



Enterprise of the Future

Energy Efficiency in the Enterprise

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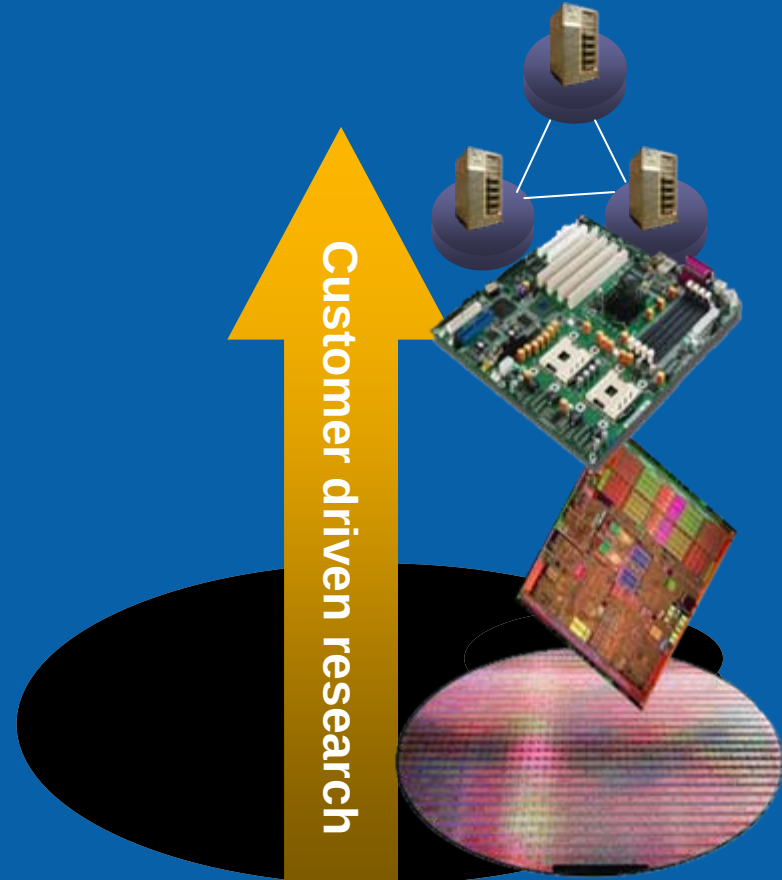
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Enterprise of the Future

- Emerging applications in Tera-scale platforms
 - Understand future workloads, system requirements and enable more energy efficient performance
- Creating the Enterprise of the Future
 - What will IT managers expect years from now?
 - What research needs to be done to meet those needs?
 - How do companies work together to find greater solutions?

Why Systems Research?

- Deliver holistic solutions for end-user value
 - Integrated technologies, hardware, software, ecosystem aligned
 - Applied and tailored to market segments
 - Silicon, platform, system and ecosystem research driven by end user needs



Customer-driven research from silicon to platform

User Requirements Redefining Research

**Line Of Business/
Workforce**



**Evolving form factors,
wireless, ease of use,
trusted platforms, security**

IT/Enterprise



**TCO, trust, virtualization,
scalability, automation,
energy efficiency**

**Identify LOB/IT pain points and usage
models to prioritize
research agenda**

Enterprise of the Future

Energy Efficiency

Virtualization/Partitioning

Scalable Enterprise

Trust

New Platform Architectures

Focusing on the needs of the Enterprise

Enterprise of the Future

Needs of the LOB: New capabilities, Collaboration, working with teams Around the world.



Agility In IT: The ability to implement New capabilities without creating a Headache for IT.

Manage cutting edge IT resources: Keeping up with new regulatory environments, minimum business expectations, quality of service.



Manage Complexity: Beyond control of the enterprise but a cost or requirement in doing Business.

IT Day to Day Wants: Tools to enable a more productive workforce, intelligent access to information while mobile and being cost effective.



Satisfaction per Watt: Deliver more automation, higher level tools for workforce productivity, and deliver an energy efficient system.

