Software solution for the generation and management of configuration registers in integrated circuits

**Background**

The different chips developed at the Chair of Integrated Analog Circuits comprise the possibility to configure the different functional blocks of the respective circuit individually. The required control signals are stored in registers, which are accessible for read and write by use of a digital interface like SPI. Due to the growing complexity of the circuits the effort as well as the error-proneness increases with regard to:

- the definition of the registers in VHDL
- the documentation of the registers in LaTeX
- the usage of the register definitions in different programming languages and environments (C, Matlab, etc.)
- the synchronization of all these data sets

**Task**

As a first step, a suitable data storage for the register definitions has to be identified among the different possibilities (XML, Excel, etc.), which enables a collaborative and user-friendly editing of the datasets and fits into the existing IT infrastructure. Subsequently, a program has to be developed for generating the different outputs like VHDL, LaTeX, etc. automatically from the database. The functionality to be implemented may be extended dependent on the duration of the thesis. Good programming skills in at least one high level language (Python, Java, etc.) as well as practical experience with storing and processing data is expected. Knowledge in VHDL, LaTeX, C is beneficial, but not mandatory.

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