

## Things I wish I knew before I bought a UAS

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Unmanned Aerial Systems or Remotely Piloted Aircraft Systems (RPAS) have become important tools in remote sensing and photogrammetry applications. They offer an unprecedented platform to deploy a variety of sensors, from straightforward camera systems through to elaborate multispectral imagers and LIDAR instruments, opening up new application areas and providing a fresh perspective on established applications.

However, operating an RPAS is not straightforward, particularly in large organisations like a university. Use of an RPAS for research purposes requires a certified RPAS pilot and a Civil Aviation Safety Authority (CASA) approved Operating Certificate for the organisation. While this sounds straightforward, it requires significant engagement with senior management to satisfy CASA's requirements. You also need to meet the Occupational Health and Safety requirements and undertake a Job safety Analysis for each project. Then there are the system and operational requirements: safe limits for batteries, incorporation of sensors onto the system, component testing and calibration, firmware upgrades, centre of gravity changes, mission planning, operational hazards and of course, weather conditions.

About eight months ago, the Remote Sensing Centre at RMIT University started down the RPAS path with the purchase of a DJI Phantom and DJI S1000 heavy lift octocopter, along with a mini-Tetracam, a thermal imager and a conventional RGB camera system. Since then, it has been working its way through all of these issues as it establishes its own RPAS imaging systems. To date, we have conducted campaigns in several vineyards in a study of vine stress, worked with Parks Victoria in koala detection and monitoring and conducted many test flights. This paper summarises the lessons we have learnt as we move from 'dabblers' to 'doers'.