

# PHD Thesis Abstract

## Subject:

## Automated Environment From Design Platform Specification to Mat10.

### Abstract:

A design platform is complete solution that allows design team to build a System-On-Chip (SOC). A design platform is composed of:

- A Physical Design Kit (PDK)
- A set of digital libraries
- A design methodologies
- A digital design kits environment based on Cad tools.

The design platform specification defines all components, parameters and associated features. It gives for instance the list of tools, of libraries, list of pvts corners, characterization condition, Cad view contents, ... A Mat10 (Maturity 10) defines a milestone where all the components of a design platform are generated, validated as a whole and ready to ship to customers.

Central Cad Design Solution (CCDS) is the provider of Design Platform within ST on various technologies such as CMOS and NVM technologies that are used by all the applicative division for their products. CCDS libraries offer covers a wide range of library from Standard-cells library to Complex Serdes. In order to cover a wide range application various design flow and Commercial tools are supported. Within CCDS the cad view automation, generation and certification group provide solution to generate and validation libraries and design platform.

This thesis proposes to define, develop and validate a global environment that allows to capture all parameters of a design platform, define dependencies between various steps, and enable automated generation and the validation from those specifications to produce Mat10 libraries. This environment must provide various features such as reporting and allow incremental development when a set of parameters have changed to improve global efficiency. This environment will enforce a high level of formalism that is required in this complex development process that involves a lot of engineer at different location. It will allow sharing in a streamline way reference data between various design group.

This thesis will start with the identification and classification of those parameters and components. Then, formalism will be defined to capture those parameters and components. The various processes of libraries generation and validation will be identified and classified. This classification must also take into account the usage of those various libraries in the design flow. It must cover also views contents requirement associated to each family of libraries. Once, those various aspects will be identified the environment will be developed and validated in order to enable a wide deployment of the solution within the various library groups.