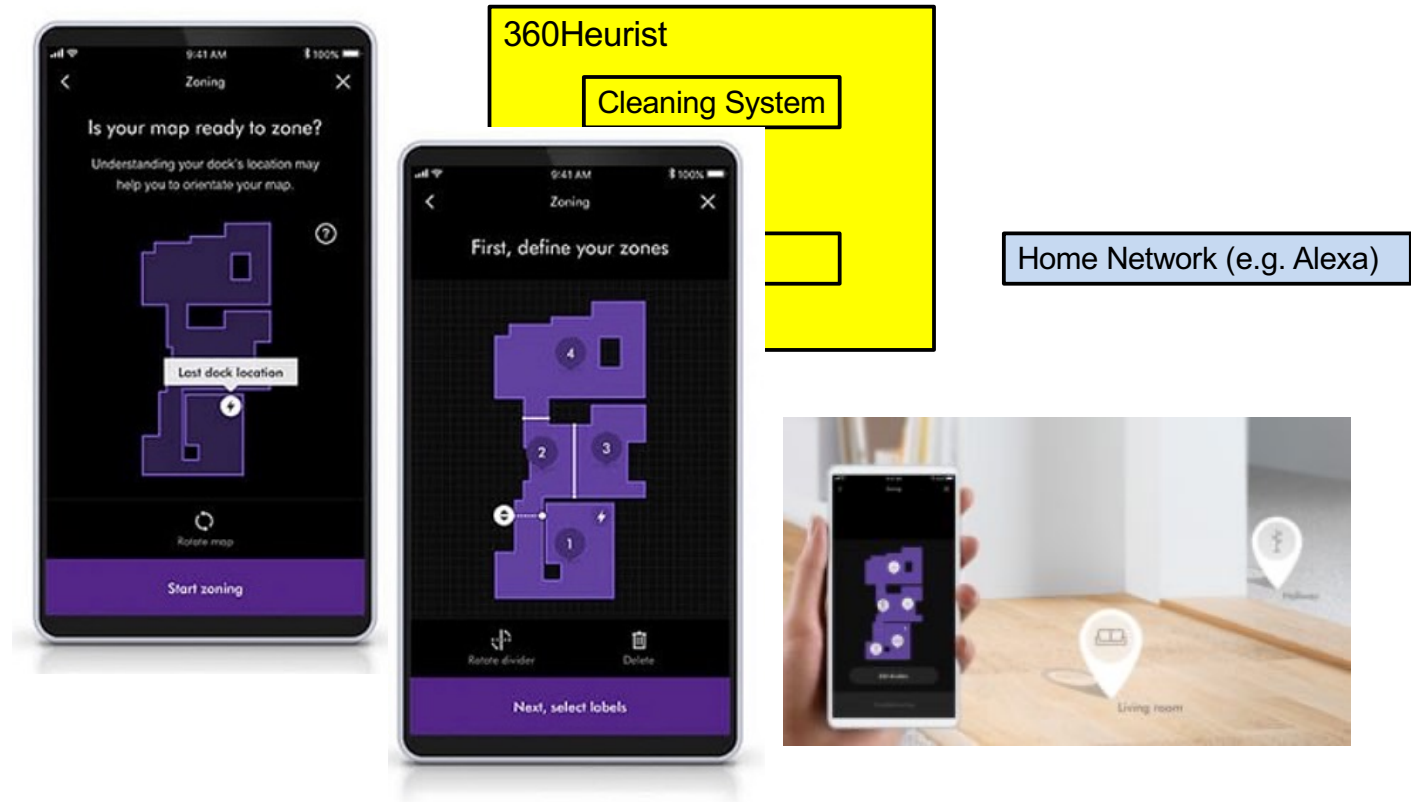
- **Product: The '360Heurist'**
- Robotic Technologies: What's in the 360Heurist?
- Simulation / Future Technologies
- Q&A