Agility in IT

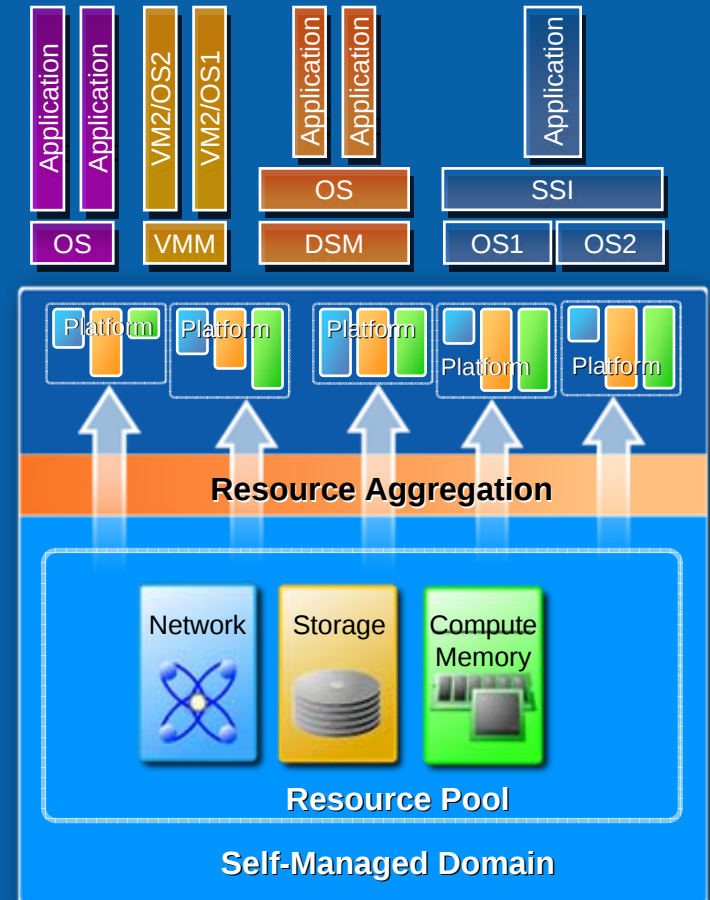
Future IT Needs

- Respond to changing business environments
- New ways for LOBs to collaborate

Enabling Technology

- New views of existing infrastructure
- Dynamic Resource Allocation
- Scalable Enterprise

Example: Scalable Enterprise
Appropriate CPU/memory, storage and network resources are dynamically aggregated and exposed as platforms, then are continually monitored/adjusted to enforce operational policies.



Manage Complexity

Future IT needs

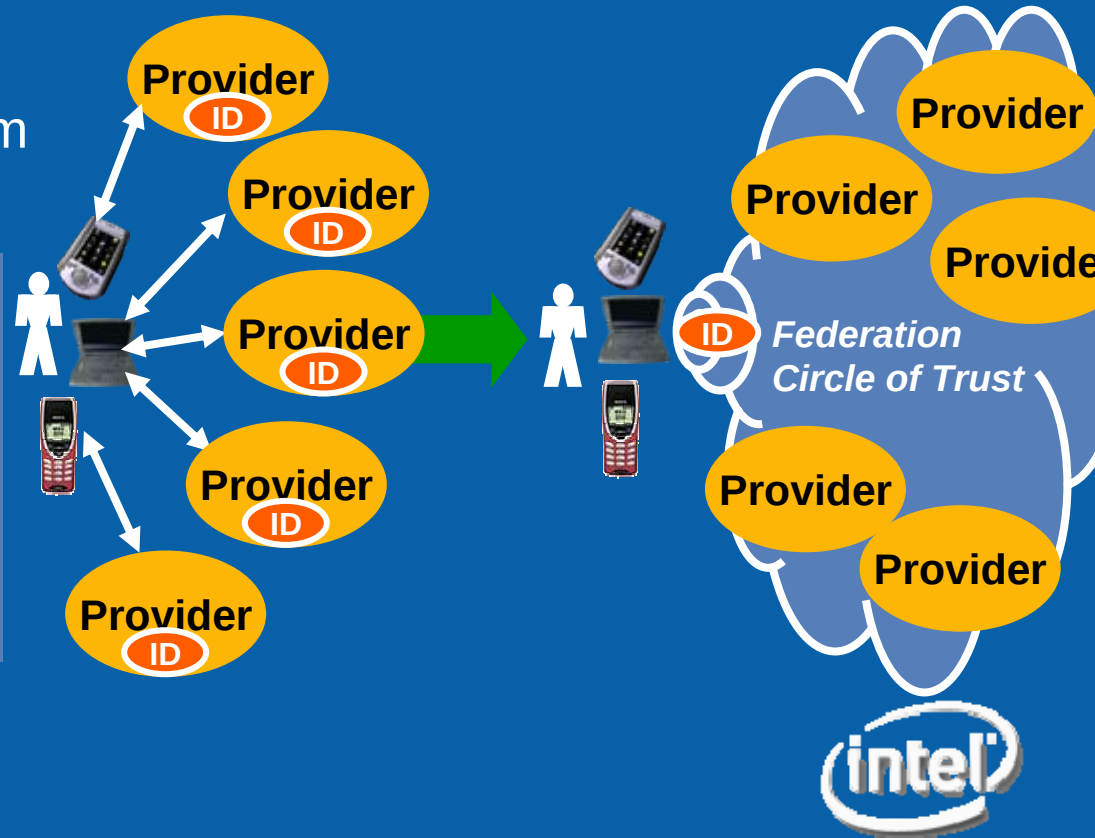
- More Trusted Computing Environment
- More flexible IT environment
- Next Generation of IT manageability

