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Applications of Lua-based Embedded Scripting within EPICS at LANSCE

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During our retrofit of LANSCE LINAC instrumentation systems we implemented fundamental upgrades to EPICS facilitating the rapid-prototype approach to software-development based upon the Lua embedded scripting language. Selection of Lua facilitates new advanced capabilities within EPICS satisfying requirements at LANSCE, but without compromising the general utility of EPICS for use within the wider context of its different sites and projects. At LANSCE Lua implements subscription update filtering of logical beam gate combinatorials selecting subsets of produced beam species, implements configuration scripting during EPICS IOC startup, and also implements advanced rapid-prototyping approach to algorithmic building blocks based on a new Lua-script-based EPICS record. We will discuss some details of how these new features are programmed and configured for implementing LANSCE requirements along with some rough measurements of the computational efficiency of Lua within these applications.

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