Automation & Robotics Research Institute
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Quad-Rotor Specifications

Weight(including the battery and the electronics)	1.25 Kg
Battery time while hovering	15 min (150W power consumption)
Payload	about 250 g
Dimensions	almost square with sides of 0.5m
Radio communication range	150m indoor, 800m outdoor

On-board sensors (50 Hz sample rate)

- 3 x gyroscopes
- 3D accelerometer
- 3D magnetometer
- GPS, 4Hz sample rate
- Vertical distance (ultrasound), 16.66 Hz sample rate
- 4 x motor speed readings
- battery voltage & current consumption

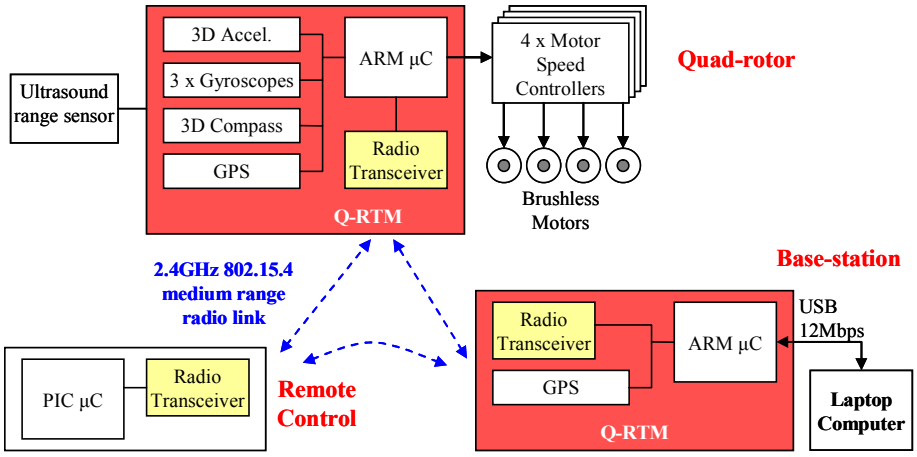
Base Station capabilities

- USB connectivity: 12Mbps, CDC ACM class (seen as a serial port under Windows or Linux)
- Ethernet, 100Mbps, UDP and TCP/IP support
- Power: by USB, by an external power connector (12V) or via Power over Ethernet (PoE)

