An open source microcontroller with retro instruction sets
4/2/2018

Staf Verhaegen
Overview

• What?
• Why?
• Status
• RFC: ASICs and retrocomputing
What?

A micro-controller with Z80, MOS6502, Motorola 68000 cores
Why?

• Retro Computing

- ACA 1233n 40Mhz Accelerator with 128MB RAM
  € 240,-

- MIST FPGA computer simulates old consoles and computers
  € 200,-

- Firebee computer
  Coldfire based Atari clone
  € 520,-
Why?

- Hobbyist/Maker
Why?
Chips want to be free

- Linux: hackers (makers) coding at night on their PC

- For custom ASICs high start-up cost but now we have:
  - Crowdfunding
  - Distributed Development
Why?

- The Dream: Low-volume Open Source ASIC service
  - ASIC production targets high-volume: high startup costs, low per unit costs
    - Mask costs
    - EDA tools license
    - Engineering
    - IP blocks
    - The fine print is not maker friendly
Why?

- The Dream: Low-volume Open Source ASIC service
  - Cost < €100/piece for 100+ devices/boards; lower prices for higher volume
    - Open source RTL not reinvent/repay for the wheel
    - Pool different chips to share set-up cost; use multi-project wafer services
    - Push button open source EDA flow
    - Intermediate in the legal affairs
Why?

- The Dream: Low-volume Open Source ASIC service
  - Retro-uC is pilot project to test the flow and costs in the manufacturing
Chips4Makers @ FOSDEM 2018

Posted on vr 02 februari 2018 in Retro-uC

When writing this I am putting the last efforts in my presentations for FOSDEM 2018. I will have two presentations there:

- The open source EDA tool chain for the Chips4Makers project in the CAD and Open Hardware devroom
- Retro-uC - An open source microcontroller with retro instruction sets in the Retrocomputing ...

Chips4Makers
Chips want to be free

Retro-uC (hackaday.io)
Retro-uC (Crowd Supply)
Contact

Retro-uC Campaign Product Options

Posted on wo 31 januari 2018 in Retro-uC

Finally I see a light at the end of the tunnel and is the launch of the Retro-uC campaign getting closer. In this post the different options for the campaign will be presented in their current state. Changes are still possible until the launch of the campaign. All feedback is ...
Status

The top level of the Retro-uC in the Chips4Makers pilot project.

- Star: 0
- HTTPS: https://gitlab.com/Chips4Makers/Retro-uC

Files (2.2 MB)  Commits (35)  Branches (2)  Tags (0)

- master
- Retro-uC

Added pictures of front and back of the designed PCBs.
Fatsie authored a day ago
### Status

**Added ao68000 fork as a submodule.**
Fatsie authored 2 months ago

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## Status

### Synthesis and P&R for WBBus with 73 IOs.
Fatsie authored 4 days ago

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### Status

- **Implemented WishBone wrapper around T65 core and added cocotb test.**
  - Fatsie authored 2 months ago

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#### master

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<td>a day ago</td>
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Retro-uC

An open silicon microcontroller with a Z80, MOS6502, and M68K - start the open silicon revolution

This project is coming soon. Sign up to receive updates and be notified when this project launches.

me@example.com

The Retro-uC pilot run will produce an open source silicon ASIC that contains the RTL for some retro CPUs
the Zilog Z80, MOS 6502 and Motorola M68K. The IC will be on a board that has Arduino compatible I/O for
Status

- Planned Product Options

Retro_uC-Breadboard
Retro_uC-ProtoPlus
Retro_uC-QFN
Retro_uC-Retrino
**RFC: ASICs and Retrocomputing**

- Do you think crowdfunded projects ASIC projects interesting for retrocomputing?
  - Goal: $10 000
  - Price/piece < $100
  - Should be able to provide 5V/12V capability
  - Production will be slower (e.g. months) compared to PCB manufacture with COTS parts

- What are requirements to make it attractive?