

On Meaningful Performance

underrated details that matter for emerging Mobile Web markets
and the Internet of Things era

Andrea Giammarchi
@WebReflection

Where Were We?

Where Were We?

Single Core 250nm @ ~500MHz

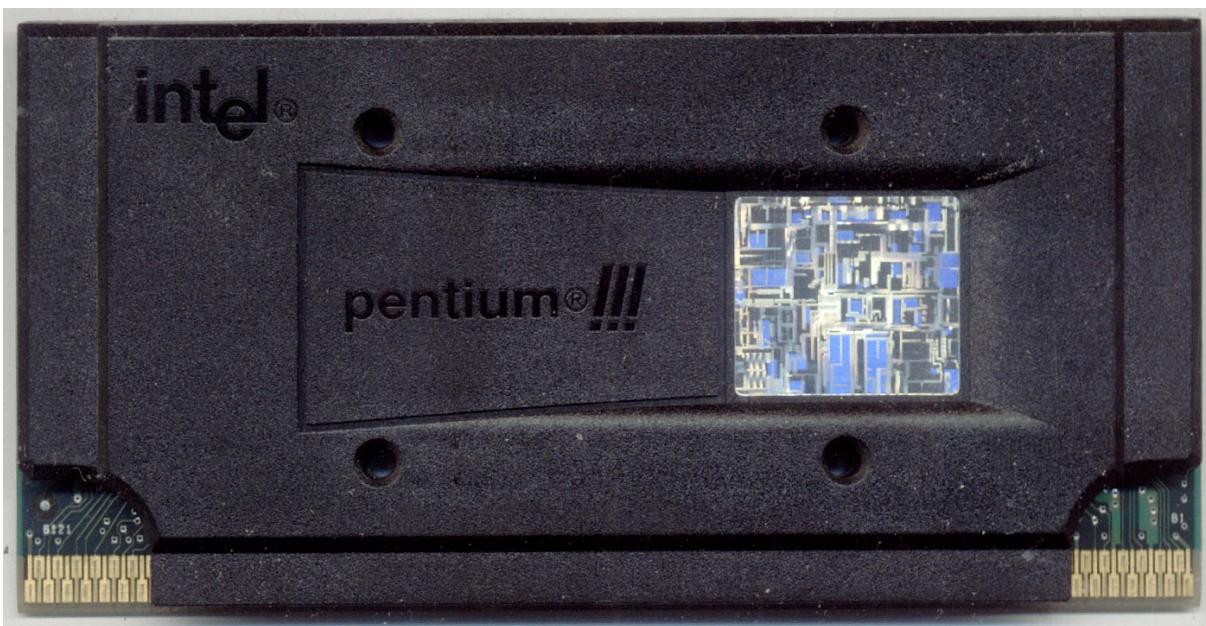
Intel Pentium III processor family				
Standard Logo (1999-2003)	Mobile Logo (1999-2003)	Desktop		
		Code-named	Core	Date released
		Katmai	(250 nm)	May 1999
		Coppermine	(180 nm)	Mar 2000
		Coppermine T	(180 nm)	Aug 2000
		Tualatin	(130 nm)	Apr 2001

[List of Intel Pentium III microprocessors](#)

