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**Operator Training Simulator (OTS) logics development using LUA
programming language scripts.**

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Abstract

In recent decades, many studies have been developed about operator training systems. Many of these systems, called OTS (Operator Training Simulator) simulate the operating environment of one or more substations. This study aimed to modernize the training standards in order to obtain better results in the operation of the Electric Power System.

Using the simulator, the operator can perform a variety of activities from their daily duties, through a friendly interface that is as close as possible to the operating environment of a substation, from the location of the field equipment, as well as control room panels, existing controls and protections. The graphical interface was developed in HTML and SVG languages, and with the use of JavaScript in scripts, it was possible to establish an interface between web servers and viewers. Like most substations often undergo improvements and / or expansions, it becomes very laborious to remake or adapt the simulation systems. One of the ways found to facilitate the adequacy is through scripts that perform control functions and protection of the installation. So in this simulator, we developed a script in Lua language. Lua is a powerful programming language, fast and light, designed to extend applications. It is used for logical, operators, scenario generation, protection and control and also in supervisory systems and computer games.

The script file "script.lua" is loaded and executed automatically by the web server during startup. Within this script should be a function "ScriptCycle" defined by the user, which will be called periodically while the "Webserver.exe" is running. Some APIs (Application Programming Interface) provided by the server are, for example, "hmi_write_point". Functions have also been developed, such as automatic tap control for voltage regulation and logic for interlocking switches and circuit breakers.

Using this methodology, changes in the system database are not necessary (SCADA or HMI), not compromising the operation of the installation