Experience of Using OpenROAD Flow Scripts on a Specific Design

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Abstract: The QRFS is a tool developed by university California San Diego in collaboration with VSD Team Bangalore. The tool is opensource and any one can use it. positives of the tool are Open road has integrated tools for Physical design and STA no need to use different tools for Physical design and STA, other positive is that fast turn around time less than 24 hours for 7nm designs and Complete openroad Tool takes less than 20GB space and it can also work on number of platforms. The negative of open road flow script is that its make file is not organised properly so that we can run each step separately.

1.INTRODUCTION

Open road flow script is open-source flow which is used to be cost effective and less time consuming. The advantage is that it can work on Advance node as well and number of tape outs has been done. This tool is from RTL to GDSII. The disadvantage which I saw was

Regarding the makefile we will discuss that in detail below. In this paper we will discuss the pros and cons of the ORFS and Tell our experience regarding the ORFS .

2. DESIGN FLOW OVERVIEW

OPENROAD tool is complete RTL to GDSII tool with number of stages Integrated in one particular flow. Like make file has synth, Floorplan, Placement, CTS, routing and finish. For one of the blocks ASAP7 UART it takes less than 5 mins to run complete RTL to GDSII. The flow is setup with the make file approach as it is easy to run the flow continuously. The disadvantage which I found out is that if u want to run particular Step in makefile like floorplan and if we give sudo make floorplan it won't run the complete step instead sources some files. It will be better if we set the description of target completely in stead of sourcing some files Only.

Include all the description for the floorplan target, similarly do for the other targets as well this will increase the speed and will able to run the particular step and debug separately .

3.CONCLUSION OR RESULT

OPENROAD tool is complete RTL to GDSII tool the overall experience is positive
1.It can run on number of designs from 45 nm to 7 nm.
2.Over all run time is good.
3. It has good run time for lower nodes as well.
4. It has a makefile flow.
5.Installation takes less the 20 GB
6. It can run on number of platforms.

The disadvantage or negative which I found out is mentioned below.
1.It has makefile for running ORFS which is not organised properly it should have the complete description of of running commands so that if we run sudo make floorplan it should do complete floorplan instead of setting some variables .

4.REFERENCES

1.Openroad 7nm physical design contest ,VSD 22feb 2023
https://www.openroaddesigncontest.org/

2.OpenRoad flow scripts .Github https://github.com/The-OpenROAD-Project/OpenROAD-flow-scripts

A Figure shows the current make file is