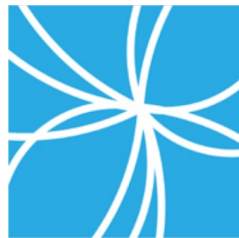


ITk Strips PP2 Firmware

Karol Krizka

June 10, 2024



BILPA

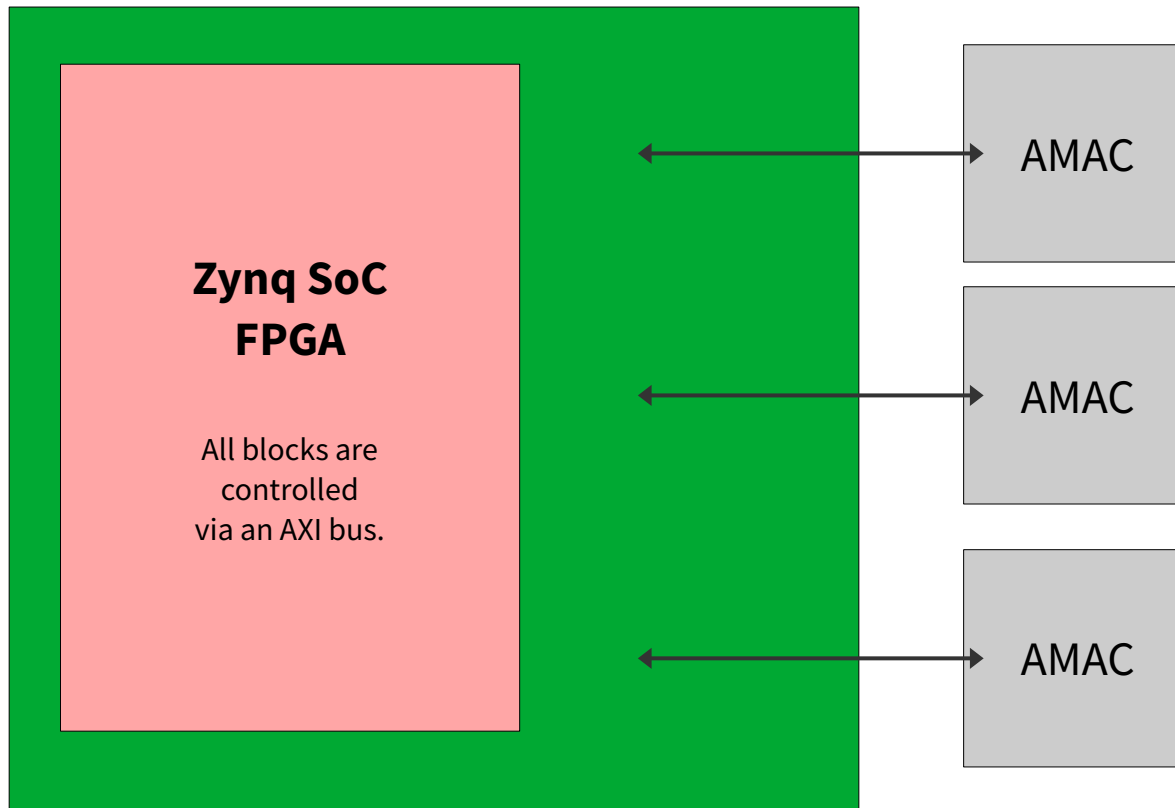


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EMP Users Meeting

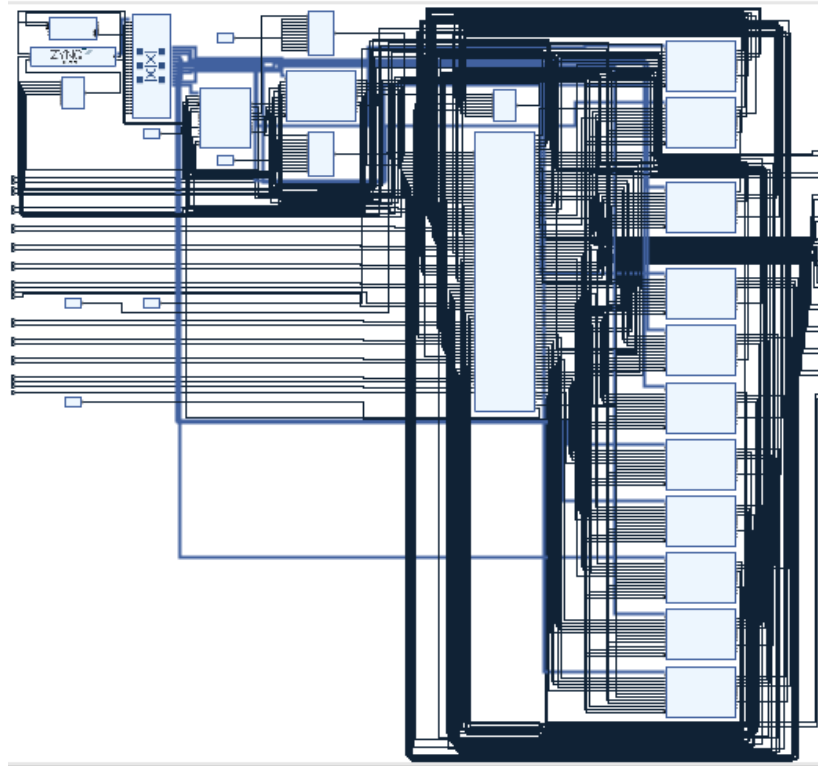
Powerboard Test System vs EMP

[Poster with more information](#)



It's the same thing... let's reuse what possible.

Firmware Updates



```
source create_design.tcl
create_root_design {} 12 1
                        ^   ^
                        N_LPGBT N_AMAC
```

Branch: [kkrizka/ITkS_PP2_dev](#)

- **Swapped to Block Diagram generation in *handcrafted* Tcl.**
 - Easier to version control.
 - Scripted for variable number of LPGBTs / PP2 AMACs
 - [Link to script.](#)

Some Plans

From the EMP team

- ~~Update test board to Alma9.~~
 - *Done last week. Nice instructions!*
- Do all AMAC controllers fit?
 - Easy to do with scripted BD generation.
 - Want to separate AMAC emu first.
 - *Next goal.*
- Update firmware to 2023.2
 - *When ready?*
- Test with an actual EMP
 - *Timeline for availability?*

My TODO list

- Test in loopback that updated firmware still works...
 - Who are users of the test board?
- Switch AXI bus to the Powerboard test system address map.
 - Then all works out of the box. ;)
- Make it work as part of system test at SR1.