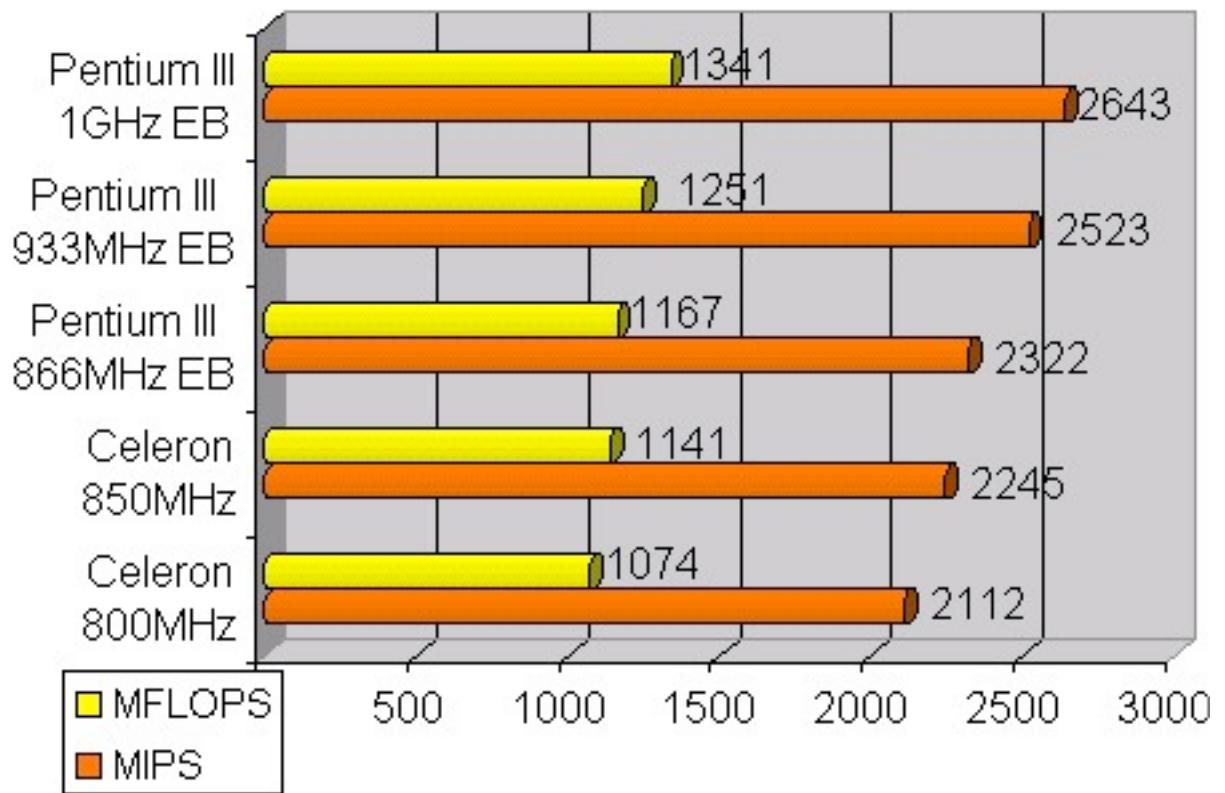
Where Were We?



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Where Were We?



Where Are We?

