DOCKETED

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Description:	CEC Computer Efficiency Standards - Technical Demo
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AGGIOS Presentation for April 15th 2015 CEC workshop on computers

Additional submitted attachment is included below.

CEC Computer Efficiency Standards
- Technical Demo -

aggIO**s**™

04/15/2015

Who we are

- California startup
- Our technology: Software Defined Power Management
- Why we are here:
  - Support CEC's energy efficiency activities
  - Promote mobile efficiency for plug load devices
  - Increase awareness of the new IEEE P2415 standard
- Presenters:
  - Davorin Mista, MSEE, VP Eng.
  - Vojin Zivojnovic, Ph.D., CEO

California startup focused on energy management of electronic devices

Learning from nature

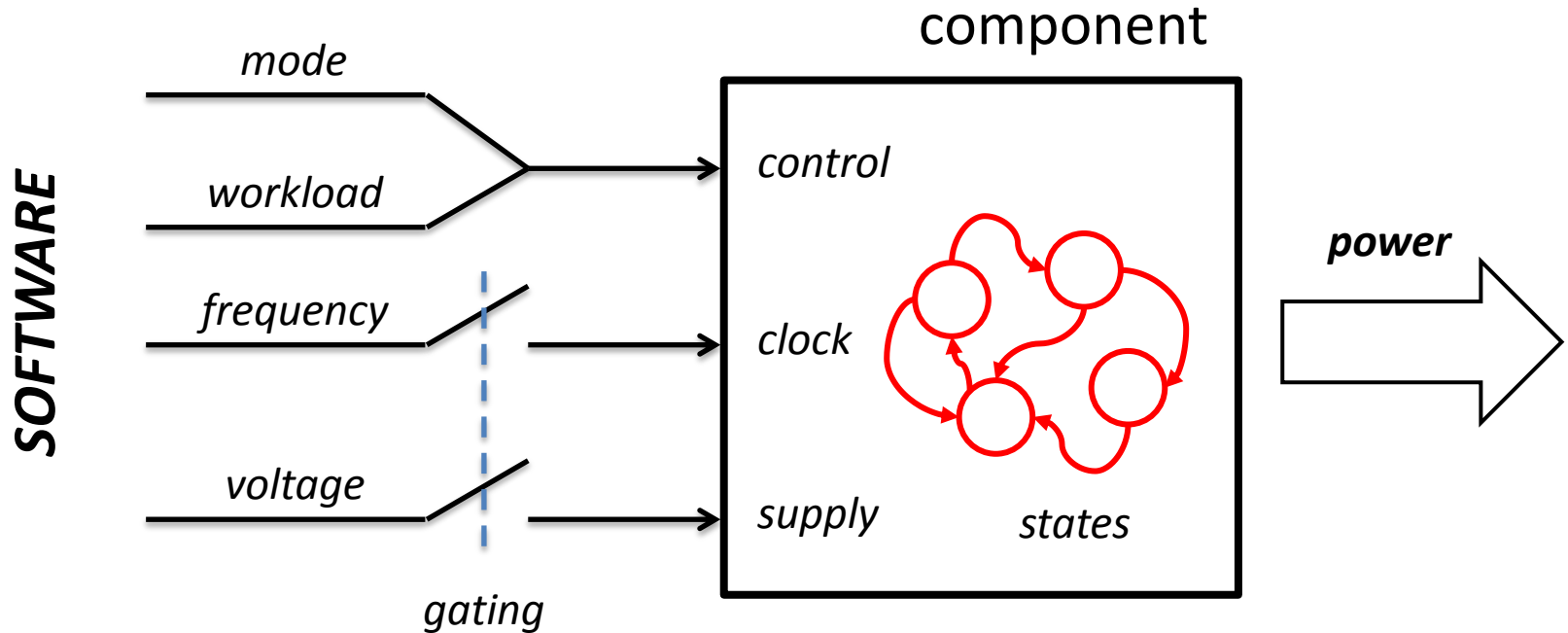**How WE design systems ...**

... for maximum performance

How NATURE designs systems ...
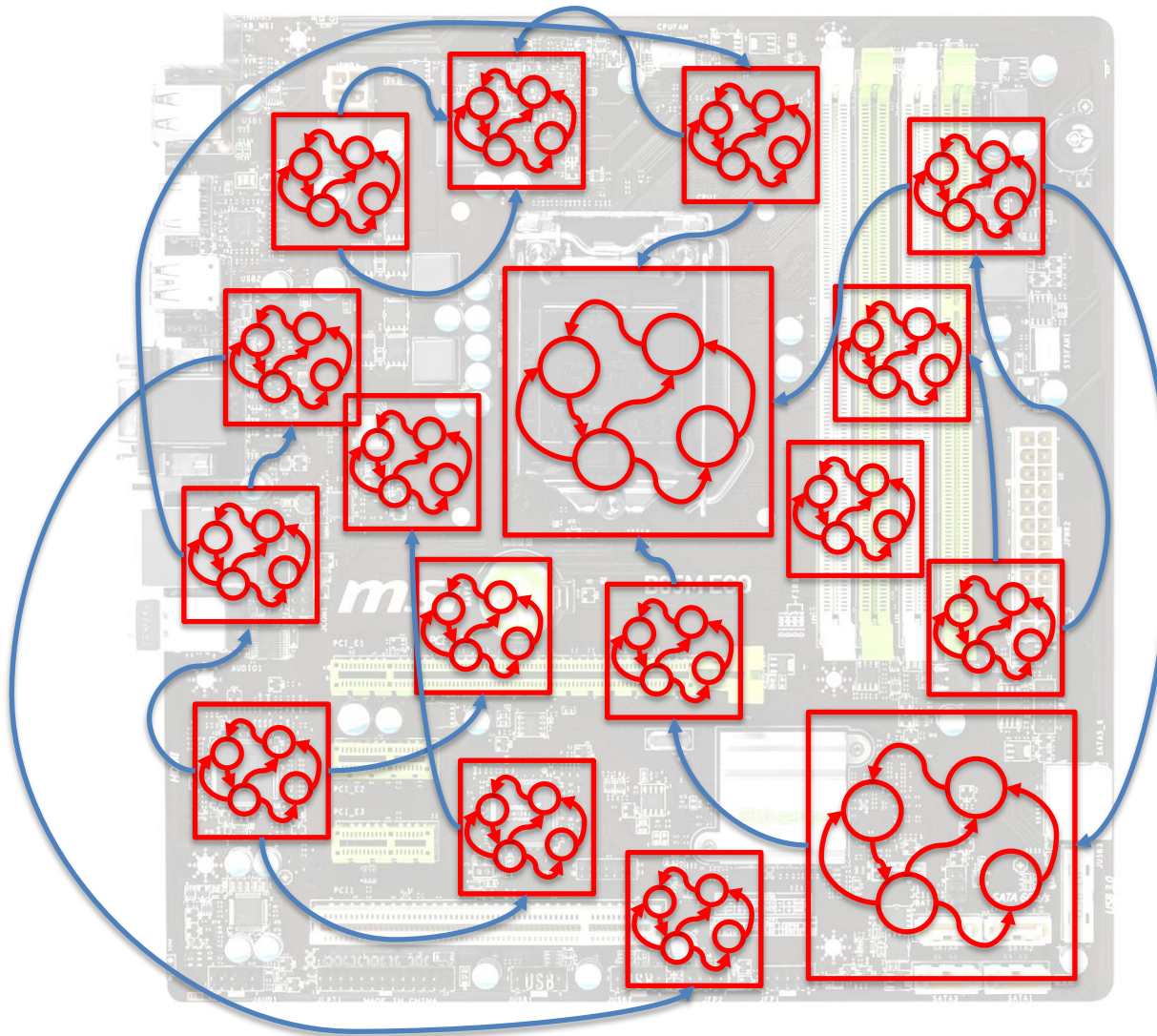

... for maximum efficiency

source: prof. Jan Rabaey, UC Berkeley

Component power consumption

Component power is a function of operating mode, frequency and voltage

Device/system power consumption

Device power is a complex combination of component power and intricate power dependencies – best understood for mobile devices!

