



Elektrobit



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Developing Advanced Drone Navigation Algorithms at Continental & Elektrobit

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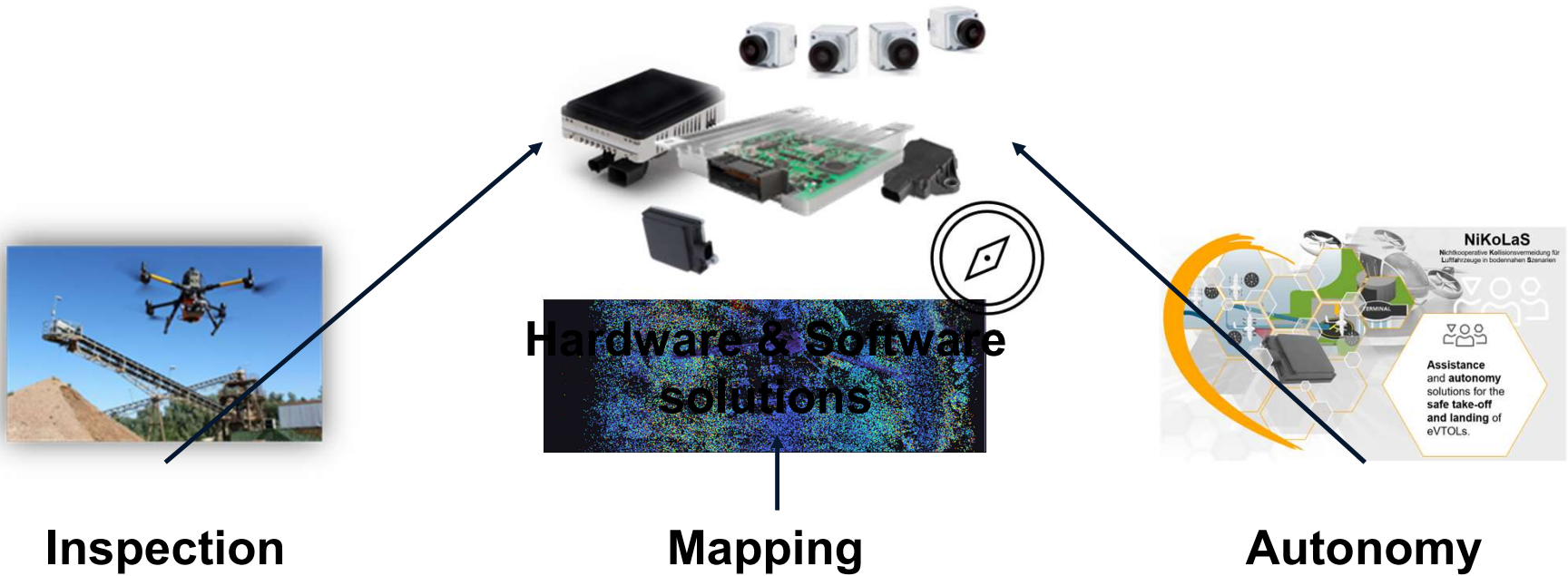


