



Australian Government

Department of Defence
Science and Technology



UNSW
AUSTRALIA

Integrity Monitoring Methods in Cooperative Intelligent Transport Systems (CITS)

Elizabeth Smith

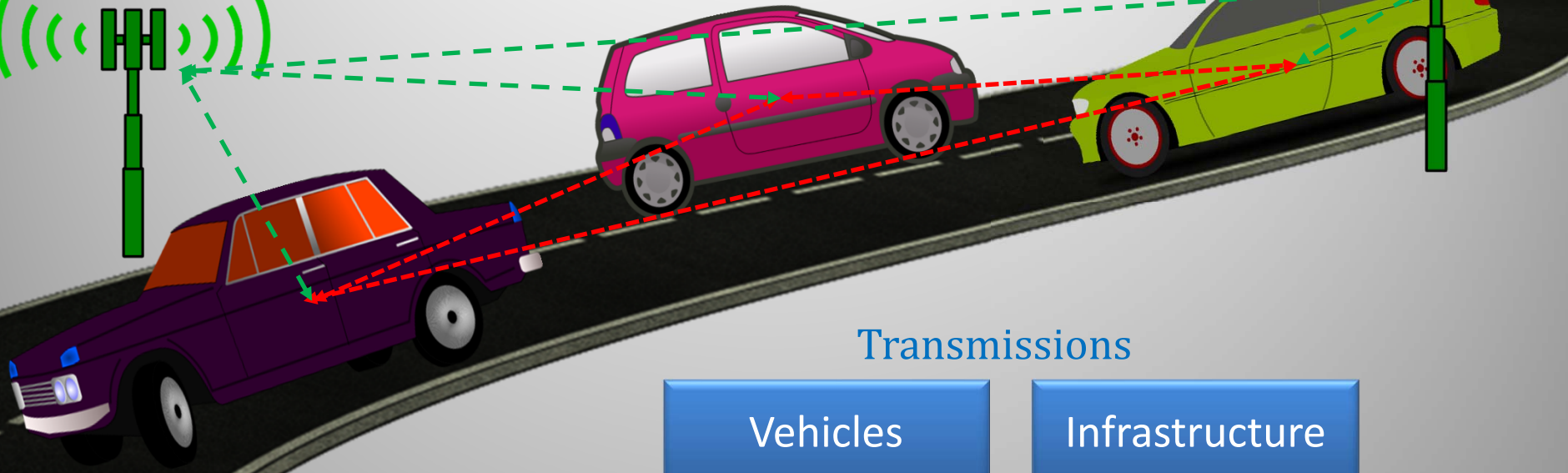
IGNSS Dec 6th – 8th 2016

Never Stand Still

Faculty of Engineering

Australian Centre for Space Engineering Research (ACSER)





