The vacuum control of the Large Hadron Collider and its injectors is based on PLC and SCADA off-the-shelf components. Since late ‘90s, CERN’s vacuum group has developed a dedicated control framework to drive, monitor and log the more than 10 000 vacuum instruments. Also, in 1998, CERN’s industrial controls group developed the UNICOS framework (UNified Industrial Control System), becoming a de facto standard of industrial control systems and gradually deployed in different domains at CERN (e.g. Cryogenics, HVAC...). After an initial prototype applying the UNICOS-CPC (Continuous Process Control) framework to the controls of some vacuum installations, both teams have been working on the development of vacuum-specific objects and their integration, together with new features, into the UNICOS framework. Such convergence will allow this generic framework to better fit the vacuum systems, while offering the advantages of using a widespread and well-supported framework. This paper reports on the experience acquired in the development and deployment of vacuum specific objects in running installations, as a prototype for the vacuum controls convergence with UNICOS.

The first set of vacuum objects has been developed jointly by the vacuum control team and the Industrial Controls and Safety group. The widgets have been developed according to UNICOS standard and vacuum control user requirements. SCADA features – i.e. automatic synoptic, state history panel and pressure profile panel – have been redesigned from vacuum framework in a more portable version and compatible with UNICOS-CPC objects. All the features are scalable. They have not only been refactored but upgraded with new functionalities. The goal is to provide a smooth migration to UNICOS and limit the impacts for users. The only change for users is relative to standardization of widget’s animation and panel layout. The new SCADA panels remain user friendly with same look as vacuum framework panels. The first version of the UNICOS vacuum control package has been tested, it will be released soon after a review with vacuum control users. In order to migrate large vacuum system to UNICOS framework, the vacuum control package needs to be complemented with additional CPC device types (ion gauge, fast valve, bake-out cabinet, mobile pumping group…) and SCADA features (device list, vacuum trending, replay…).