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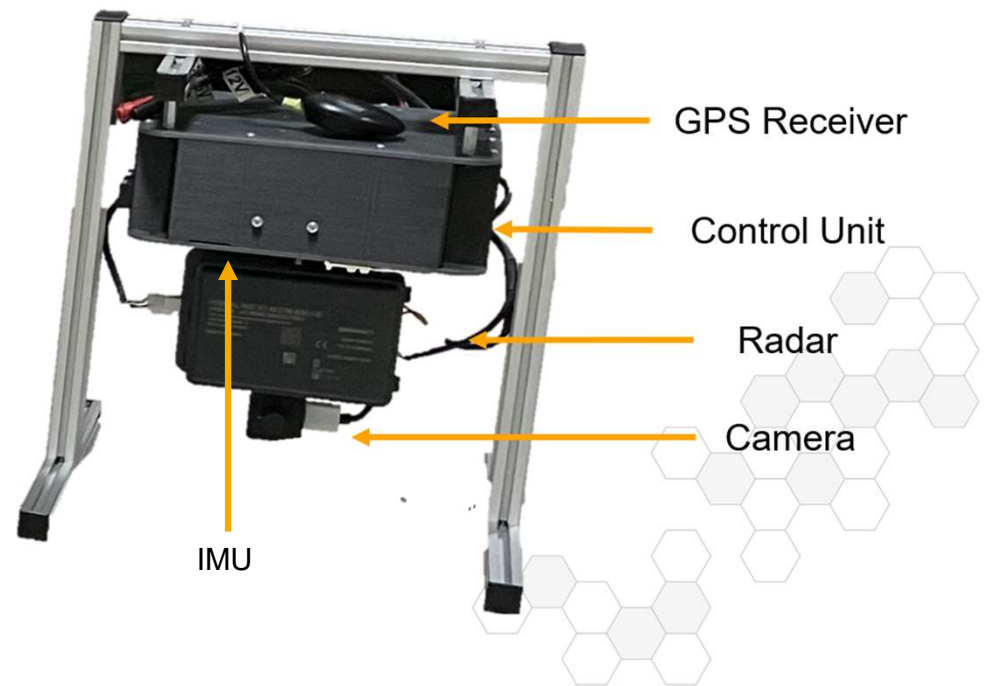