Transmissions

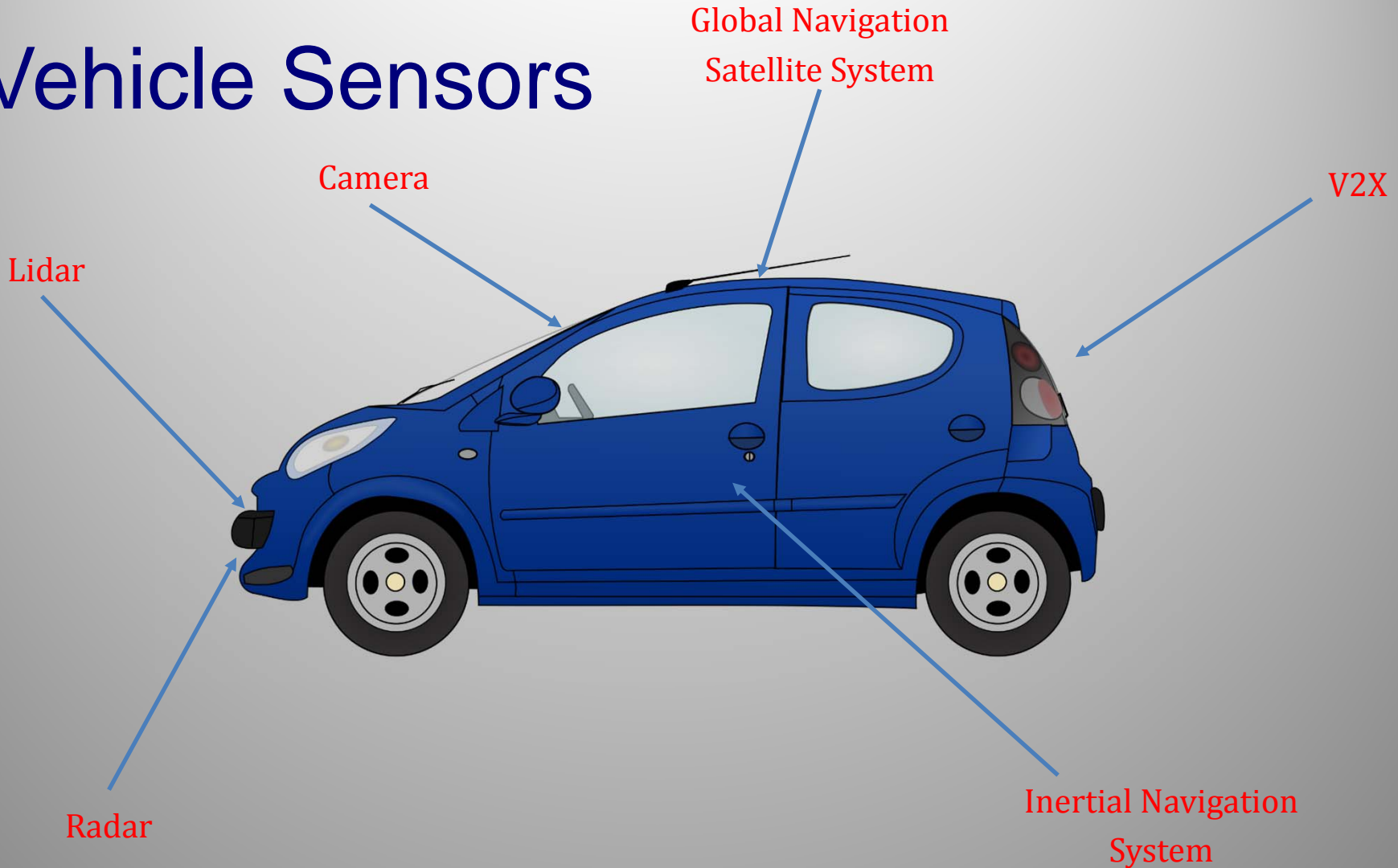
Vehicles

- Position
- Heading
- Speed

Infrastructure

- Hazards
- Traffic
- Weather