Enabling technology projects:

- Autonomics
- More Trusted Platform
- Managed Identities

Example: Identity Capable Platforms (ICP)

ICP architecture strategy will improve trust, user control, balanced security and policy management through inter-domain converged wireless network service models across multiple platforms.



Exploring “Satisfaction per Watt”

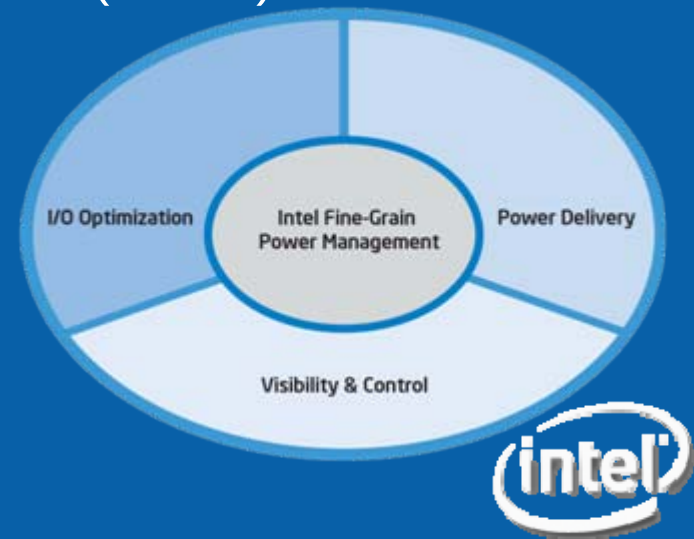
Future IT Needs

- Higher computing density
- Lower total cost of ownership
- Enable quality of service

Enabling Technology Projects

- Platform thermals and acoustics
- Virtualization and Partitioning
- Energy Efficient System Architecture (EESA)

Example: Energy Efficient System Architecture (EESA) is a collection of technologies and architectural improvements that together will result in dramatically higher performance per watt for small form factor to high performance computing servers