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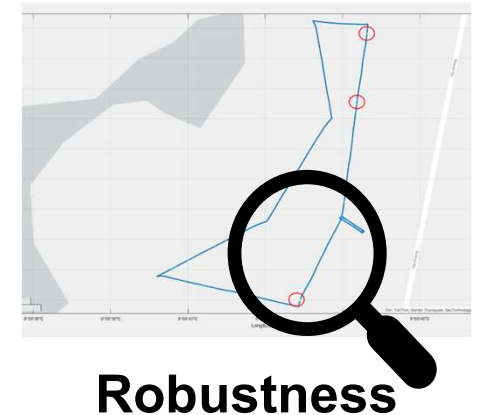
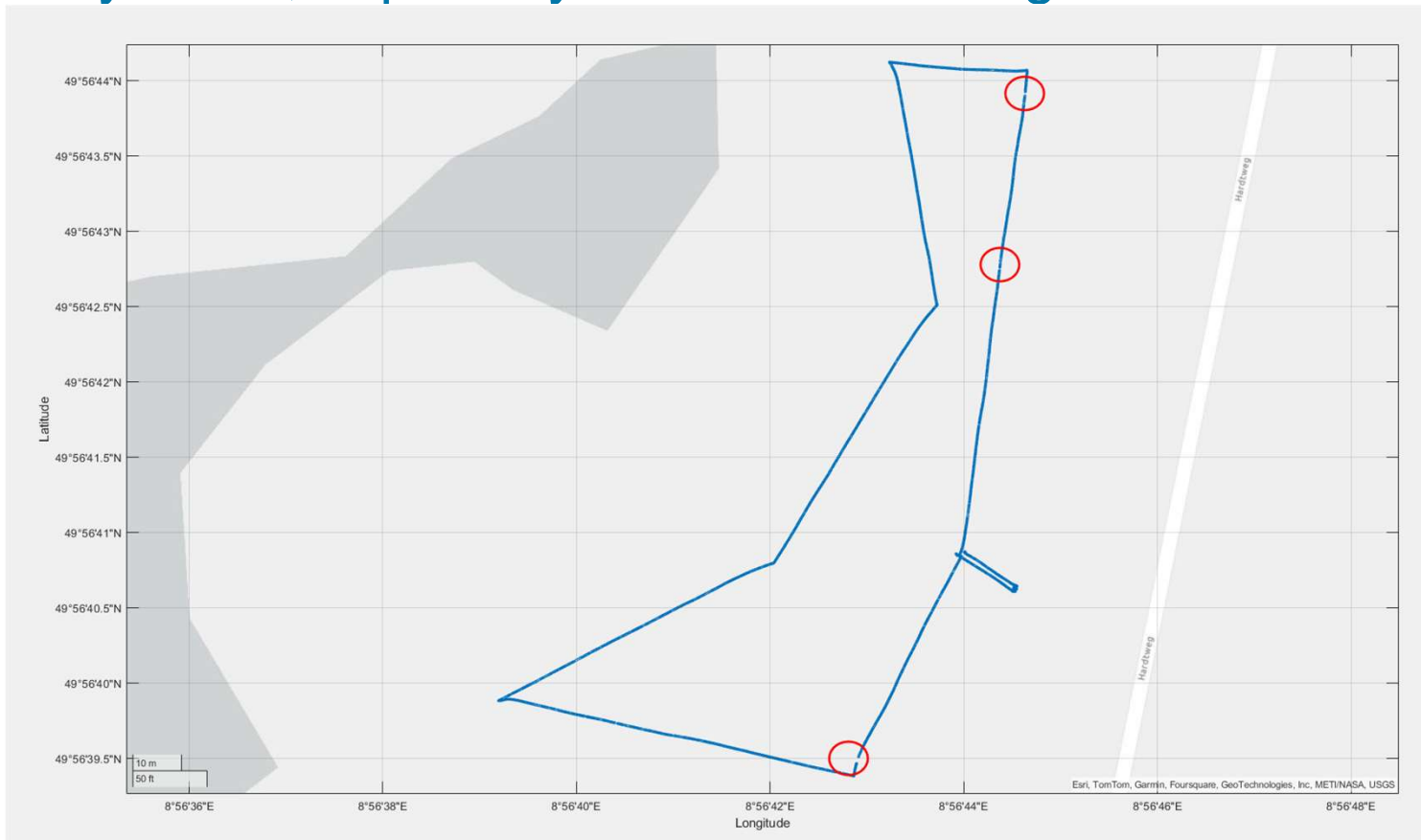
Use cases