Vehicle Sensors



GNSS Error Sources

Clock

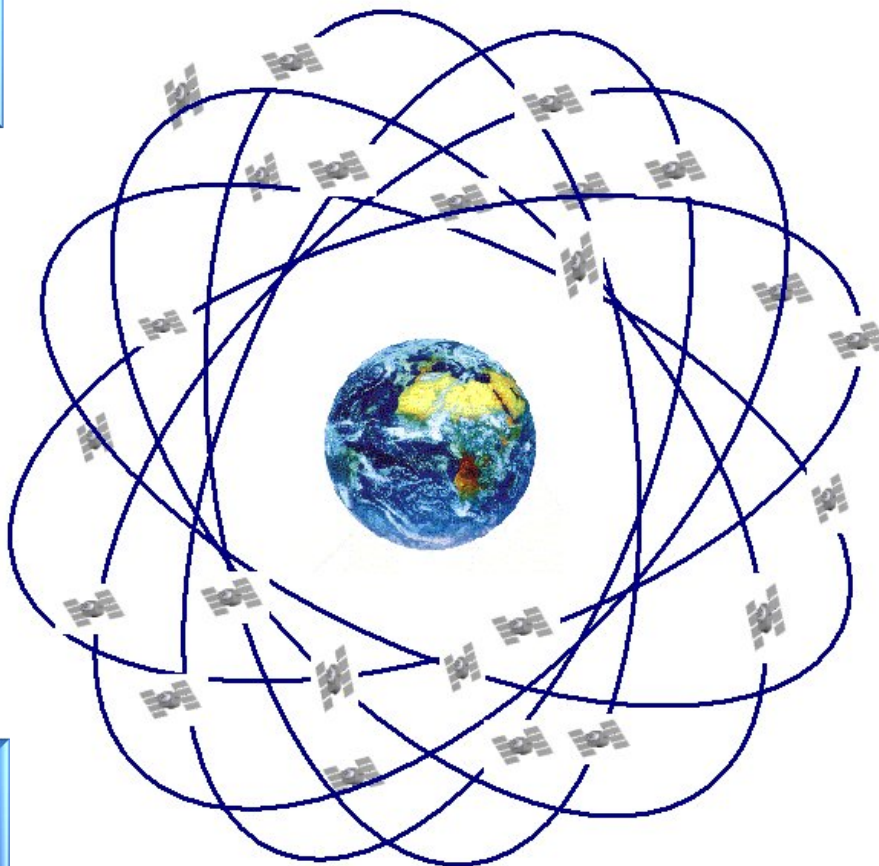
Equipment

Ephemeris

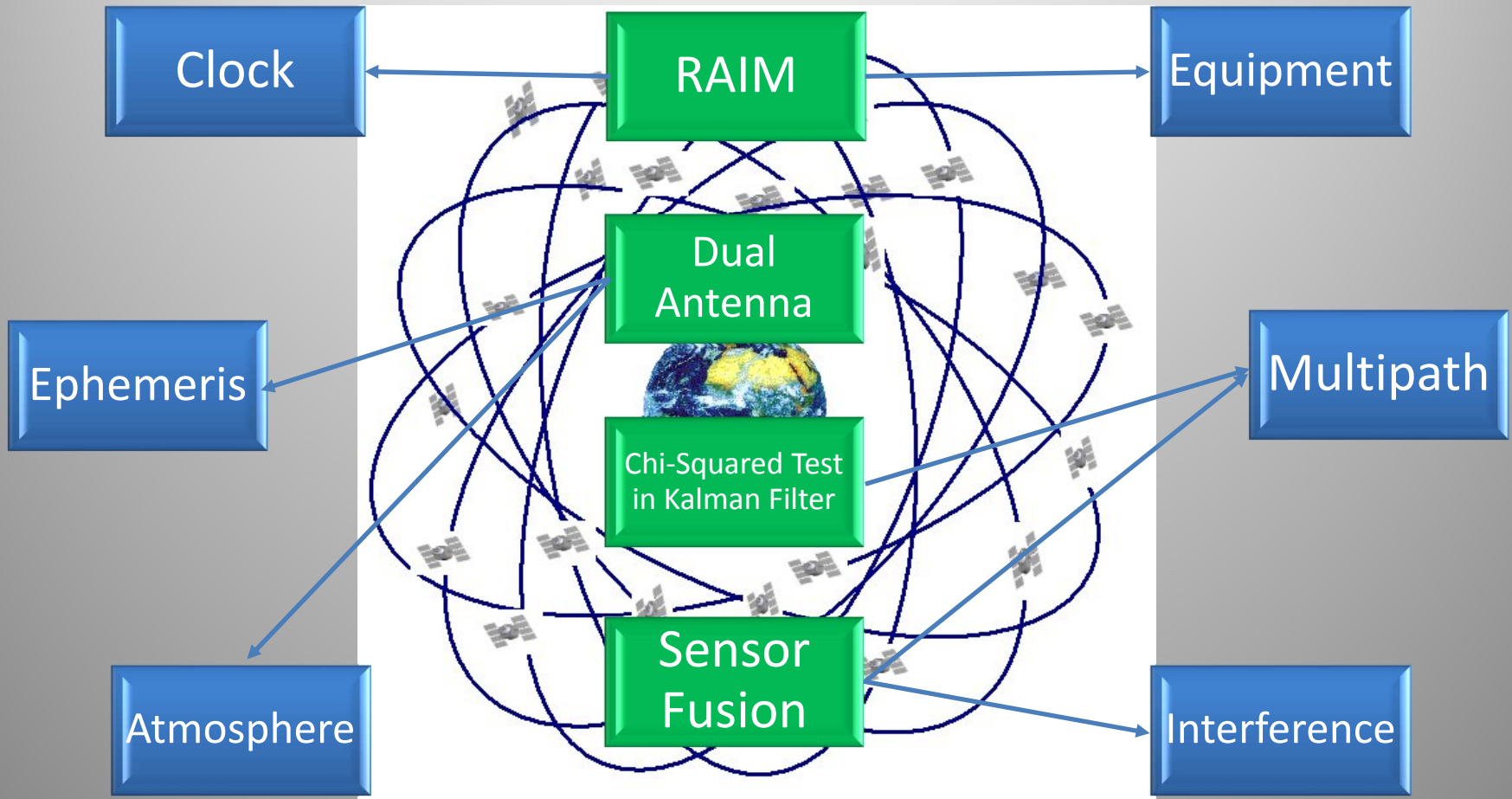