Demo summary

- Two demos using common software and components

- Demo #1: assembled desktop PC (cost ~$550)
  - MSI motherboard, Intel processor, Western Digital hard disk drive, Seasonic power supply, Windows 8.1
  - Showing impact of <u>software defined power management</u>

- Demo #2: off-the-shelf desktop PC (retail $499)
  - HP ProDesk 400 G1, Windows 8.1
  - Showing impact of <u>improved voltage conversion</u>

Demo 1 recap

**Idle-power for MSI assembled desktop PC:**

- Default settings: 22W

- Optimized software: 12.4W

- Optimized + right-sized PSU: 8.6W

Reductions in Idle Power

- 44%

- 61%

| | Default Config | Optimized Software | Optimized PSU |

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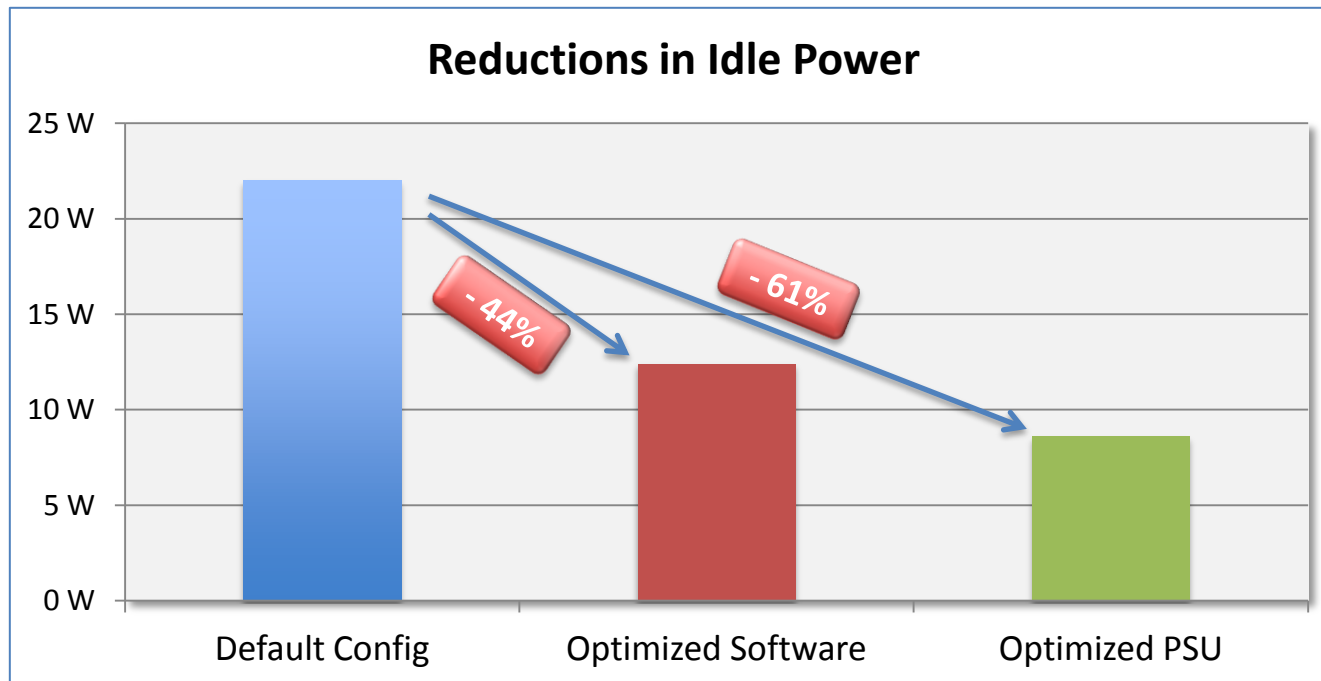
Demo 2 recap

