This paper presents a description of a new emulation platform to help decrease expenses for the development of a new train-to-ground communication system for railways, which is one of the objectives of the Shift2Rail Joint Undertaking. This emulator will interface with the T2G communication prototypes at IP layer and will consider many railway-specific services, perturbations and physical layer scenarios. It will combine modern approaches for testing like hardware-in-the-loop and software-in-the-loop in order to mimic railways environment and radio access technologies on an efficient way. In this paper we explain all these aspects, beginning with the railway particular circumstances to be taken into account and ending with an explanation of the approach for the development of the emulator.