Multipath

Atmosphere

Interference



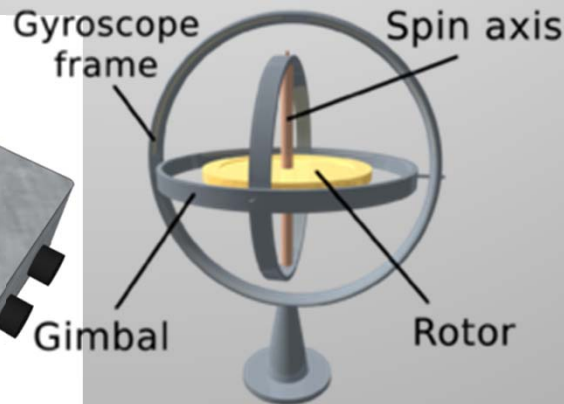
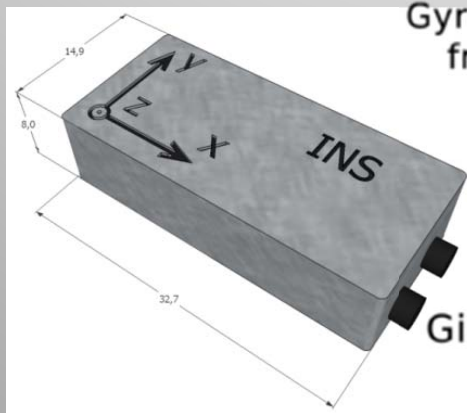
GNSS Error Detection



