

UAV Integration Checklist

Complete each section in order. Sign off each section before proceeding to the next.

Project: _____

Date: _____

I. Hardware & Software Installation

Review UAV proposal document (Google Drive) for sensor details and software requirements

Install Ubuntu with correct username (uav) and hostname (uavN)

Clone the install_script repository

Install drivers for all onboard sensors (cameras, LiDARs, etc.)

Install any additional client-specified software (SLAM, collision avoidance, etc.)

Clone required packages into ~/git/ folder

Create symbolic links from cloned packages to ~/workspace/src/

Build the ROS2 workspace (colcon build)

Verify sensor driver operation and expected output

Focus camera lenses (if applicable) and secure them with black hot glue

Calibrate cameras (if applicable) using the provided guide

Verify .bashrc variables: UAV_NAME, UAV_TYPE, UAV_MASS

Perform setup for new drone/frame/motor/propeller configurations if applicable (measure thrust constants)

Run uav_check — all checks must pass

Remove unnecessary default Ubuntu folders (Desktop, Documents, Videos, Music, Downloads, etc.)

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II. Tmux Session Preparation

Locate a suitable base tmux session (e.g. just_flying from mrs_uav_deployment)

Copy and rename the session to ~/example_session

Create additional sessions for different scenarios (e.g. indoor/outdoor) if needed

Configure example_session to launch all sensors and software

Place customized launch files in example_session/launch/ folder

Place customized config files in example_session/config/ folder

Store camera calibration files in example_session/config/camera_calibrations/

Create/modify static_tfs.launch.xml in launch/ with all sensor static transforms

Obtain sensor offset data from hardware team (CAD measurements)

Use tf_reconfigure to fine-tune transforms at runtime

Run the tmux session and verify transforms in RViz

Configure MRS UAV Status monitoring in config/custom_config.yaml

Verify all sensor rates are green in MRS UAV Status

Run record.sh and verify recording rate is below 10 MB/s

Adjust record.sh to exclude high-bandwidth topics if rate is too high

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III. Test Flights

Record all test flights on video

Calibrate UAV through QGroundControl (accelerometer, gyro, level horizon, compass)

Verify RC failsafe (RC off -> "Manual control lost" in QGroundControl)

Spin motors and verify rotation directions are correct

Perform initial flights with the NUC turned off

Test fly in Manual mode

Test fly in Altitude mode

Test fly in Position mode (induce yaw whirpooling)

Perform autonomous takeoff and execute maneuvers via MRS UAV Status

Test land_home command

Demonstrate any client-requested features (precise landing, obstacle avoidance, etc.)

Upload autonomous test flight video to project Google Drive folder

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IV. Backups

Delete the bag_files/ folder to avoid backing up ROSbags

Upload final example_session to "backup" folder in project Google Drive

Download PX4 parameters via QGroundControl and upload to Google Drive

Create full disk backup using Clonezilla

Compress Clonezilla image into .zip and upload to Google Drive

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V. Documentation

Measure and record the mass of the UAV (with battery and propellers)

Measure and record UAV dimensions with propellers (width, height, length in cm)

Measure and record UAV dimensions without propellers (width, height, length in cm)

Checked by: _____ Date: _____