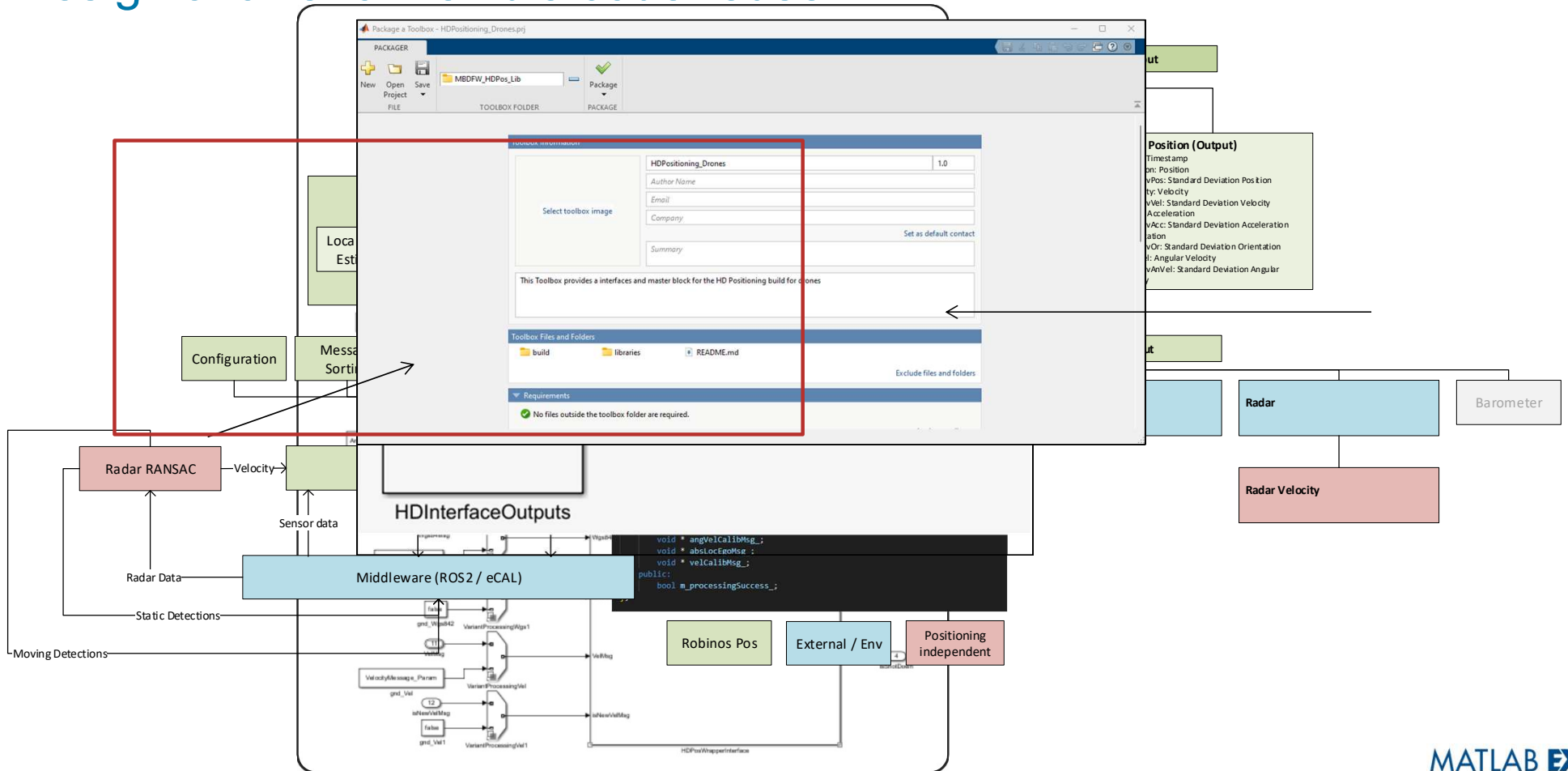
Our payload system “ConRadAir”