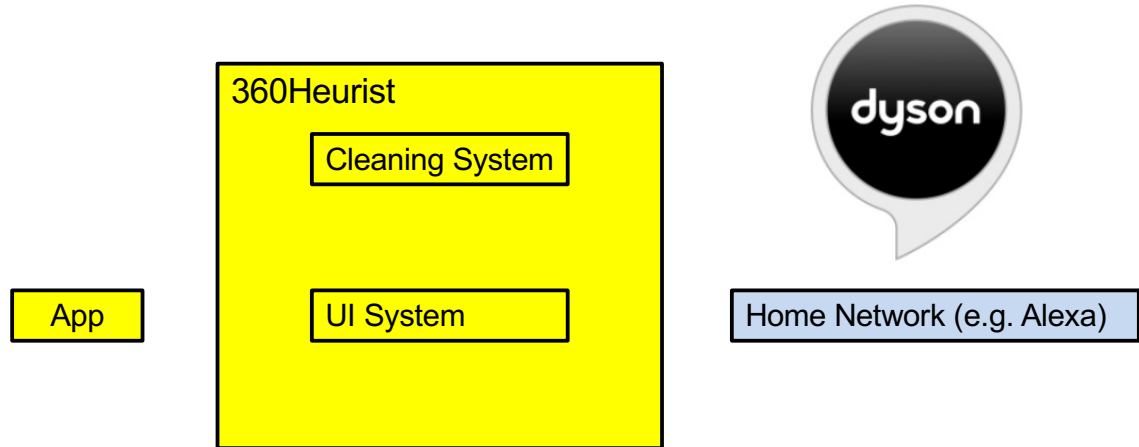
360Heurist

Cleaning System









You can also use voice commands to interact with your Dyson 360 Eye™ robot. Try these:

