ACPI Overview

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Contents

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Power Management History

- Advanced Power Management (APM)
  - BIOS-based system power management
  - Provides CPU and device power management
  - Called when idle - provides CPU power mgt.
  - Uses device activity timeouts to determine when to transition devices into low power states
  - OS has no knowledge of what APM does
  - Each IBV must refine and maintain APM BIOS code / IP
  - Wide variety of implementations and functionality
    - No uniform user experience

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ACPI

- Advanced Configuration and Power Interface
  - Conceived by Intel, Microsoft, and Toshiba (the promoters)
- An "interface" specification
  - ACPI/OSPM replaces APM, MPS, and PnP BIOS Spec
- Allow OS-directed Power Management (OSPM
- Defines
  - Hardware registers - implemented in chipset silicon
  - BIOS interfaces
    - Configuration tables
    - Interpreted executable function interface (Control Methods)
    - Motherboard device enumeration and configuration
  - System and device power states
  - ACPI Thermal Model

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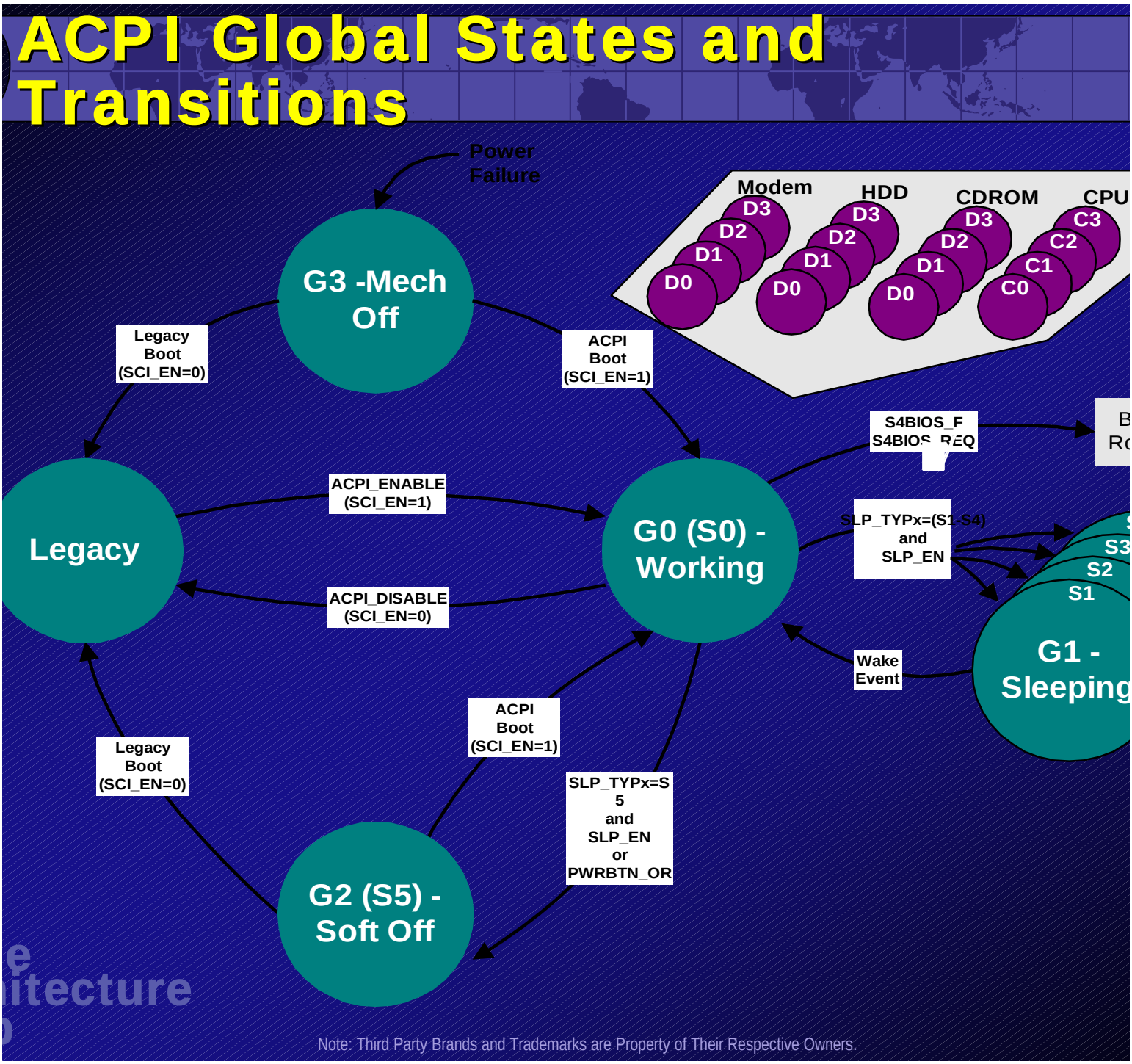
ACPI Global States and Transitions
Power Failure
G3 -Mech Off
Legacy Boot (SCI_EN=0)
ACPI Boot (SCI_EN=1)
Modem
HDD
CDROM
CPU
D3
D2
D1
D0
C3
C2
C1
C0
Legacy
ACPI_ENABLE (SCI_EN=1)
ACPI_DISABLE (SCI_EN=0)
G0 (S0) - Working
S4BIOS_F
SLP_TYPx=(S1-S4) and SLP_EN
S3
S2
S1
G1 - Sleeping
Wake Event
ACPI Boot (SCI_EN=1)
Legacy Boot (SCI_EN=0)
SLP_TYPx=S5 and SLP_EN or PWRBTN_OR
G2 (S5) - Soft Off
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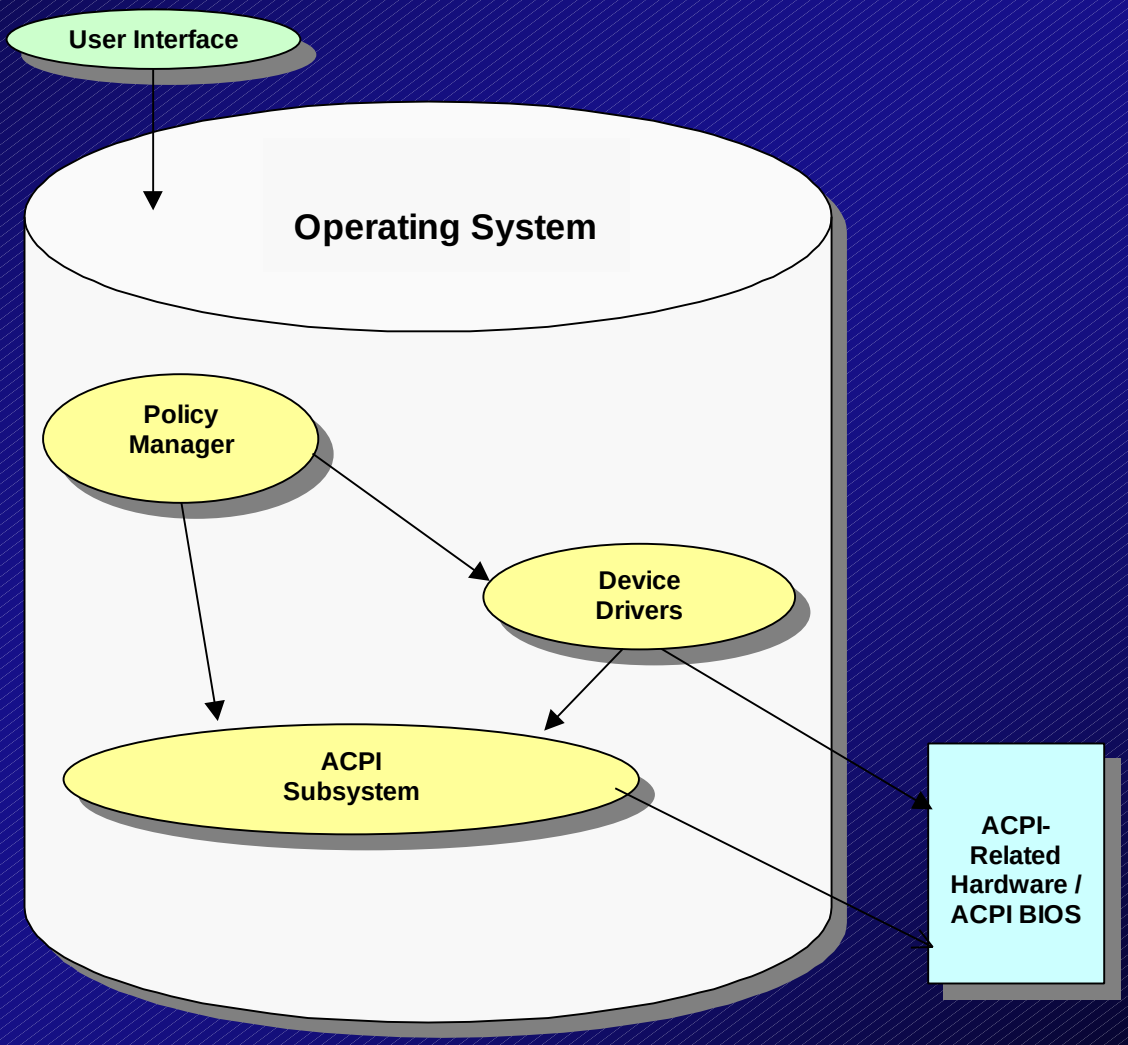
An ACPI System