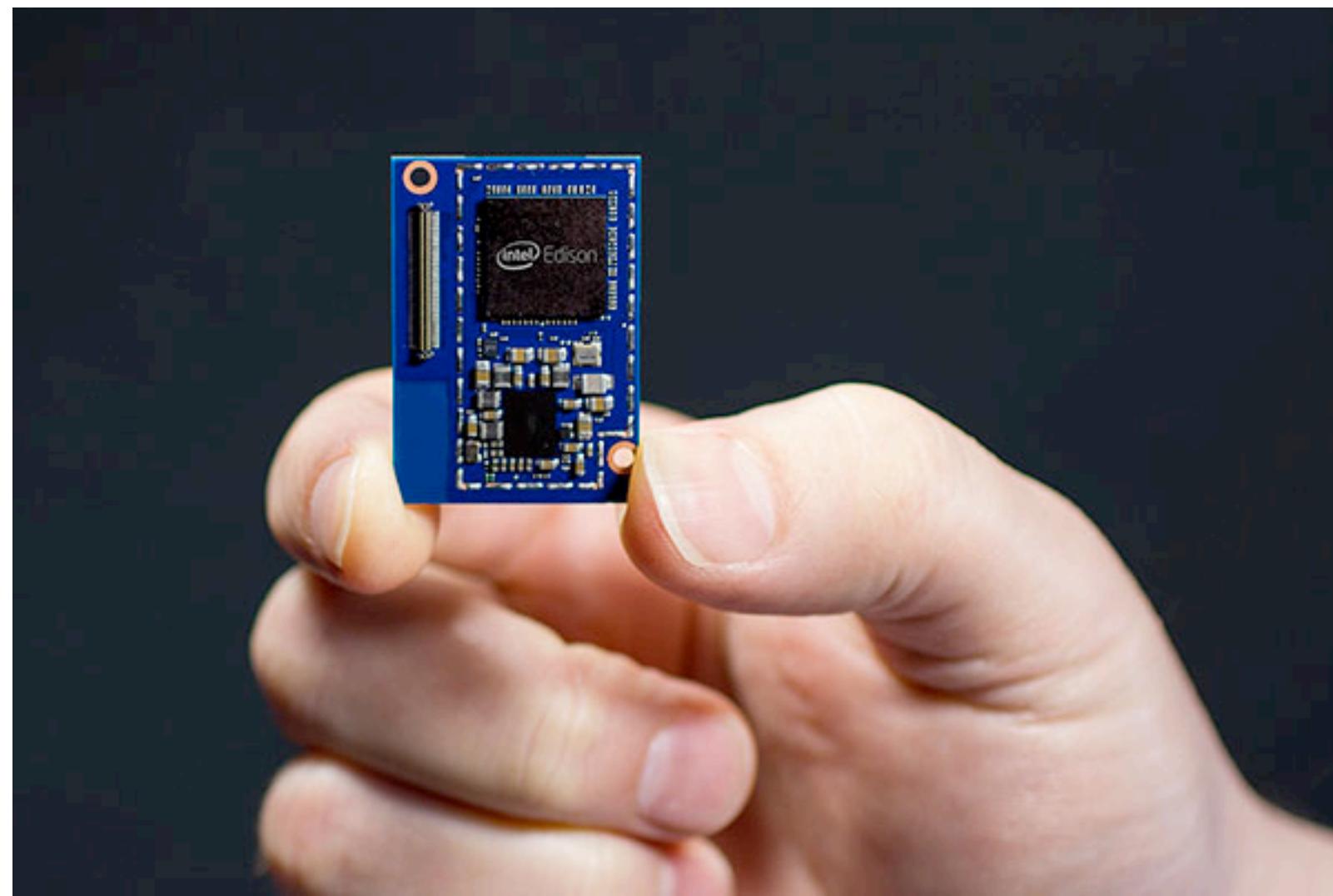


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