INS Error Sources

Bias/Drift

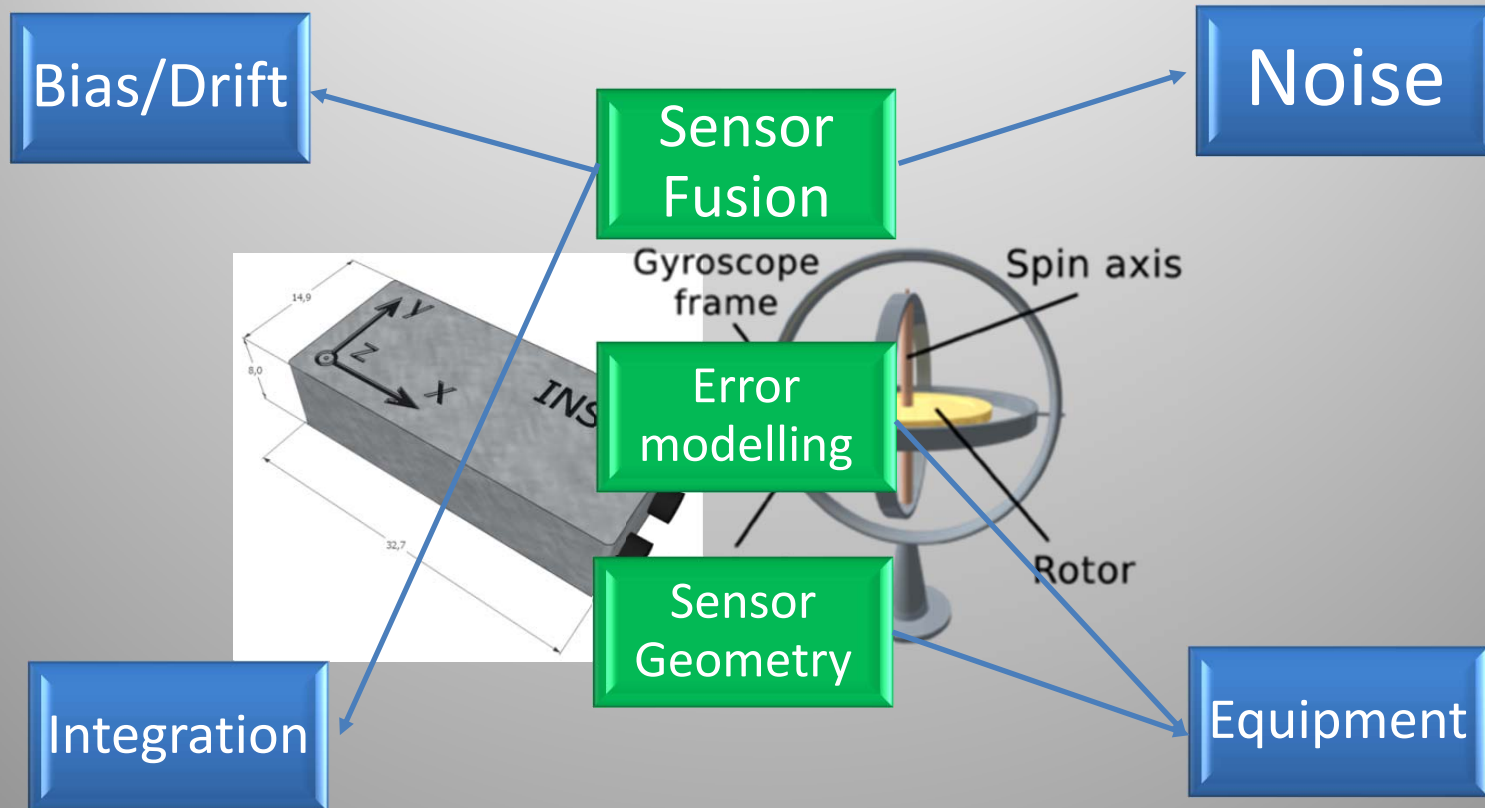
Noise



Integration

Equipment

INS Error Detection



Radar Error Sources

Clutter



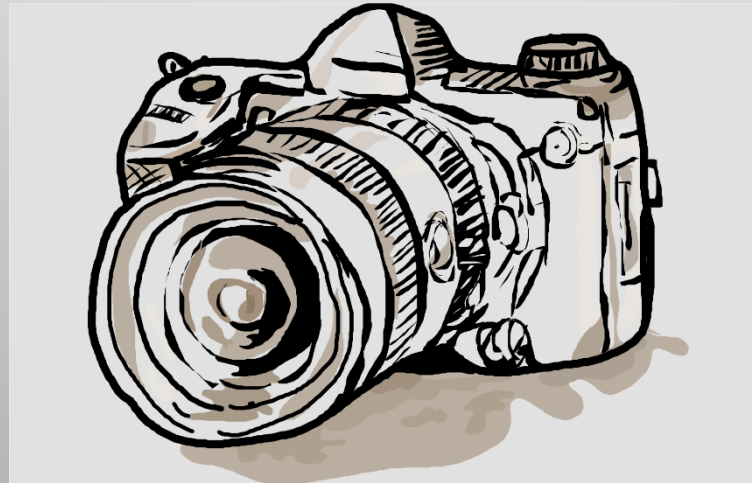