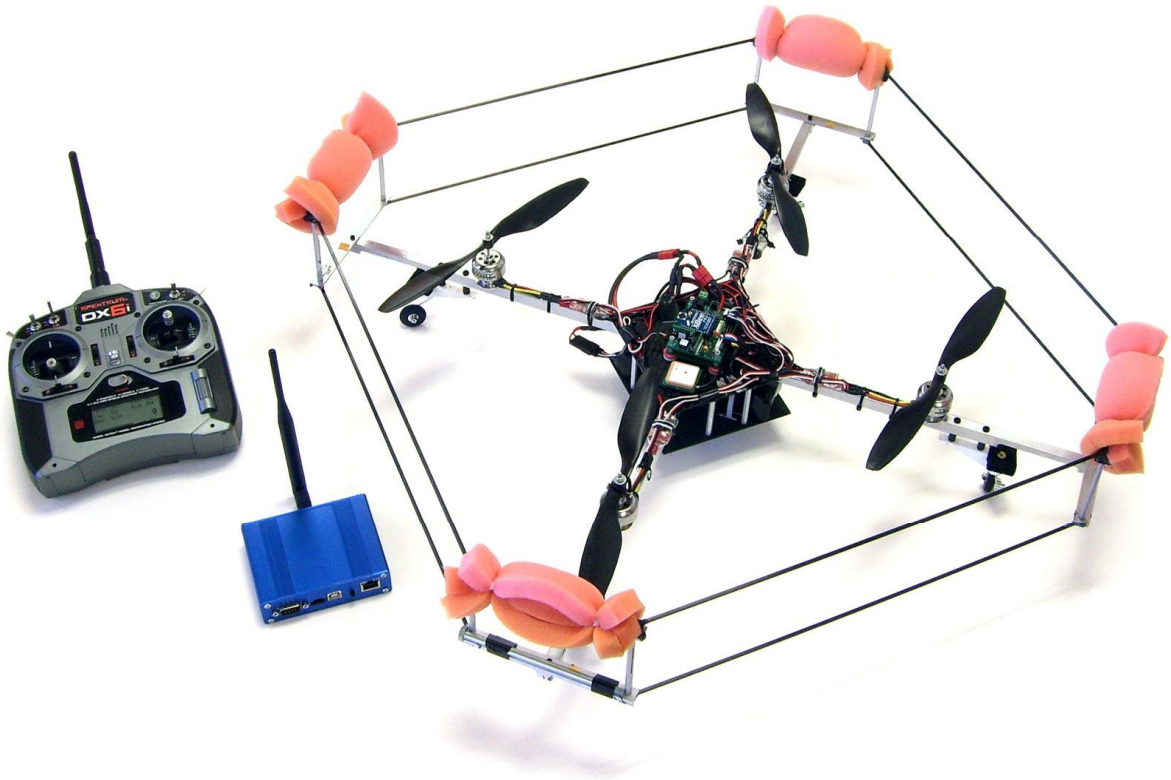
Software support

- Simulink S-function for real-time communication using the USB link to the Base Station. Works in all simulation modes, normal and accelerated
- Nonlinear model of the quadrotor platform in Simulink
- LabView support using UDP packets