Idle-power for HP commercial desktop PC:

- Default settings: 21W

- Optimized software: 17.5W

- Optimized + right-sized PSU: 9.7W

Reductions in Idle Power

- 17%

- 54%

Default Config	Optimized Software	Optimized PSU
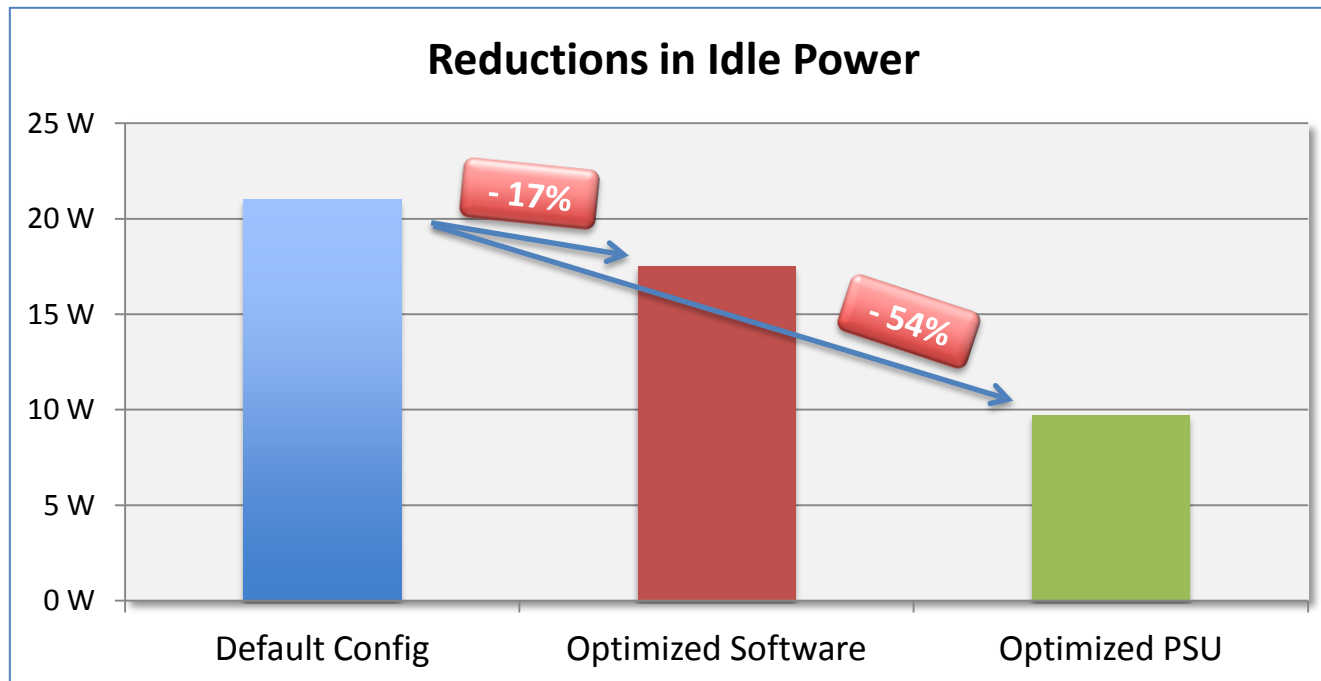
Conclusions

- Components that meet expected power levels are available today

- We still need to improve the way we select and combine such components to optimize whole device (system) power

- New unified technologies and standards are necessary for cost effective deployment of advanced power solutions across the industry