Robust navigation is essential for unmanned aerial systems, especially without GNSS signals.

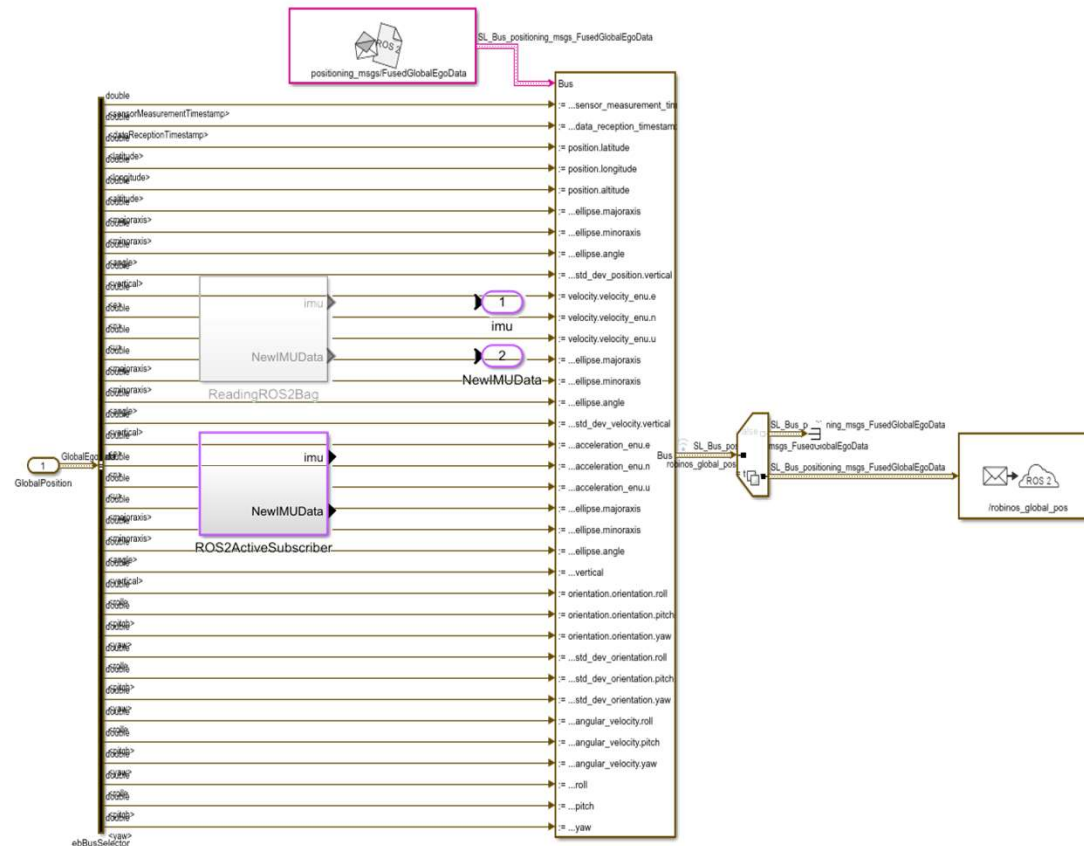


Integration of Legacy Algorithms with Model-Based Design allows for flexible code reuse.

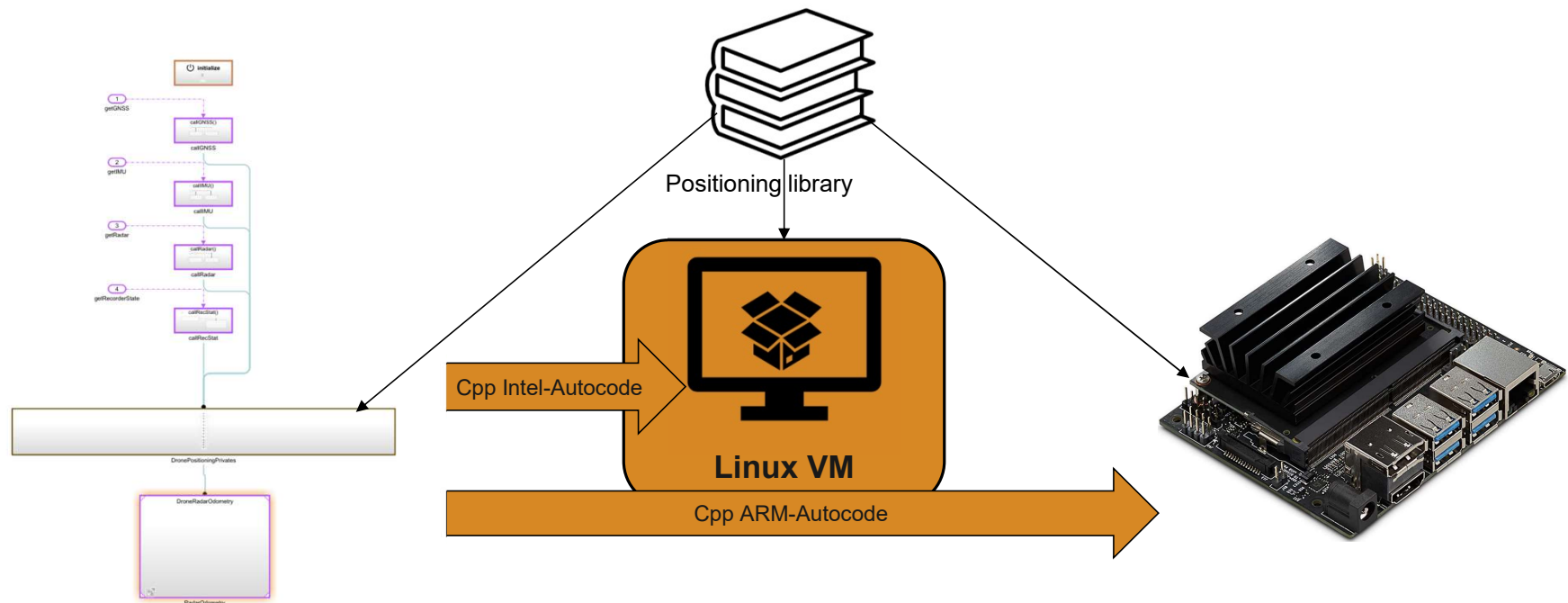


ROS2 Toolbox enables comprehensive system simulation with real-world data to ensure system reliability and robustness.

