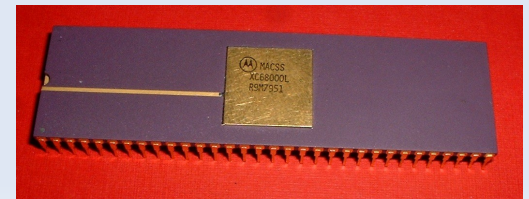


# M68K: Life in the old Architecture

Greg Ungerer  
[gerg@snapgear.com](mailto:gerg@snapgear.com)

# 68000 the classic

- Introduced 1979
- CPU variants – 68000, 68020, 68030, 68040, 68060
- SoC variants – 68302, 68306, 68328, 68360
- Many machines – Amiga, Atari, Mac, Sun, Apollo, ...
- Linux support as early as 1993
- Nothing much new since late 90's



# ColdFire: rebooting the M68K

- Introduced 1994
- Dropped instructions and addressing modes
- Targeted at Embedded market
- Many SoC variants – 52xx, 53xx, 54xx
- Linux support from 1999
- Still being developed



# Linux: two M68ks

- Linux
- M68k architecture
- Classic 680x0 CPUs
- "real" computers
- All with MMU

- $\mu$ clinux
- M68knommu architecture
- ColdFire and 683xx
- Embedded boards
- No MMU
- Forked from m68k code

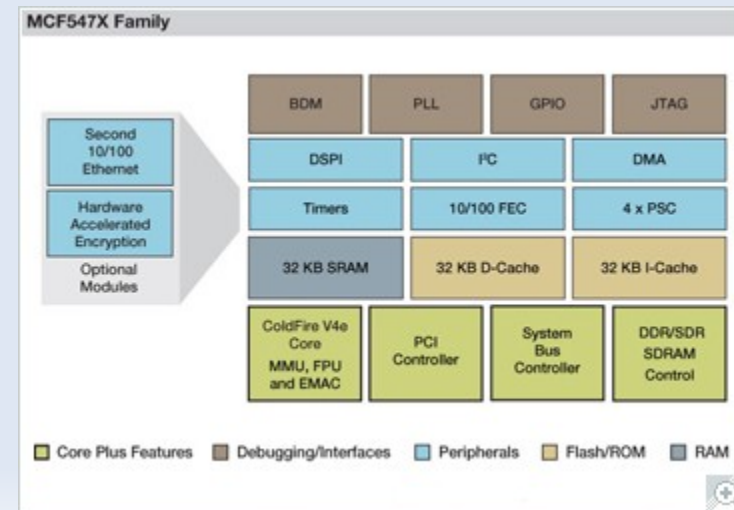
# M68k: the great merge

*Goal: merge m68k and m68knommu*

- Multi-step process
- Spanned multiple kernel revisions
- Piggy-backed on the move of the asm headers
- Directory merge of core architecture code
- Initial renaming \*\_mm.c and \*\_no.c
- Fine grained merge of each file

# ColdFire: MMU is ready

- ColdFire V4e has an MMU
- Much faster than classic CPUs
- Not the same MMU as classic 680x0!
- New architecture code to support
- New cache code to support
- New FPU code to support
- Now in mainline



# State of Play

- Actively maintained
- Active, but low volume, email list
- Steady stream of patches
- Classic support mostly enthusiasts
- ColdFire mostly commercial users
- Debian/m68k port alive (for classic CPUs)



# Development Tools

- Real hardware
  - Classic computers (Atari, Amiga, etc)
  - Development boards (ColdFire)
  - Various embedded boards
- Emulators
  - ARAnyM (Atari Running on Any Machine)
  - QEMU (ColdFire?)



# Where to now?

- Fine grain merging still going on
- More ColdFire CPU support
- More ColdFire peripheral support
- Classic CPUs in non-MMU mode
- Keeping it all working in mainline
- Single kernel image?

# Links

- <http://www.linux-m68k.org>
  - <http://vger.kernel.org/vger-lists.html#linux-m68k>
- <http://www.uclinux.org>
- <http://aranym.org>