The LHC circuit application is intended to provide a single access point for the supervision of systems involved in the powering of the LHC magnets. It was initially made for the hardware commissioning of the LHC.

Outside of the Power Converter (PC) themselves other systems are able to intervene in the diagnostic when the powering is impacted: interlocks (PIC), quench protection (QPS and nQPS) and the cryogenic status (CRYO).

The LHC_CIRCUIT gets data from the Power Converter, the control of Power Converter is not in the scope of LHC_CIRCUIT and is done via a dedicated user interface.

One challenge of the application is to map these different sub-systems between them. They do not follow the same partitioning of equipments. Moreover, there are many variations possible in their combinations.

It gives synthetic information from PC, PIC, QPS and CRYO:
- Summary and details for each LHC Circuit.
- Summary for each Powering sub-sector.

It gives direct access to the details, information and commands for the PIC and QPS Applications:
- Provide a single access point for these two applications.
- Hierarchical navigation via Powering sub-sector/LHC circuit.

It has homogenous graphical interfaces:
- Data presentation.
- Navigation.

The application is also an entry point for the QPS macro used by the LHC sequencer as it is the only system connected to all QPS PVSS servers.

The Circuit application is connected by PVSS distributed connections to the CRYO, QPS and PIC servers. It is also connected to the Power Converters by a CMW link.

If the PIC application have its own UI, the QPS do not. In practice, the operators control both applications through the Circuit application most of the time. The CRYO is connected to the Circuit application only to get status. No CRYO actions are done through Circuit.

The entry point is a view of the LHC with all the powering sub-sector. A double click on the powering sub-sector gives access to a view with all circuit of a given powering sub-sector. A double click on a circuit gives access to all the devices (or a summary of QPS and nQPS devices for the RB, RQF and RQD circuit). A double click on the QPS and nQPS summary gives access to the QPS and nQPS devices of the RB, RQF and RQD circuit.