Alexa, ask Dyson to start cleaning

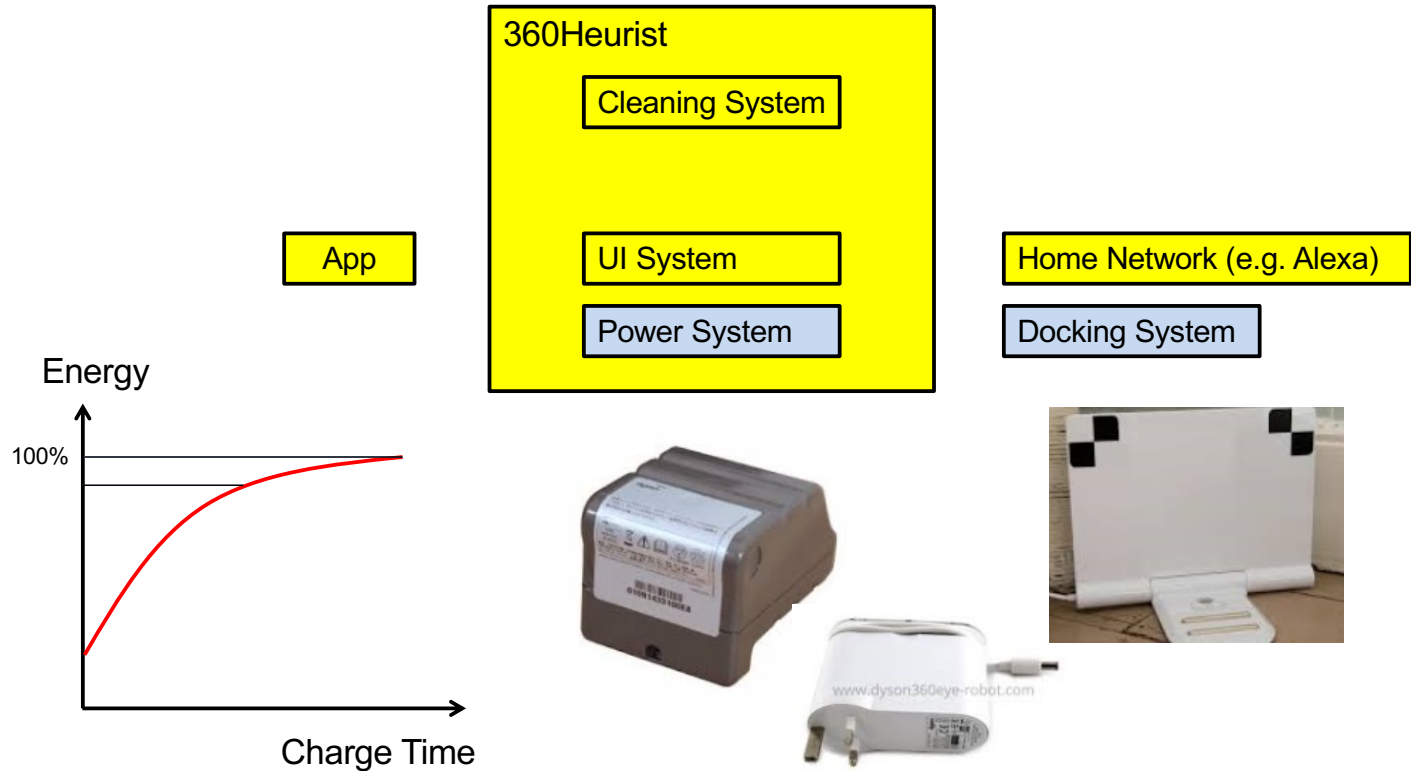
Alexa, ask Dyson to pause cleaning

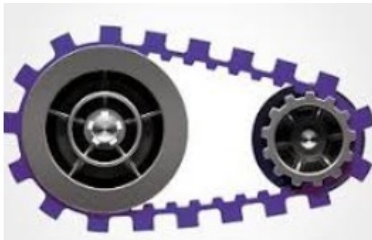
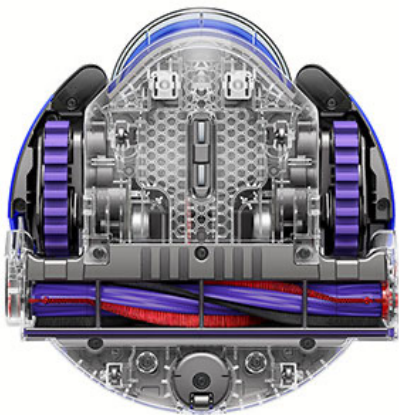
Alexa, ask Dyson to turn on quiet mode

Alexa, ask Dyson for max mode

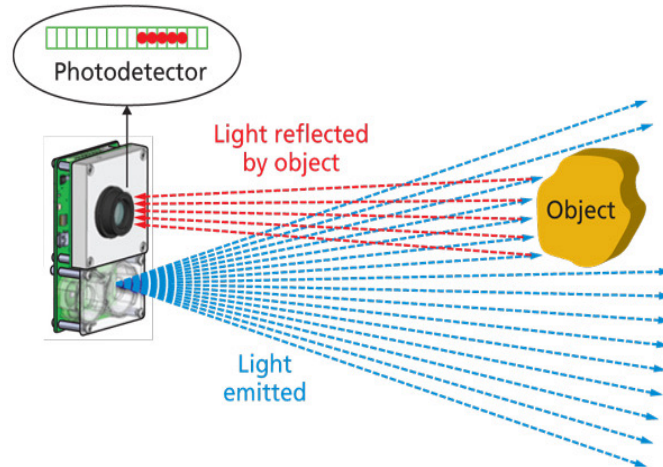
Alexa, ask Dyson to turn on quiet mode

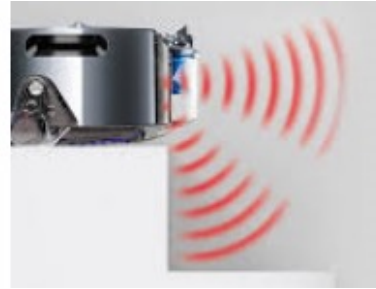
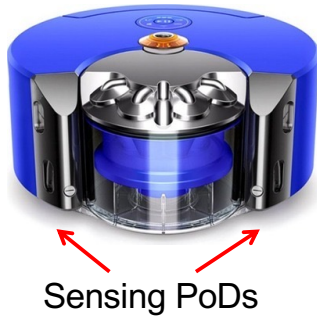
Alexa, ask Dyson for my robot's current status