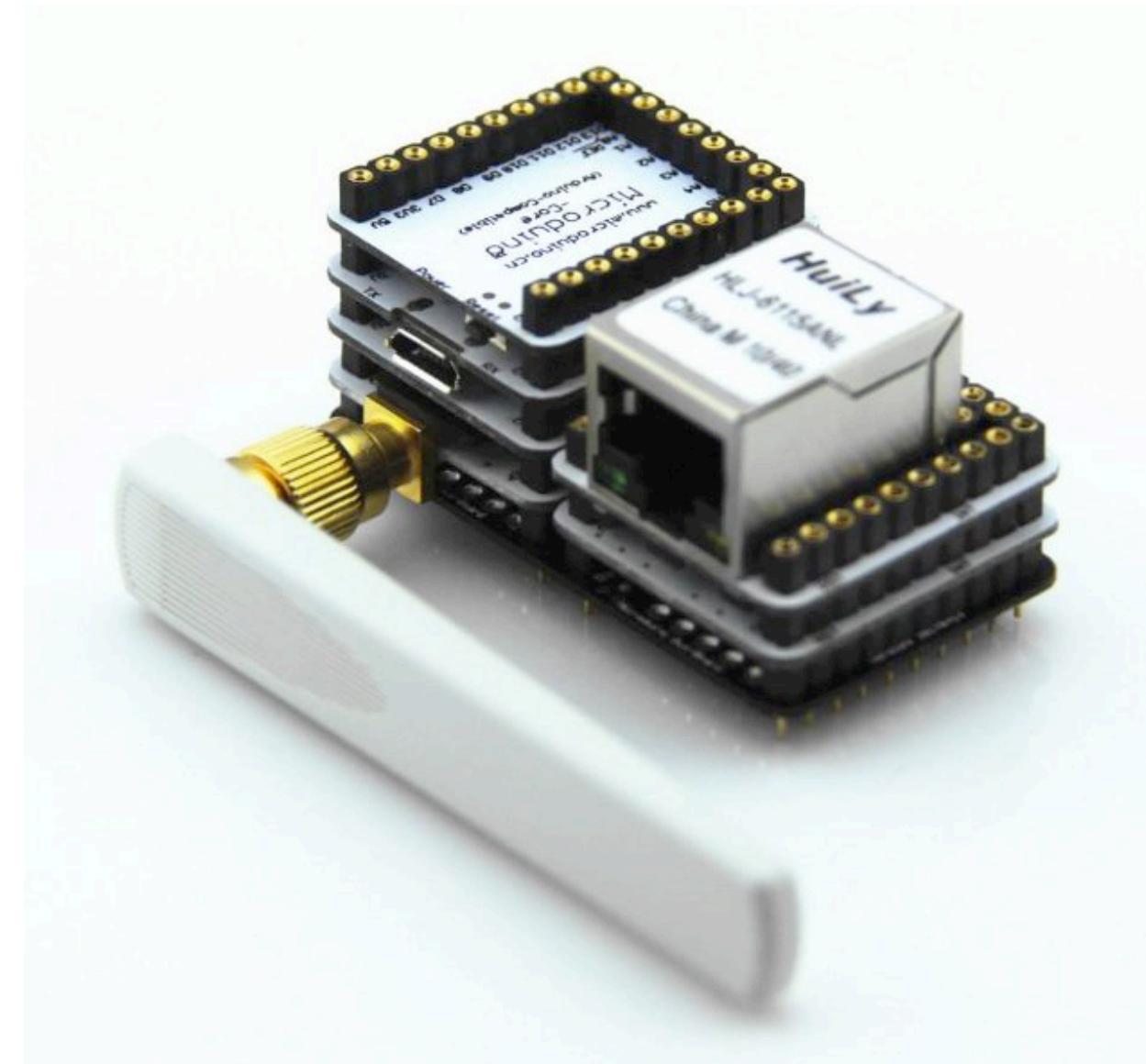
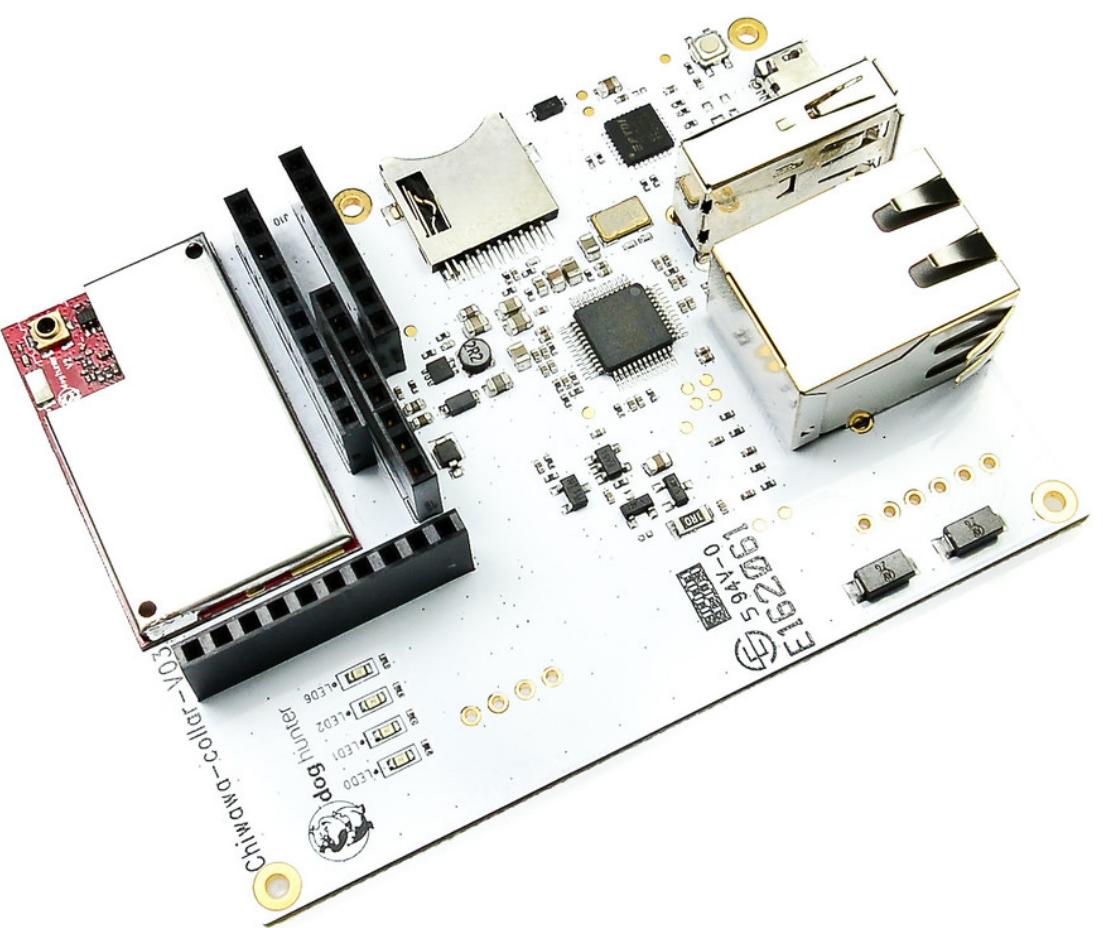
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Dual Core 22nm @500MHz - WiFi BTLE included



