Multilayer controller for field robots - High portability and modularity to ease implementation

Various autonomous machines and robots exist in agriculture today as research prototypes. In many prototypes software and hardware are designed and developed from scratch. The MobotWare software framework has been used to create an overall system called multilayer controller. MobotWare is a software framework capable of controlling mobile robot platforms in different environments. The RHD is a real-time device server, which operates only as a hardware interface. The MRC is a low level real-time controller it can control the movements and actions of the robot. The AURS allow connections to advanced sensors and handles tasks like mapping and localization. Along with the MobotWare, machine dedicated firmware controlling specific platforms without internal CAN system has been updated. On the hardware side there has been added various new sensors and a safety circuit. The Multilayer controller has successfully been implemented on two agricultural machines. Future work will include fault tolerant software, introduce compliance to safety standards and update the user interface.