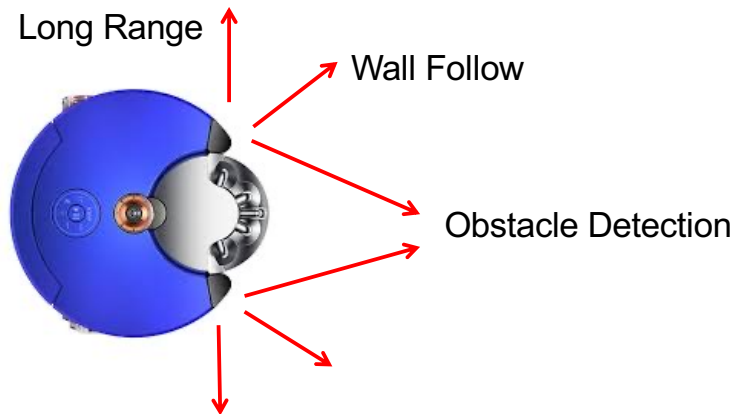


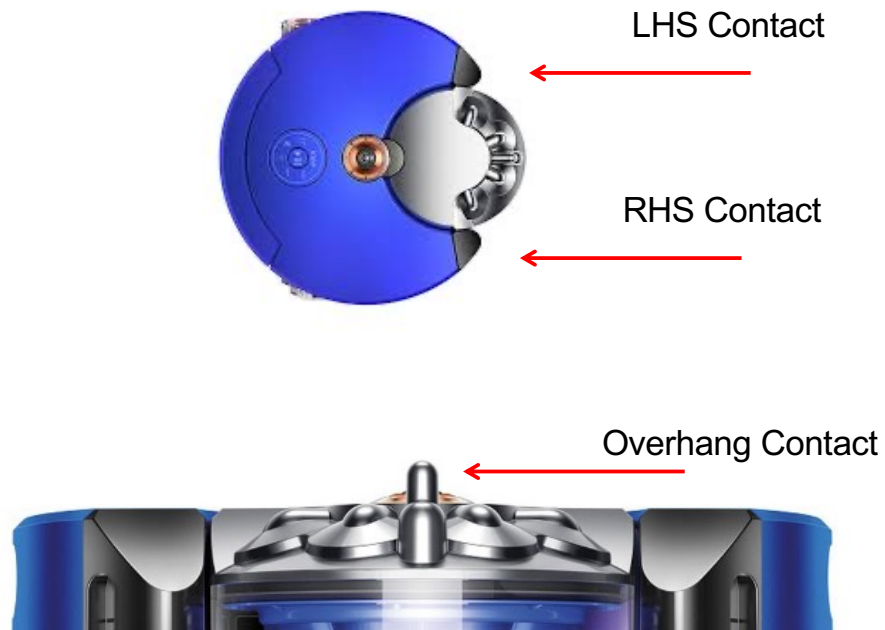
- The time (or phase) difference between the emitted and received light signals at a given frequency is converted to a distance reading