- Variant subsystems allow switch between
 - Replay ROSbag
 - Subscriber mode
- Code generation for standalone ROS2 node including
 - ROS2 parameters
 - Publisher / Subscriber
 - Custom messages
- Small manual modification of Cmake-File for library linking

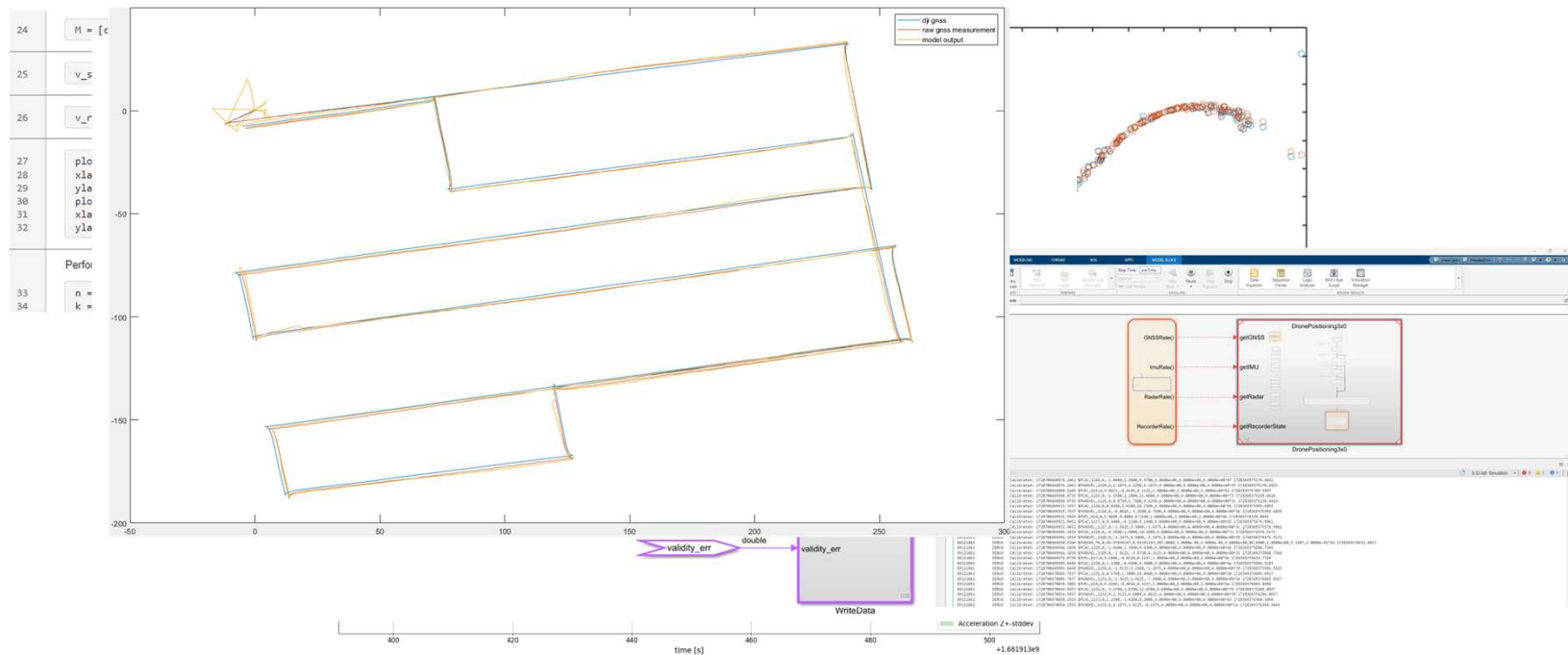


Streamlined process from simulation to execution enhances efficiency.