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ACPI Software Components

- ACPI Subsystem
  - Consumes ACPI BIOS
  - Interacts with ACPI Hardware
- Policy Manager (OSPM)
  - Sets and Monitors System Policies
  - User Interface
    - Allows User Input to Policy
- Device Drivers
  - EC, SM Bus, CM Battery, Smart Battery

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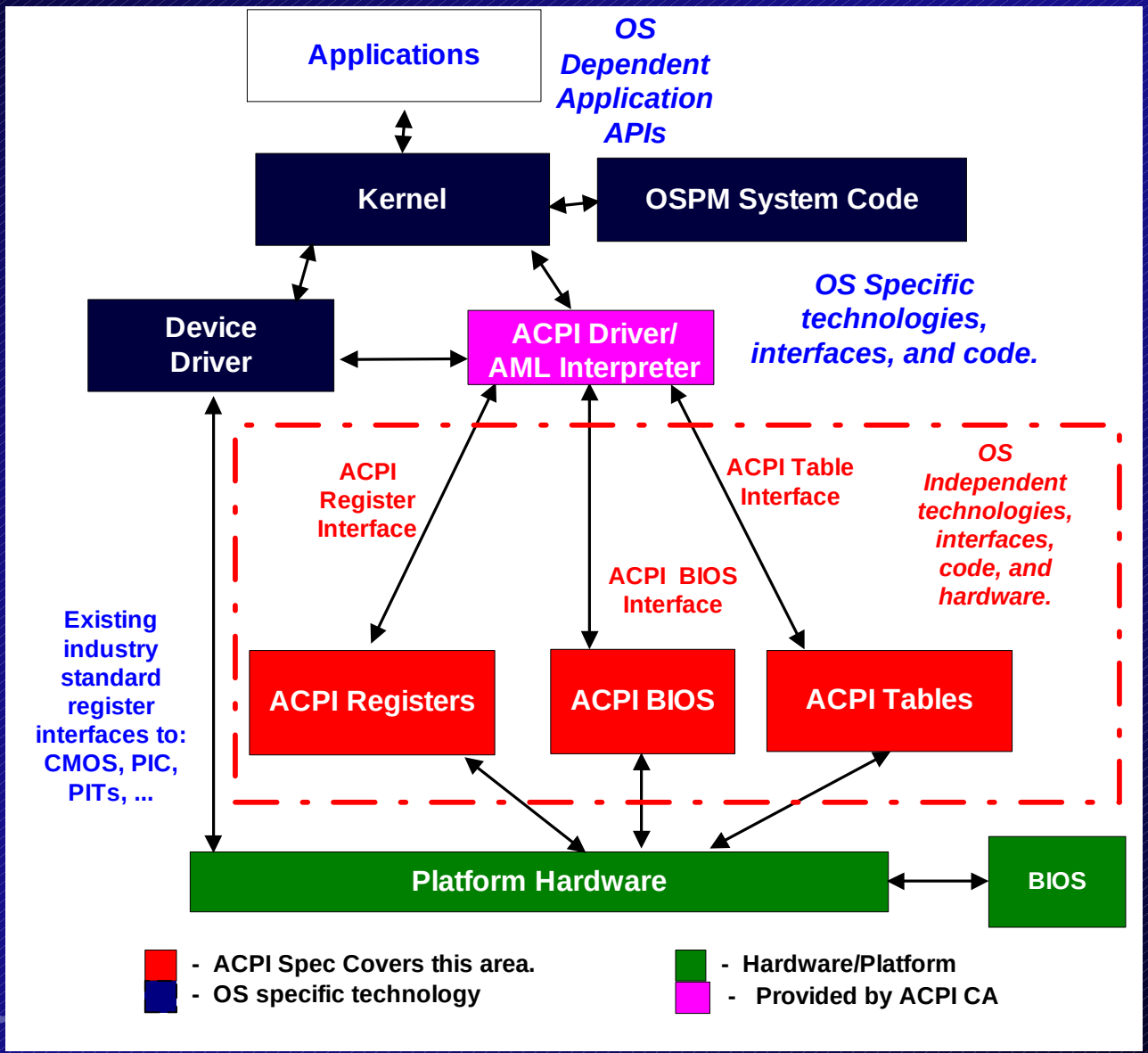
ACPI System Overview



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ACPI Specification History

- ACPI 1.0 released December 1996
- ACPI 1.0a released July 1998
- ACPI 1.0b released February 1999
- ACPI 2.0 released July 2000

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How does ACPI change?

- Periodic errata meetings held with promoters
- Either spec is updated (e.g. 1.0a, 1.0B, etc) or errata document is posted on the ACPI site: http://www.acpi.info

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