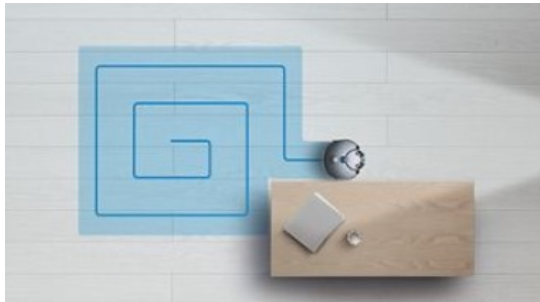




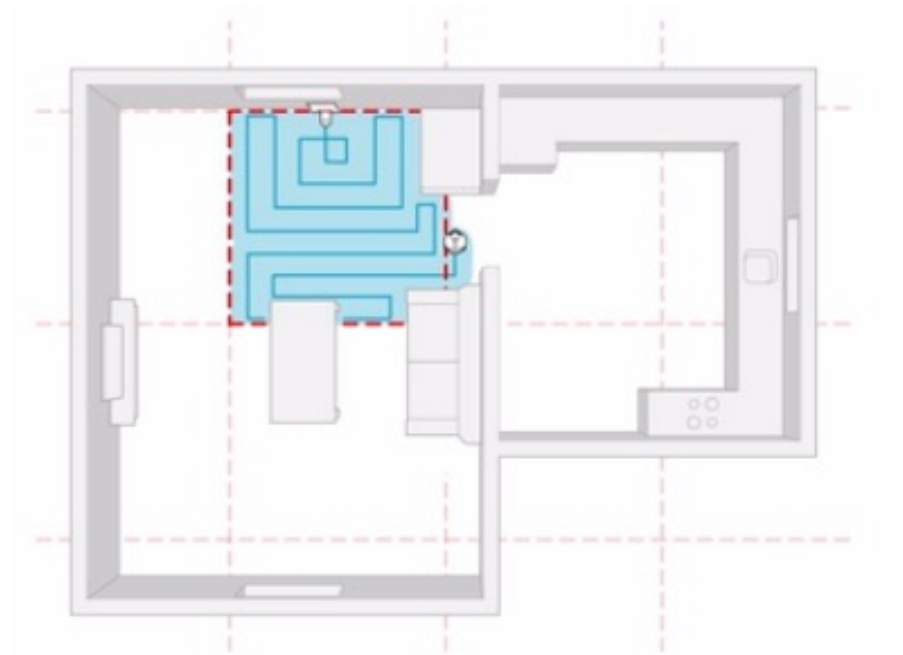
Drop Sensors



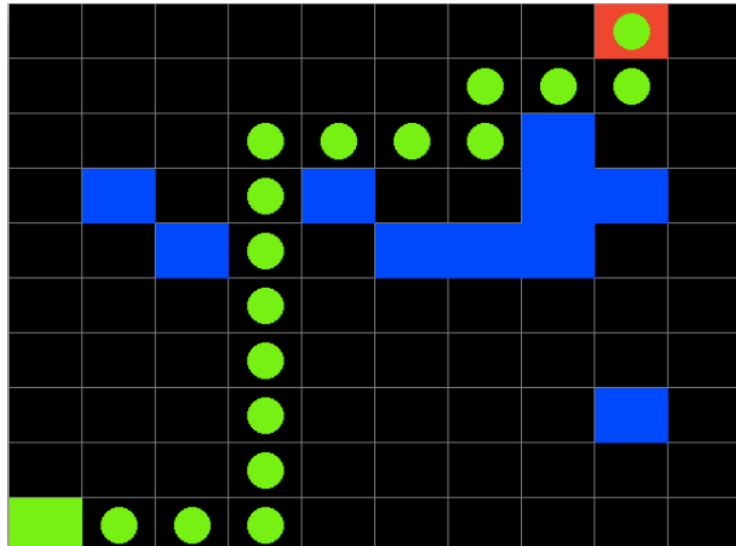
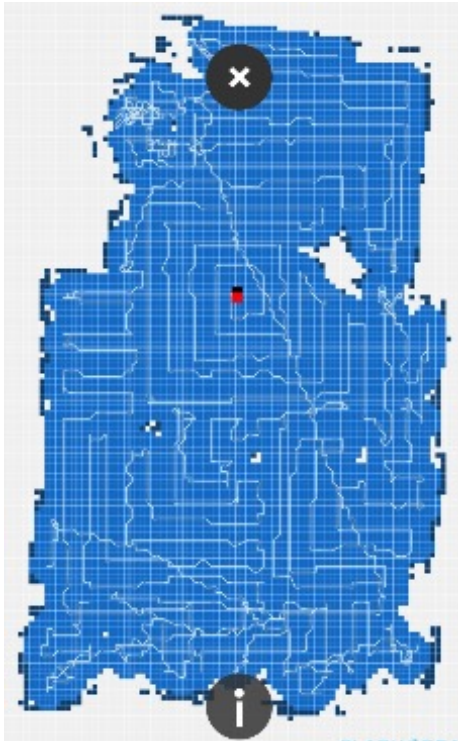