Shift left in development through simulation & automatic code generation

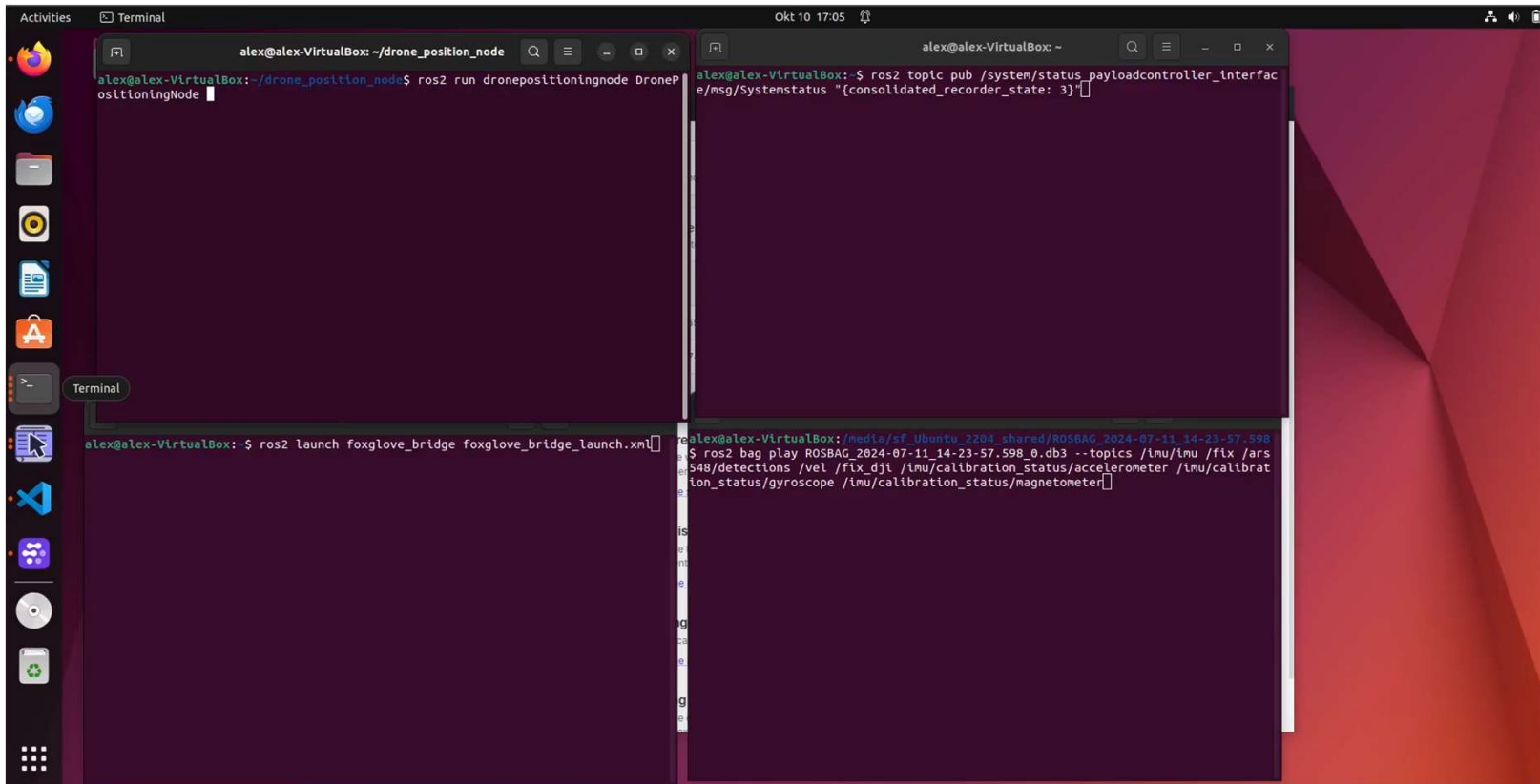
Model-Based Design significantly improves the development of drone and eVTOL systems.