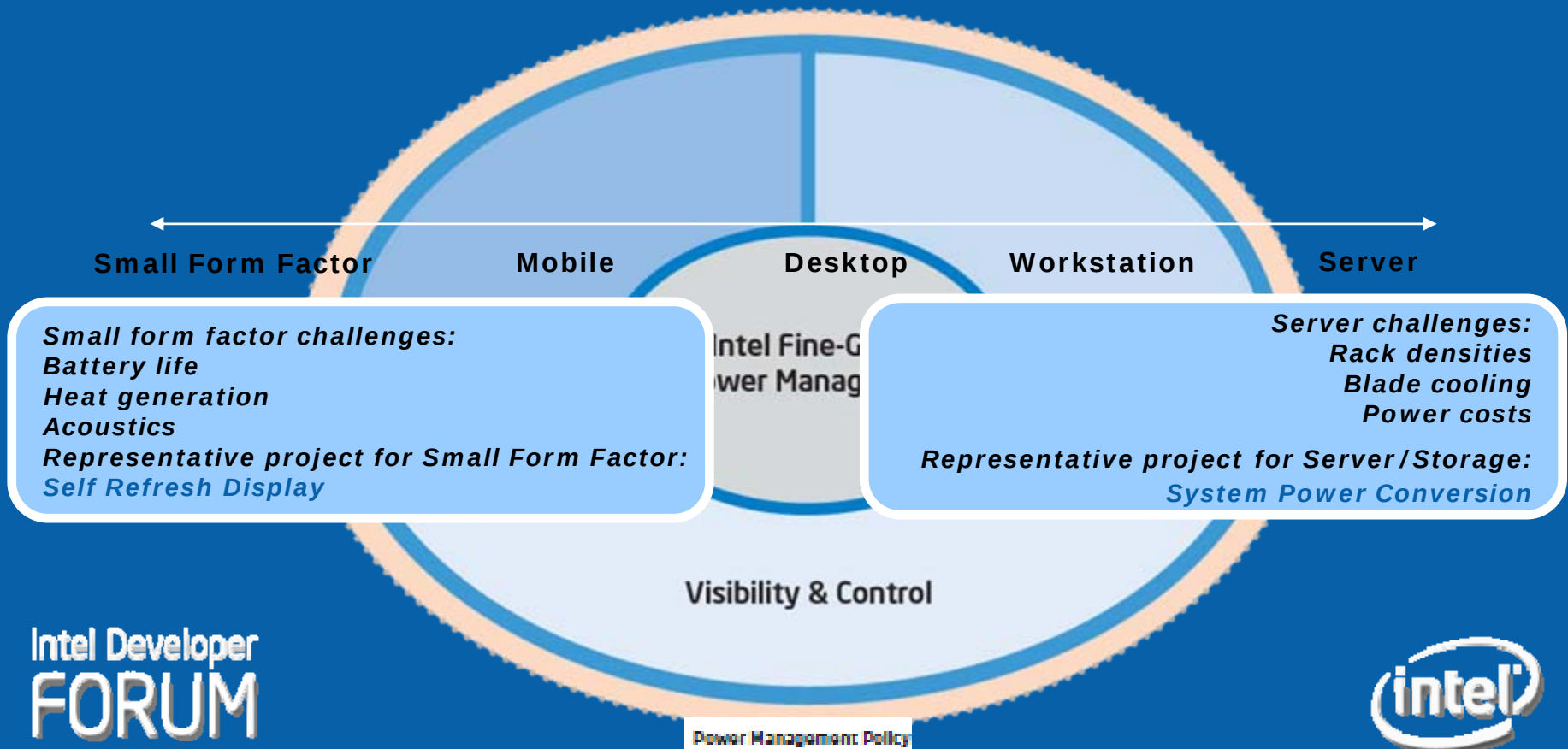
EESA And the Enterprise of the Future

- **IT Concerns**

- Energy Costs to run hardware becoming significant portion of total cost of ownership
- Increasing datacenter cooling costs
- Want to better utilize space in datacenter by increasing density of computing power
- Platform design to maximize system performance per watt

Energy Efficient System Architecture (EESA)

A collection of technologies and architectural improvements that will result in dramatically higher performance per watt across all platforms



EESA Components

Power Management Policy -

components of EESA provide the tools to maximize performance per watt on the system.

Intel Fine Grain Power Management-

Focusing on reducing average power on a system without compromising performance.

I/O Optimization-

Focusing on optimizing communication between devices and the platform.

I/O Optimization

Intel Fine-Grain Power Management

Power Delivery

Visibility & Control

Power Delivery-

Being efficient from wall to workload. Understanding how to efficiently convert and deliver power to the system components while minimizing loss.

