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ProtoDUNE. The how and the why.

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If you want to build a skyscraper, learn how to build a house first. DUNE is a long-baseline neutrino experiment which aims at studying neutrino oscillations. The DUNE far detector will consist of four modules, each using liquid argon time-projection-chamber (TPC) technology and holding around 14,000 tonnes of the noble liquid. To test the technology, its scalability, and gain expertise, two prototypes, called Single-Phase (SP) and Dual-Phase (DP) ProtoDUNEs, have been constructed at CERN. The SP detector has been operating since October 2018 and managed to take data using a dedicated charged-particle test beamline provided by the CERN Neutrino Platform. The DP TPC began operating in July 2019 and is currently taking data using cosmic tracks. In my talk, I will briefly explain how a single- and a dual-phase liquid argon TPC work. I will describe the challenges and achievements of the two ProtoDUNEs, with specific reference the installation, the cryogenic system, the high voltage feedthrough, the purity and temperature monitoring etc. I will then present the future plan of the detectors so that, hopefully, by the end of the talk, you will have learnt how building and operating these prototypes has helped us to pave the way to a smoother construction of the DUNE far detectors.