Radar Error Detection



Visual Error Sources

Weather

Poor Line
Quality

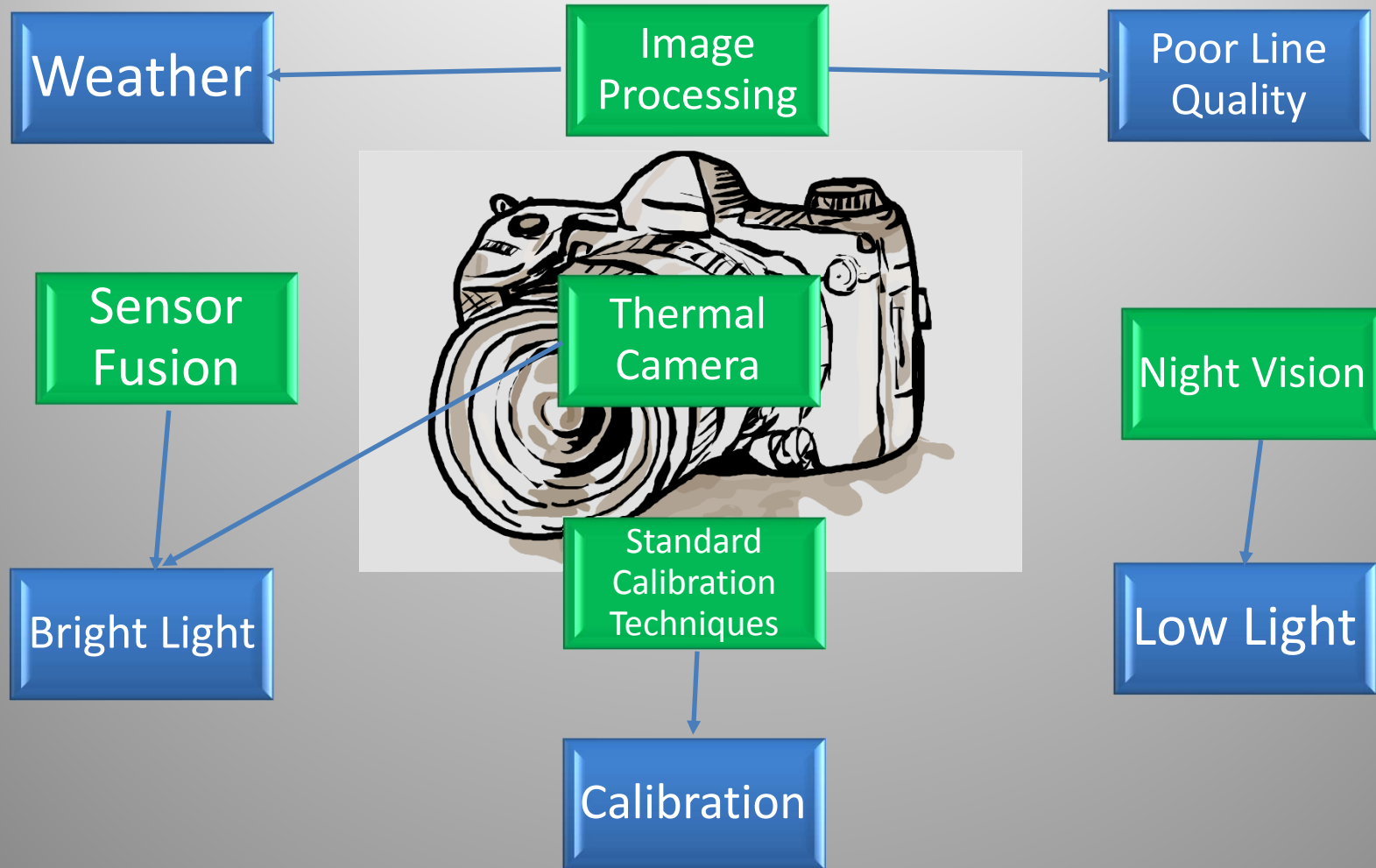


Bright Light

Low Light

Calibration

Visual Error Detection



Lidar Error Sources



Clutter