Where Are We?

MIPS 24K @400MHz - WiFi included



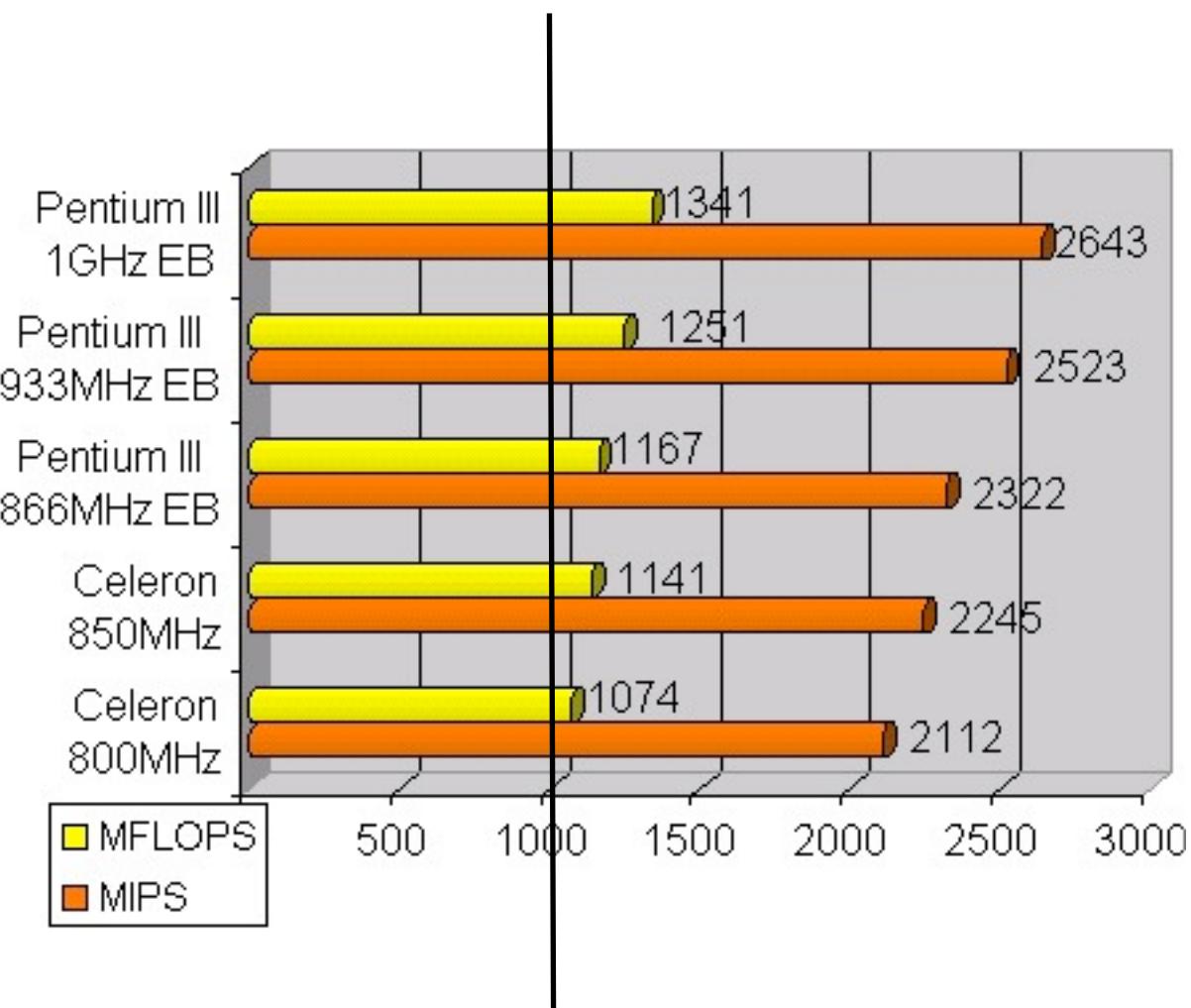
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MIPS 24K @400MHz - WiFi included