Industry Engagement Opportunities

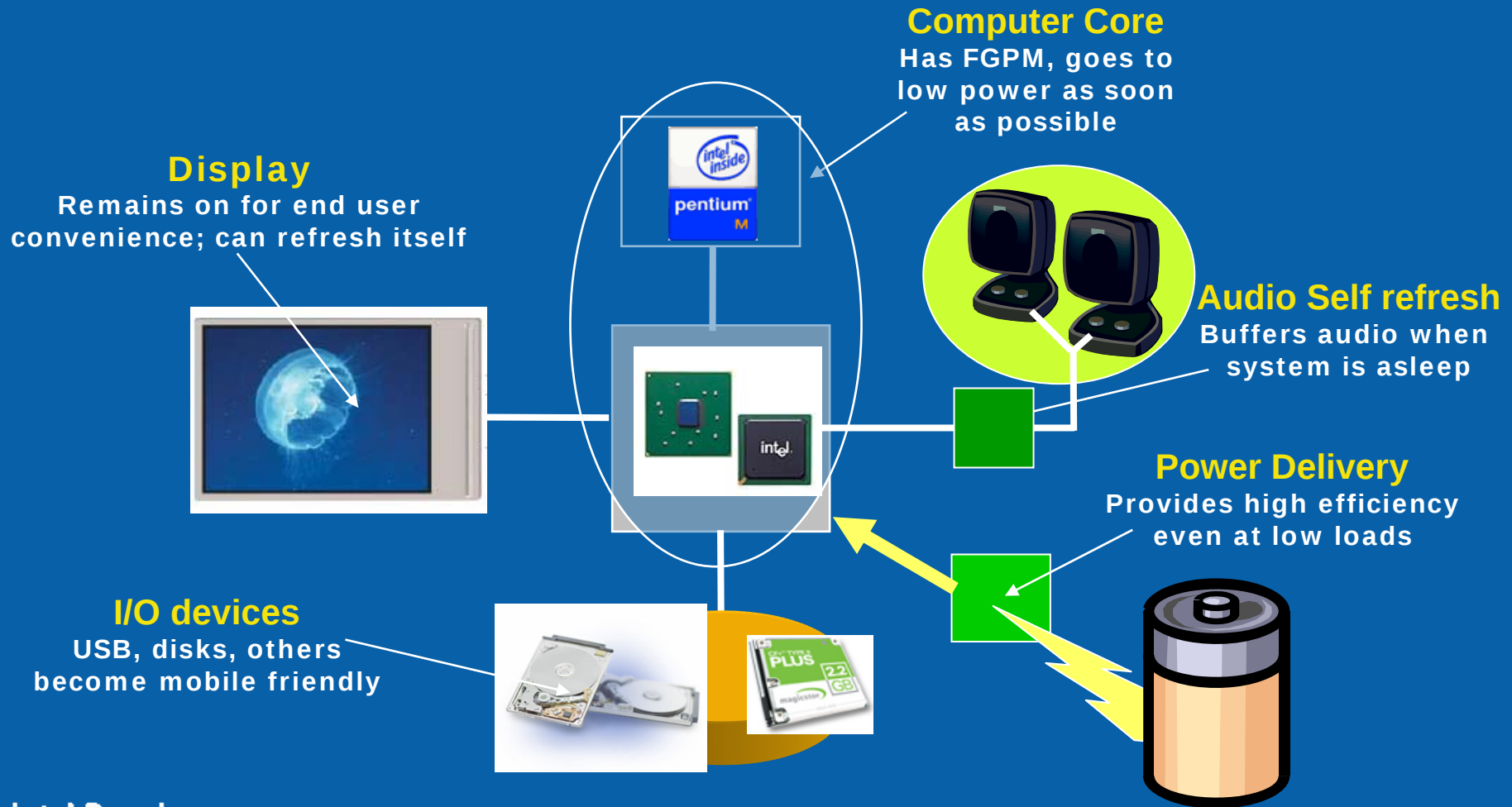
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Visibility and Control –

Sense and analyze information, either internal or external to the system, allowing the platform to make better decisions about the use of energy.



EESA System Perspective



Researching the Enterprise of the Future

Creating the enterprise of the future takes ecosystem engagement and coordination

- Lab to Lab engagements
- Involvement in standards bodies

Emerging research agendas to watch:

- Scalable Enterprise
- Identity Capable Platforms

Intel is harnessing platform possibilities by enabling the next generation system architecture

Other EESA Sessions at IDF

- ITRS003 Energy Efficient System Architecture
 - Thursday, March 9 at 3:30
 - Room 2000
- ITRS013 Self Refresh Displays
 - Thursday, March 9 at 4:30
 - Room 2000
- Tech Showcase:
 - Energy Efficient Technology Research
 - Booth 1002



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