

Chapter 7 - OpenROAD flow scripts

Course authors (Git file)



- 1 What are we going to do now?
- 2 The tools in ORFS
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Section 1

What are we going to do now?



Previous chapters

What happen on the way to here:

- GDS-2-RTL: OpenROAD
- OpenROAD flow scripts (ORFS) overview
- ORFS flow steps and flow components
- First run of the flow scripts
- A Dive into the PDK (Klayout)
- Analysing: Heatmaps and more (ORFS GUI)



This chapter

NOW:

- One day of using ORFS
- Getting a hands on with important data and features.



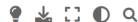
Idea of today

There is a good tutorial about ORFS in the official documentation:

<https://openroad-flow-scripts.readthedocs.io/en/latest/tutorials/FlowTutorial.html>

The ORFS online-tutorial was not written for the use with the IHP PDK especially, but we can adopt this easily.





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OpenROAD Flow Scripts Tutorial

Introduction

This document describes a tutorial to run the complete OpenROAD flow from RTL-to-GDS using [OpenROAD Flow Scripts](#). It includes examples of useful design and manual usage in key flow stages to help users gain a good understanding of the [OpenROAD](#) application flow, data organization, GUI and commands.

This is intended for:

- Beginners or new users with some understanding of basic VLSI design flow. Users will learn the basics of installation to use OpenROAD-flow-scripts for the complete RTL-to-GDS flow from here.
- Users already familiar with the OpenROAD application and flow but would like to learn more about specific features and commands.

Figure 1: ORFS Online Tutorial



Lecture and trainings more interactive



Caveats

- ORFS does not handle multiple runs for a single design.
- The design run must be cleared with `make clear_all`, before a new runs can be started.
- !!! The previous data from the previous run will be lost.

Side feature:

- A run can start over where you left it.

My opinion:

- Both should be possible:
 - Kkeep data
 - Start over where left behind

But it is not.



Workaround for this

We have to:

- Manully save the previous data.
- Maybe just be renaming the directory.
- make gui_final only works on the actual design data.

Training: Multiple design runs



Section 2

The tools in ORFS



Section 3

Structure of flow directories



Section 4

Important data locations



Logs

- Where to find?
- How to read?

Training: Design logs

Training: Design logs



Results

- Where to find?
- How to read?

Training: Design results

Training: Design results



Reports

- Where to find?
- How to read?

Training: Design reports

Training: Design reports



Section 5

Design config variables



Design config variables

- Where to find?
- How to change?
- See the changes in the design data

Training: Changing the density

Training: Changing the density