**Implementation
& Design**

**Verification &
Deployment**

Final results



The screenshot shows a terminal window with the following content:

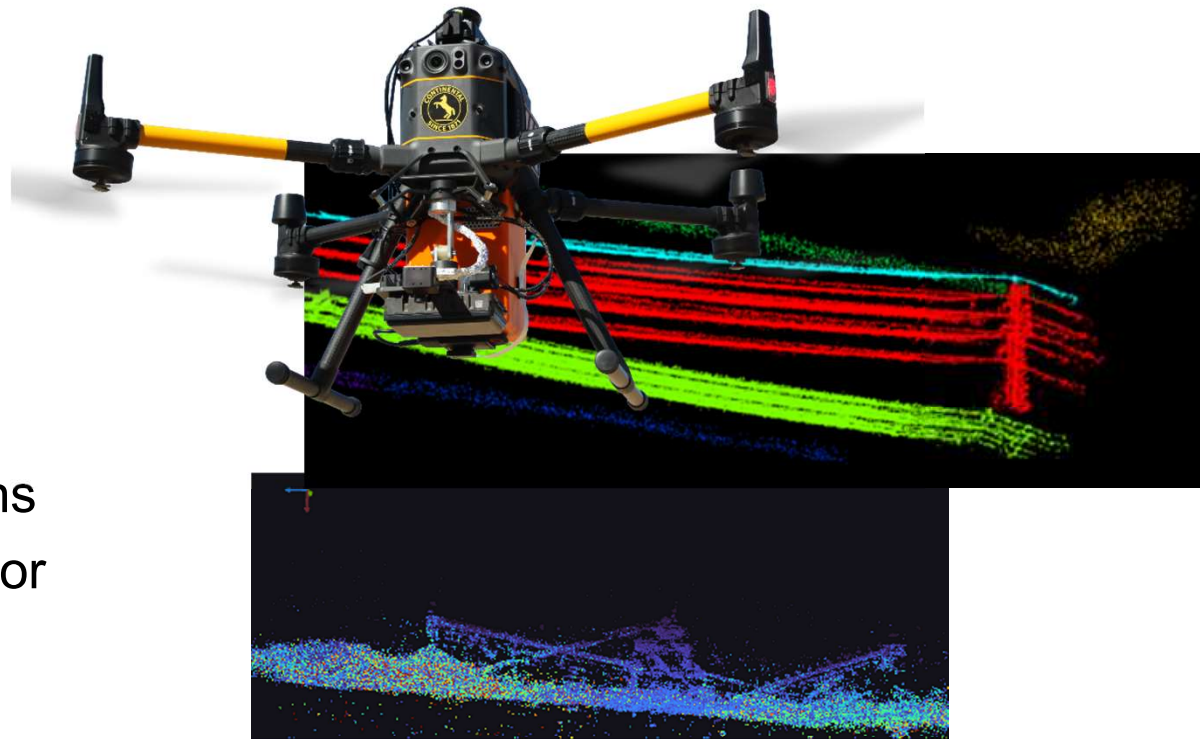
```
alex@alex-VirtualBox: ~/drone_position_node
alex@alex-VirtualBox:~/drone_position_node$ ros2 run dronepositioningnode DronePositioningNode

alex@alex-VirtualBox: ~$ ros2 topic pub /system/status_payloadcontroller_interface/msg/Systemstatus "{consolidated_recorder_state: 3}"

alex@alex-VirtualBox: ~/media/sf_ubuntu_2204_shared/ROSBAG_2024-07-11_14-23-57_598
alex@alex-VirtualBox:~/media/sf_ubuntu_2204_shared/ROSBAG_2024-07-11_14-23-57_598$ ros2 bag play ROSBAG_2024-07-11_14-23-57.598_0.db3 --topics /imu/imu /fix/ars548/detections /vel /fix_dji /imu/calibration_status/accelerometer /imu/calibration_status/gyroscope /imu/calibration_status/magnetometer
```

Summary and Outlook

- Enhancement of automotive grade solutions to support unmanned aerospace solutions
 - E2E implementation, simulation and deployment
- »»»
- Safety
 - GNSS denied situations
 - 3D-mapping with sensor fusion



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