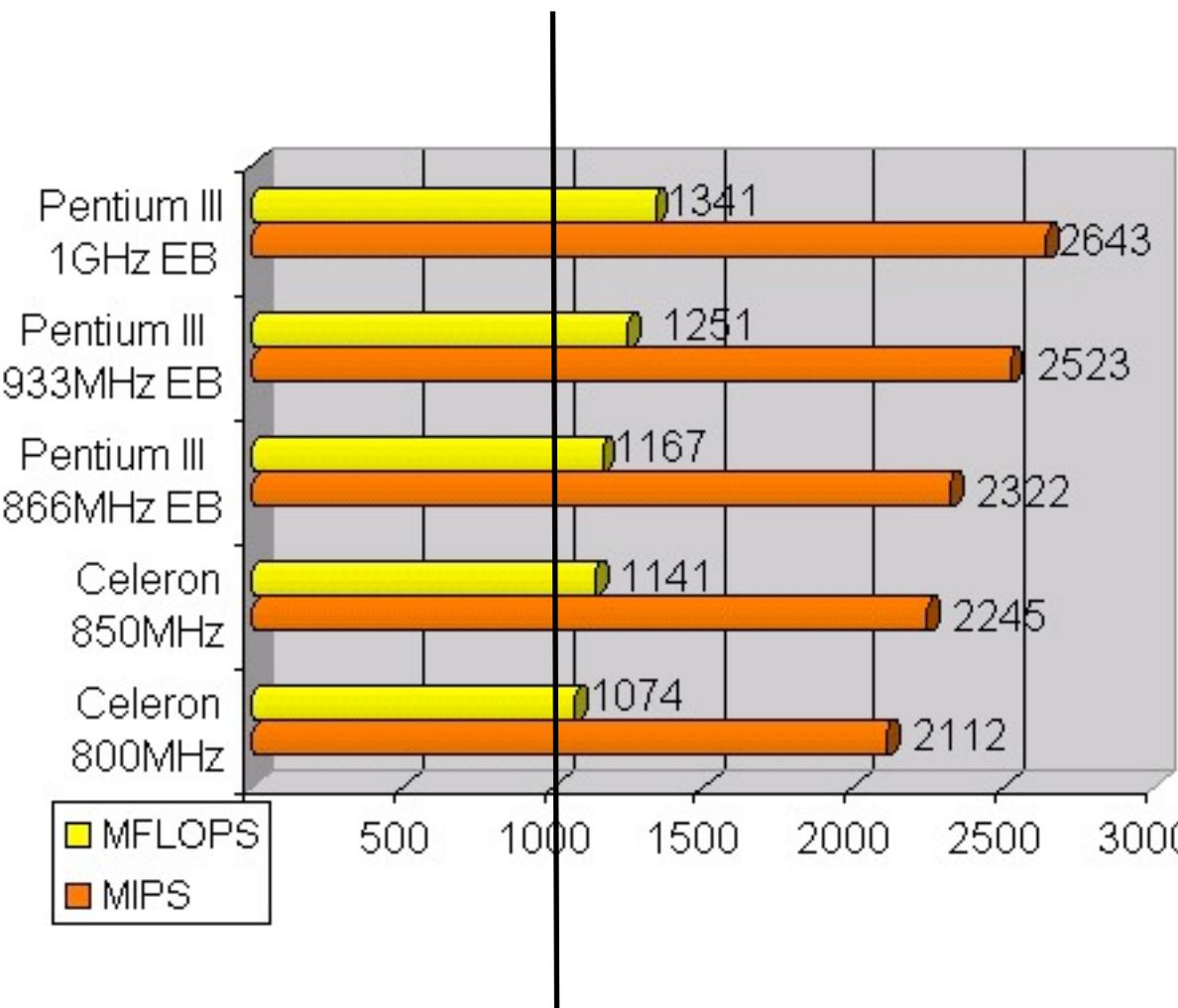


up to 900 Dhystone MIPS Performance

Where Are We?



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Moore's law is about transistors, not performance!

Arduino Yún

Arduino YúNO



Arduino Yún

- ATmega32u4 with 32 KB of flash memory and 2.5 KB of sram, 1KB EEPROM, and 16MHz Clock Speed
- Atheros AR9331 MIPS @ 400MHz with 64 MB DDR2 and 16MB of Flash Memory
- SDCard !!! (nodejs, python, sqlite3, etc etc ..)

Arduino Yún

nodejs and npm performance on Yun:

LIVE DEMO!

IoT Basic Practices

- if your software does also minor tasks, load the heavy stuff only when and if it's necessary (as example `npm --version` takes 7+ seconds!)
- do not assume infinite amount of RAM (cache little when needed and drop it ASAP)
- actually, do not assume HW features at all (as example the disk cache, see ./fspeed)
- define requirements and stick with them (no premature overengineering, see ./nody)

IoT Basic Practices



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The Mobile Web Platform

The Mobile Web Platform

it is NOT just this one:



The Mobile Web Platform

it's rather like this



The Mobile Web Platform

- performance problems addressed in 2010 still valid for today devices, specially for those cheap one, common in today emerging markets
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The Mobile Web Platform

- performance problems addressed in 2010 still valid for today devices, specially for those cheap one, common in today emerging markets
- the problem in a page: the Tesla experiment
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The Mobile Web Platform

- performance problems addressed in 2010 still valid for today devices, specially for those cheap one, common in today emerging markets
- the problem in a page: the Tesla experiment (**live demo!** on Bada)
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The Mobile Web Platform

- performance problems addressed in 2010 still valid for today devices, specially for those cheap one, common in today emerging markets
- the problem in a page: the Tesla experiment
- the power of Touch events (cards and vscroll live demo again!)
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The Mobile Web Platform

- performance problems addressed in 2010 still valid for today devices, specially for those cheap one, common in today emerging markets
- the problem in a page: the Tesla experiment
- the power of Touch events (cards and vscroll live demo again!)
- bringing Touch to IE, with its good HW, and NOT vice-versa: ie-touch

The Mobile Web Platform

- Find the real bottleneck and “ignore” micro benchmarks for the rest
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The Mobile Web Platform

- Find the real bottleneck and “ignore” micro benchmarks for the rest
- Handlers are rarely the bottleneck: it’s live demo time!
- Polyfill the basics: the dom4 case
- Make your environment better where you can: eddy.js and its features
- Test on real Hardware and try on the cheap one too!

Thank You!

exciting time for Web developers
be ready to reach everything you want!

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