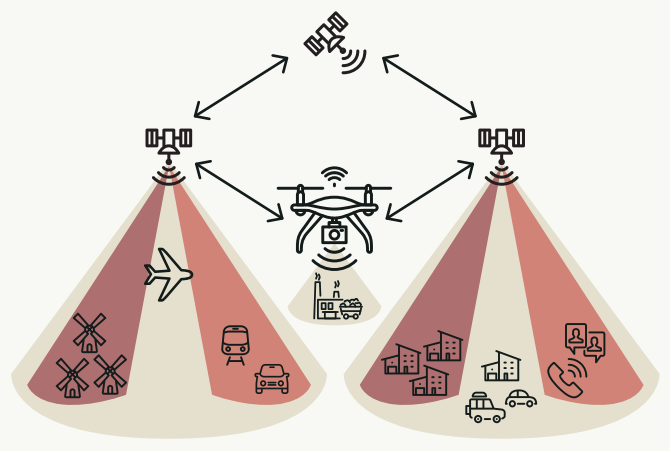

## THEME 3: FUTURE COMMUNICATIONS AND IOT

Our research focuses on communication technologies and networks for applications, including 5G/6G mobile networks, satellite communications, IoT, and ad hoc and UAV networks. These communication technologies continue to underpin industry activities and operations across the broad spectrum of sectors and society more generally. Our research addresses connectivity and data speed for these future network technologies and cuts across traditional discipline boundaries. Our key strengths are in wireless network design and communication link optimisation. We have world-leading expertise in cellular network optimisation, resource allocation, mm-wave network deployment design, user terminal scheduling, multi-antenna MIMO systems, mm-wave communication link design, beamforming, low Earth orbit satellite communications, heterogeneous networks, and secure communications. Our applied research is underpinned by fundamental capabilities in information theory and communication theory.



### TACTICAL COMMUNICATIONS

We are working closely with various industry partners in developing technology for tactical communications to mobile users on the ground using a constellation of low Earth orbit (LEO) satellites. Tactical includes soldiers with handsets, communications to vehicles, UAVs and aircraft.

### DRONES AS FLYING IOTS

In our MQ Drones Lab, we are developing high-performance drones used as the brain for flying IoT devices. These drones are equipped with a fusion of sensors, computer vision and depth-sensing cameras to detect markers. They enable communication between the flight controller and Jetson, functioning as a master and slave, while incorporating a control system that excels in wind resistance and ensures good flight stability.