Hog: Build System / CI for Firmware

- **Currently building the EMP firmware is a bit awkward.**
 - Several scripts to run in an undefined sequence.
- **Advantages of using Hog ([more information](#))**
 - Lots of boiler plate project Tcl is hidden.
 - Continuous Integration for building/testing of firmware in Git.
 - Much simpler interface for building
 - Compatible with work via Vivado GUI
- **Example for Zynq firmware: [Powerboard reception test system](#)**

Hog: Example from PB Test System

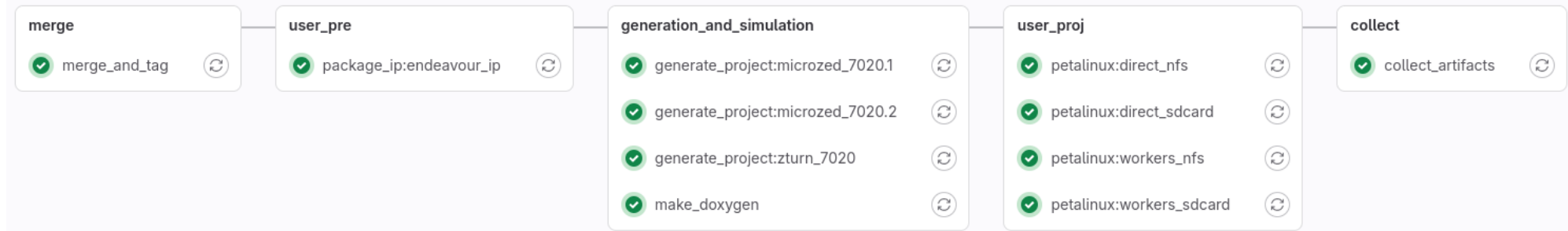
[link](#)

hog.conf 343 B

```
1 #vivado
2 [main]
3 PART = xc7z020c1g400-1
4 BOARD_PART = avnet.com:microzed_7020:part0:1.3
5
6 [synth_1]
7 STRATEGY = "Vivado Synthesis Defaults"
8 FLOW = "Vivado Synthesis 2021"
9
10 [impl_1]
11 STRATEGY = "Vivado Implementation Defaults"
12 FLOW = "Vivado Implementation 2021"
13
14 [hog]
15 ALLOW_FAIL_ON_GIT = False
16 ALLOW_FAIL_ON_LIST = False
17 ALLOW_FAIL_ON_CONF = False
```

post-creation.tcl 246 B

```
1 source ${repo_path}/bd/ActiveBoard.tcl
2
3 create_bd_design ActiveBoard
4 current_bd_design ActiveBoard
5
6 create_root_design {} {0} {5}
7
8 make_wrapper -files [get_files ActiveBoard.bd] -top -import
9 set_property top ActiveBoard_wrapper [current_fileset]
```



OS creation in CI optional.