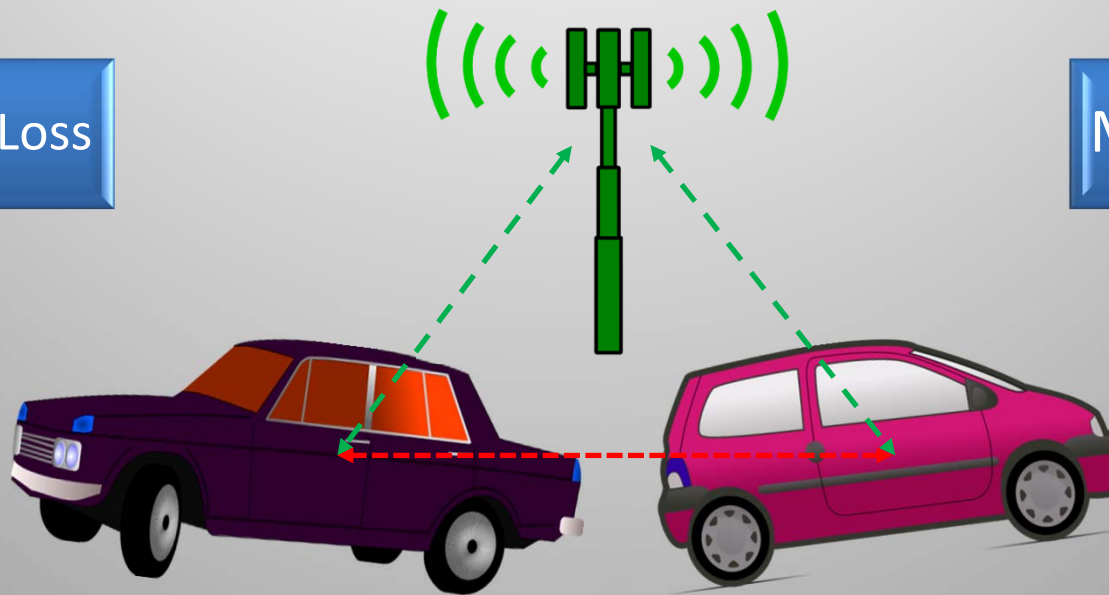
Lidar Error Detection



V2X Error Sources

Packet Loss

Multipath

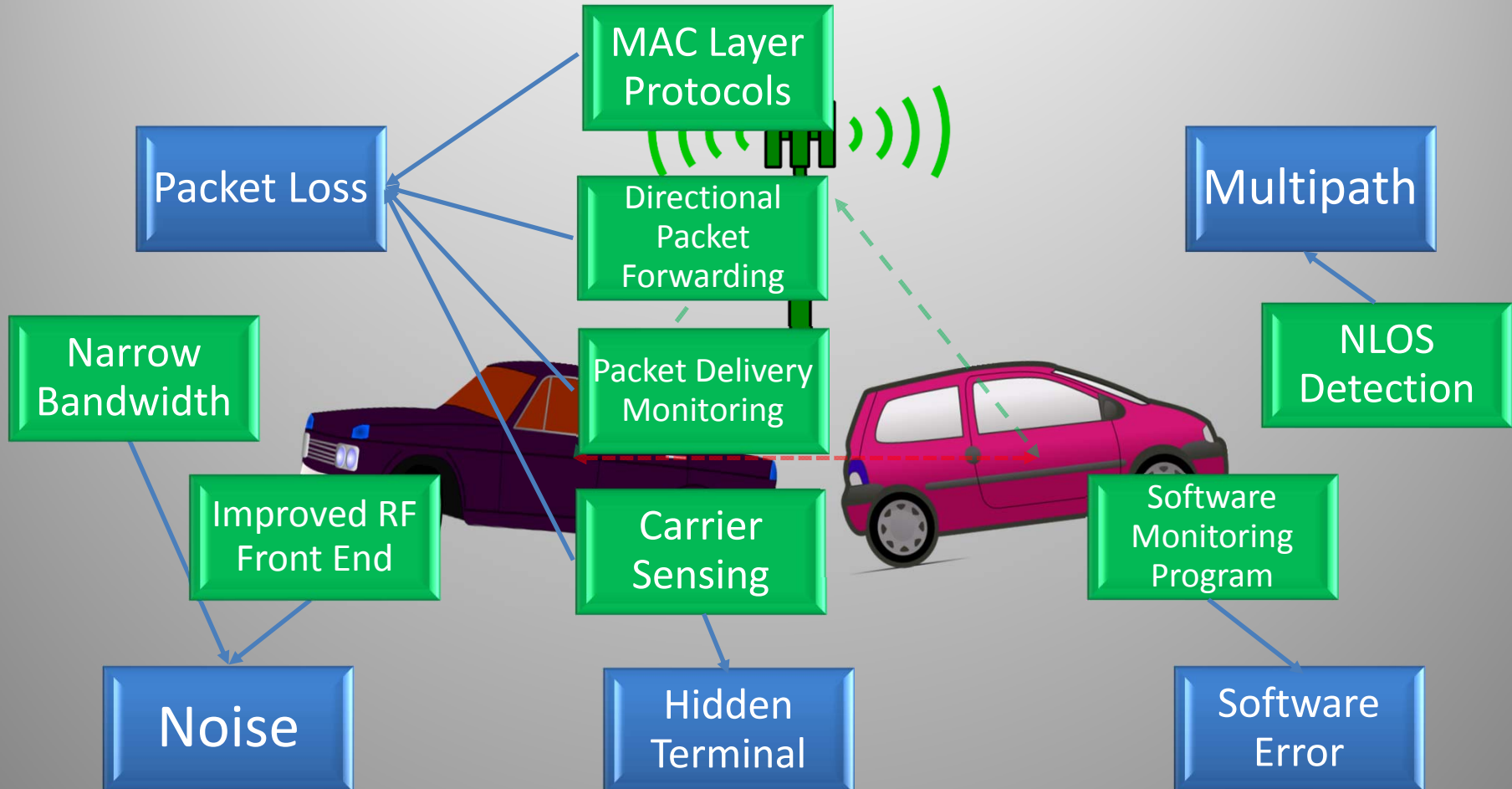


Noise

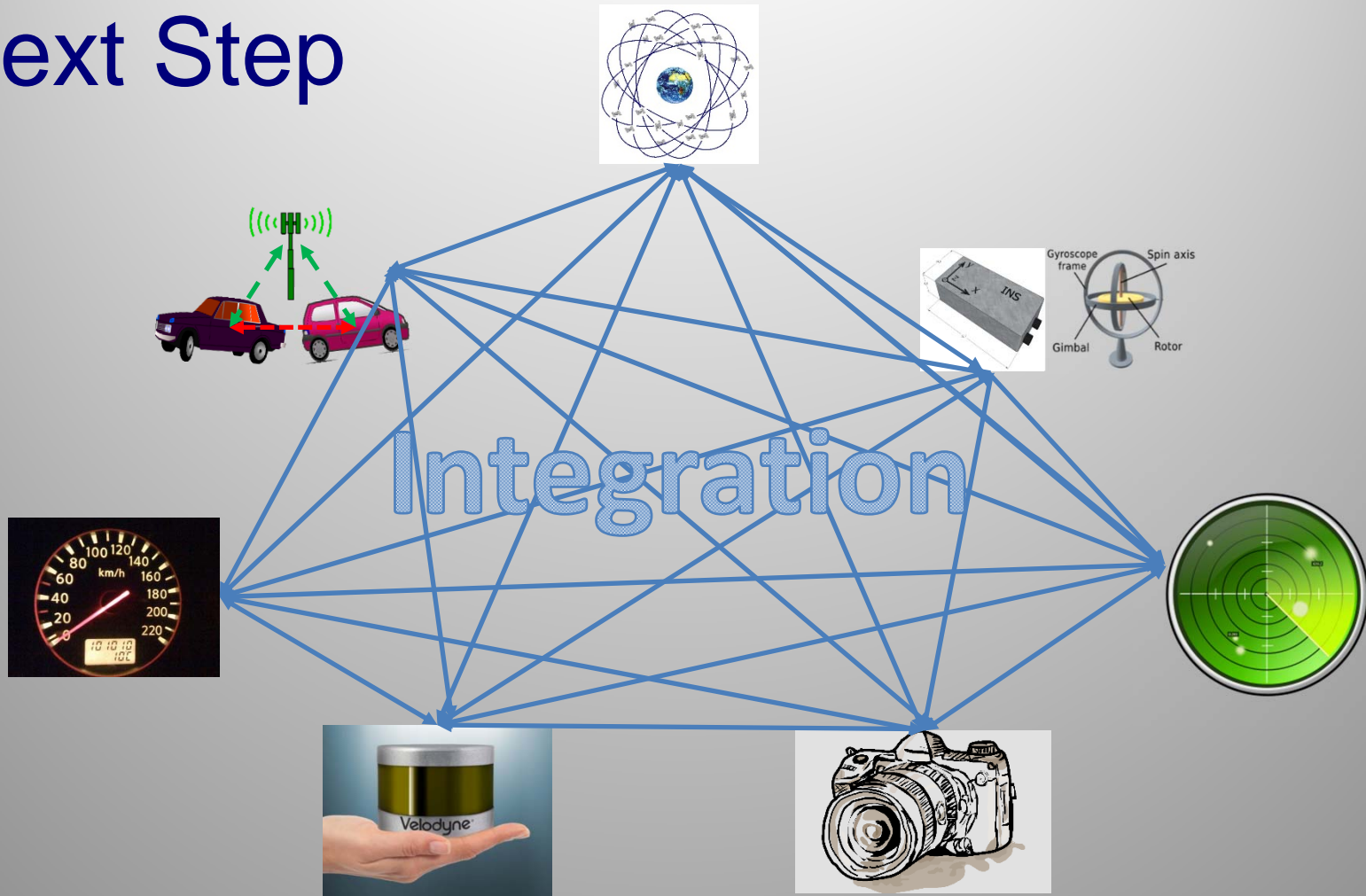
Hidden
Terminal

Software
Error

V2X Error Detection



Next Step



Thank you 😊

Elizabeth Smith

University of New South Wales

Elizabeth.a.smith@student.unsw.edu.au

Defence Science and Technology Group

Liz.smith@dsto.defence.gov.au