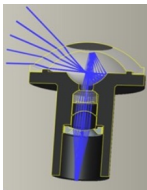


Oil Drop

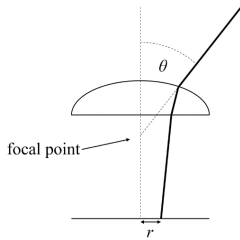


Grid based cleaning

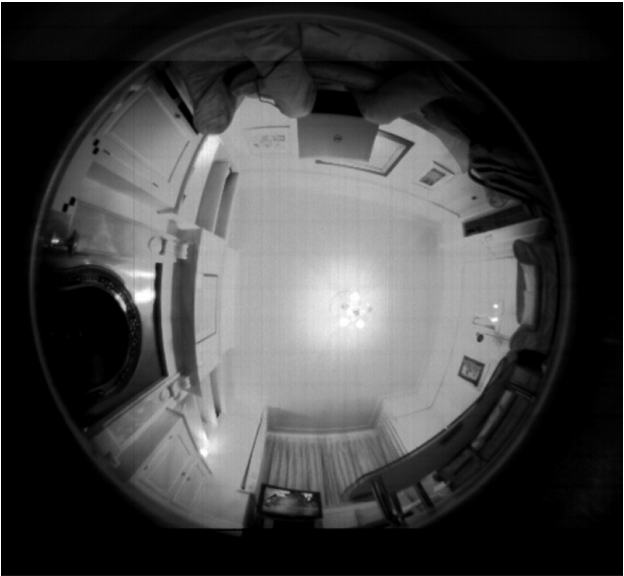




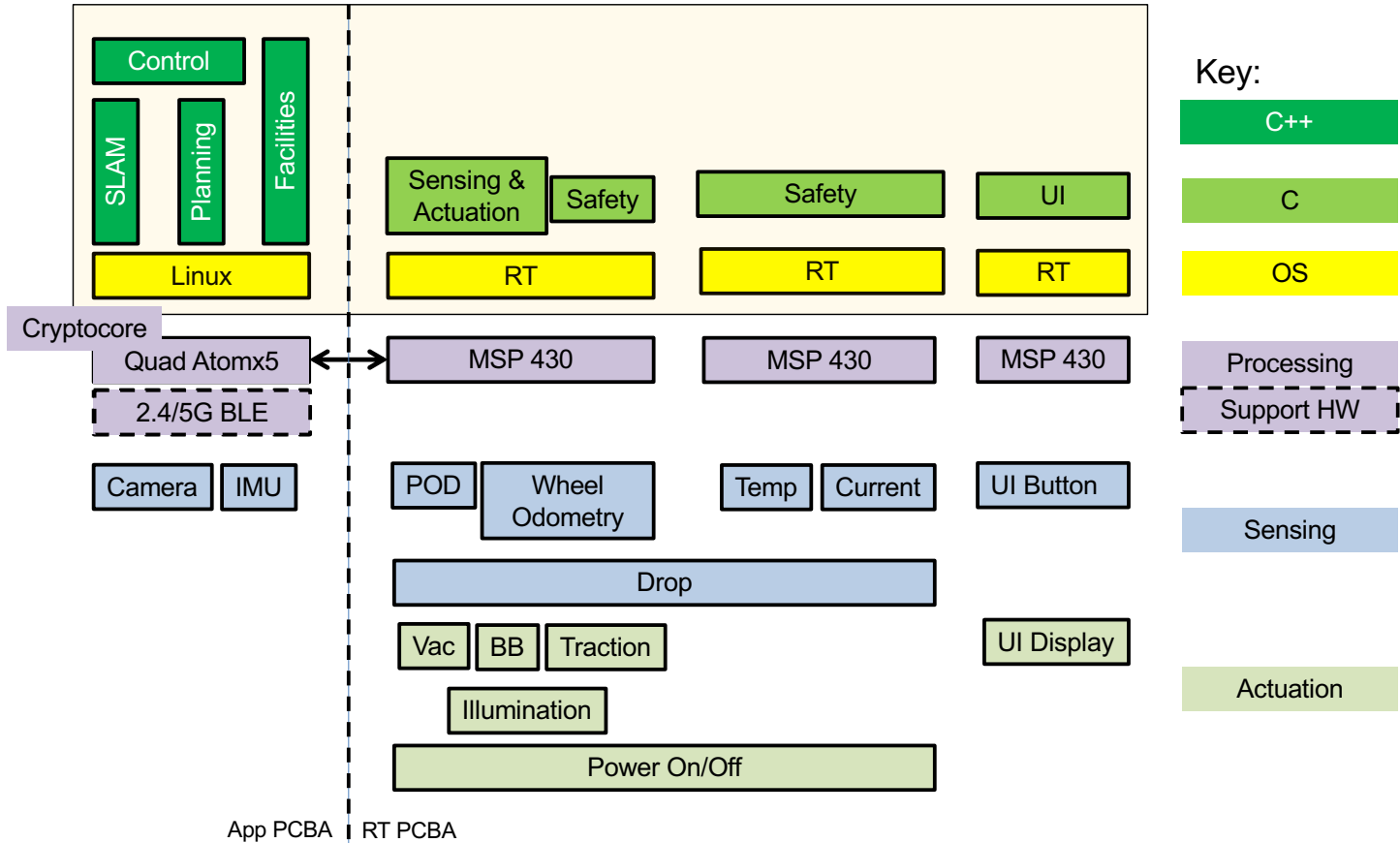
360Eye



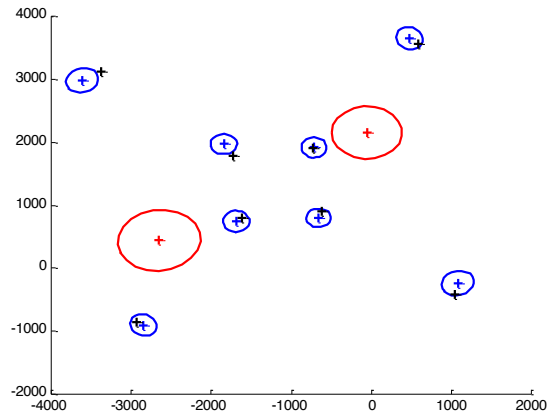
360Heurist



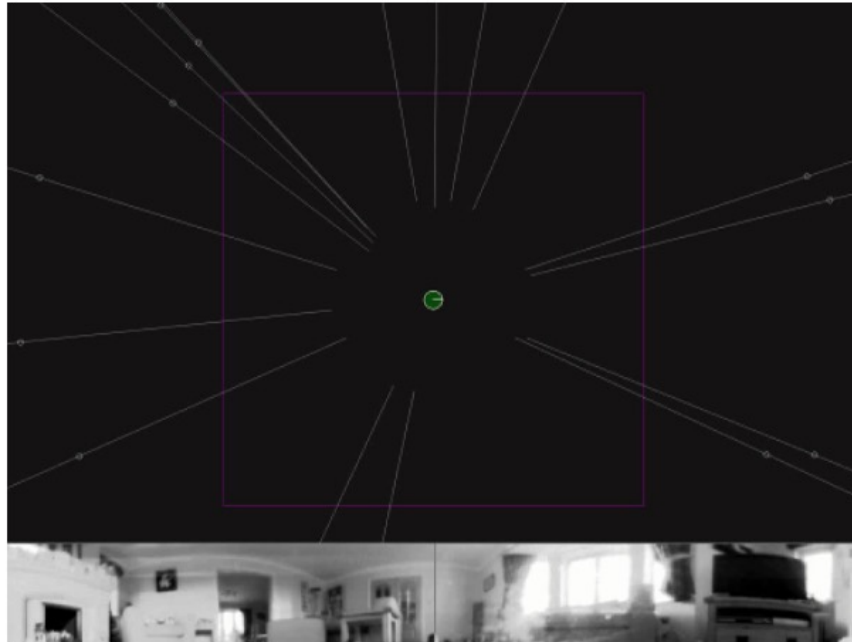




- Feature based SLAM
- Decentralised multi-platform SLAM

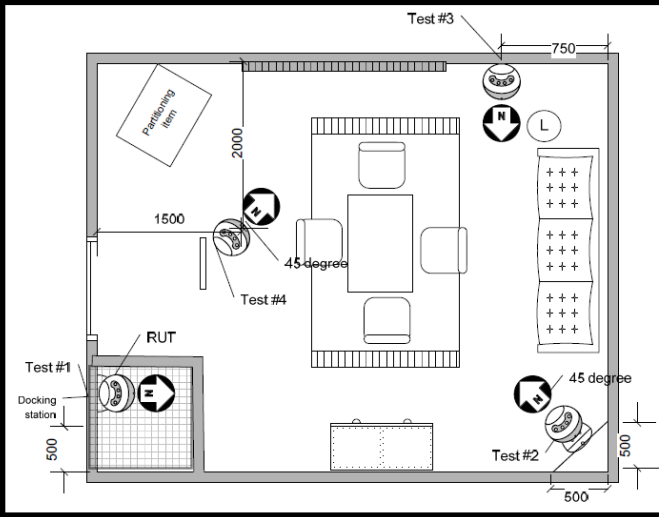






Navigation (Coverage) Test

4 Starting Positions



Performance Criteria

❖ Dust Removal (Collection) Performance

- Wooden floor, Carpet floor

❖ Autonomous Navigation Performance

- measure the coverage rate in a standard test environment with various obstacles

❖ Operation-time per Full-charge

- Source of major complain from the user (drastic decrement of operation-time per charge)

❖ Fiber Pick-up

❖ Corner/Edge Dust Pick-up

❖ Fall-off

❖ Docking

❖ Noise

❖ Others

Pulling the Product and Robotic Technologies together...

dyson