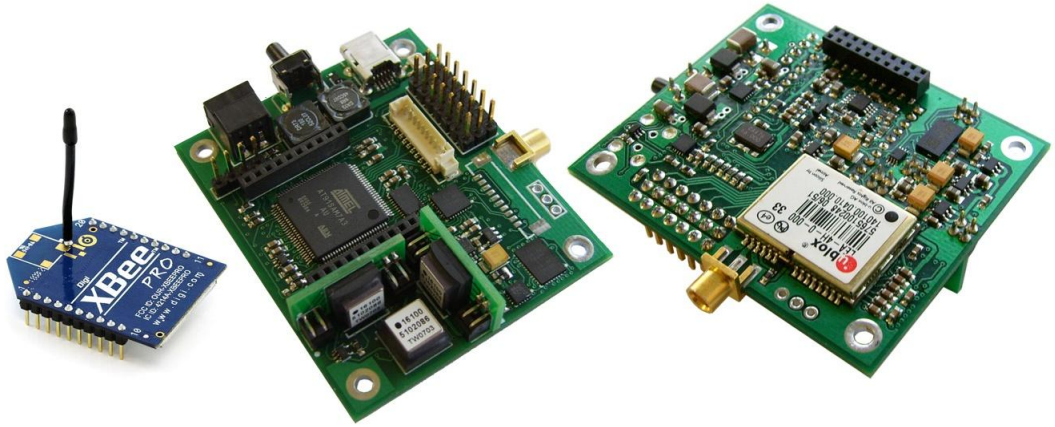
Organization of the control system



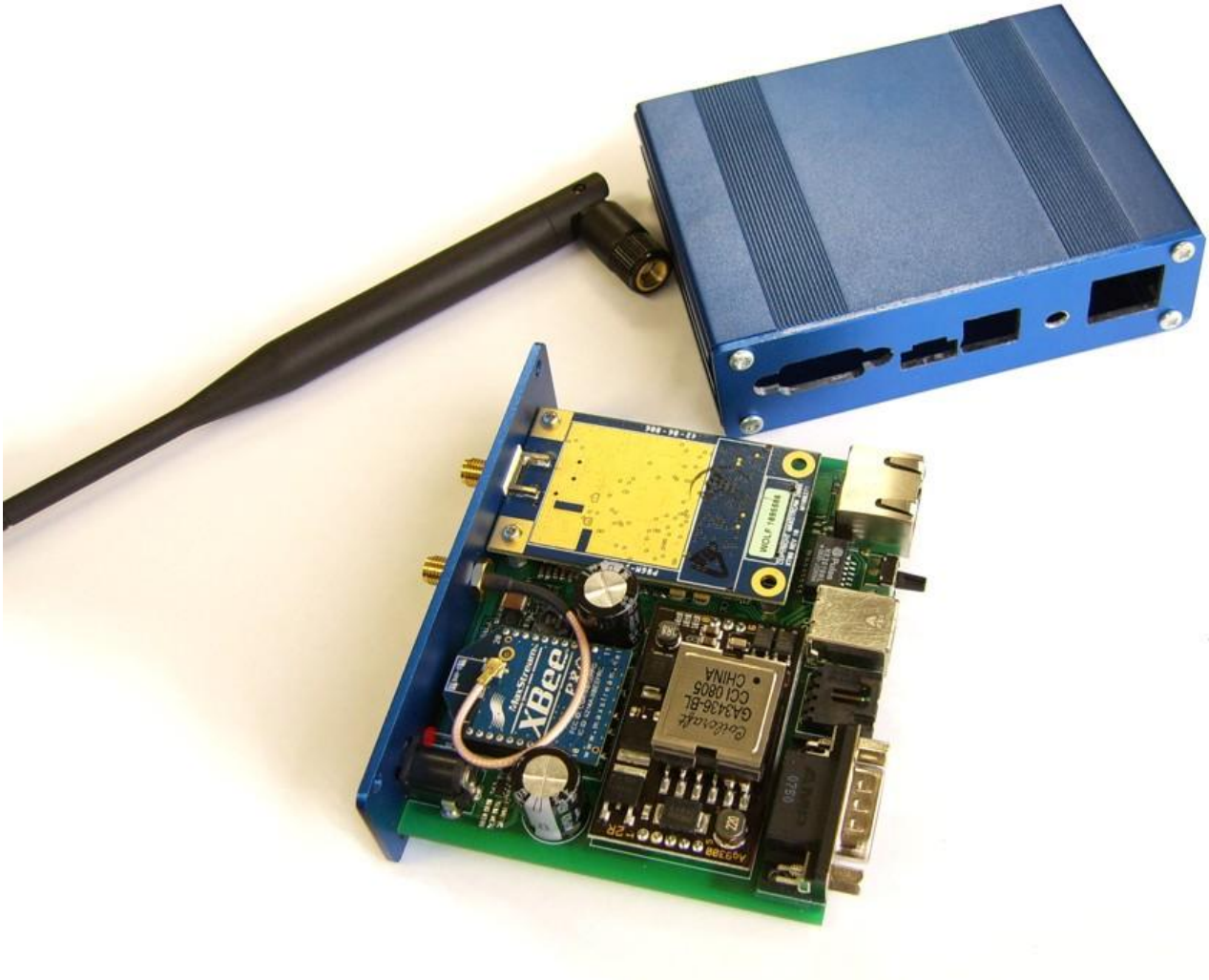
The mechanical platform



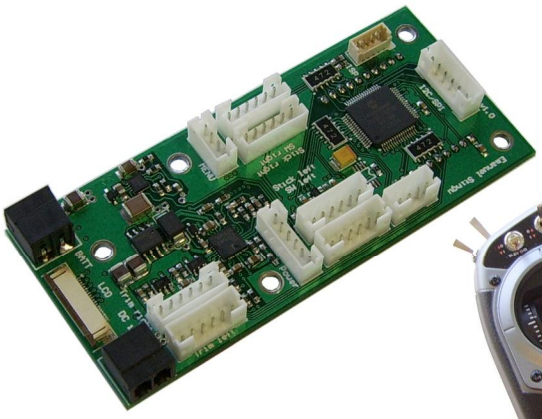
Quad-Rotor electronic board

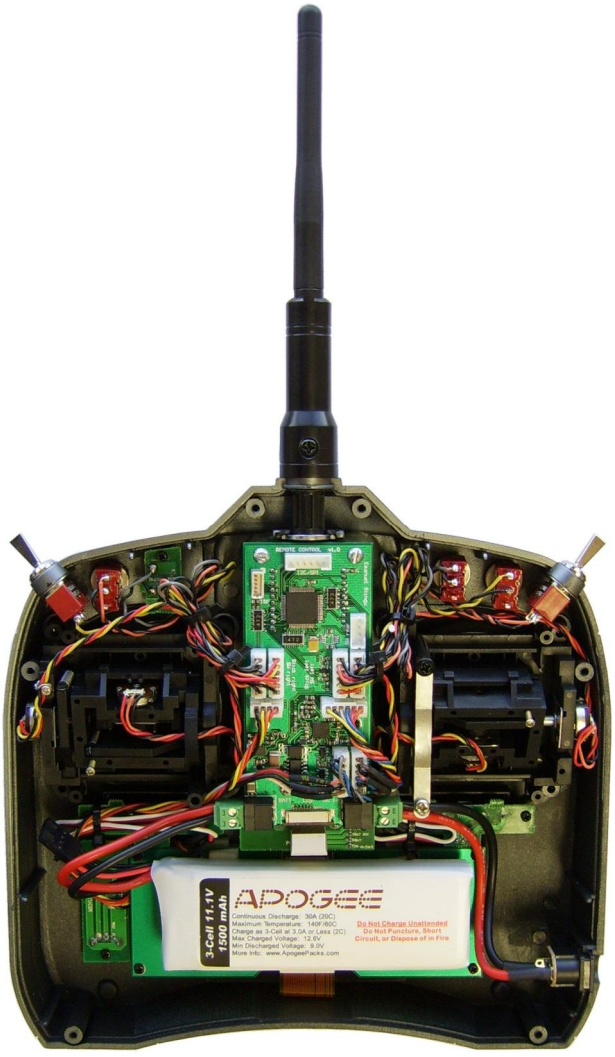


Base station



Remote control





Simulink Implementation