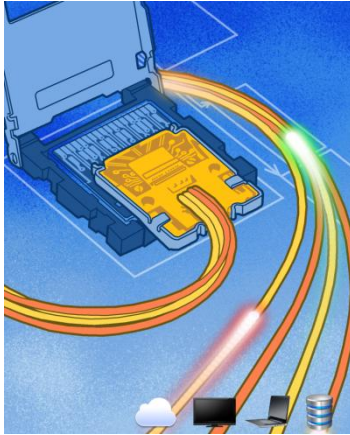


# Invented@Intel Labs: Light Peak

Invented@Intel Labs: Light Peak



Impacted: Thunderbolt™ Technology

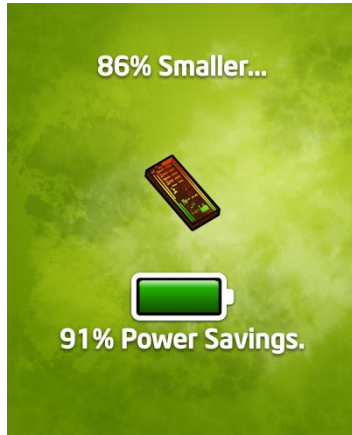


# THUNDERBOLT™

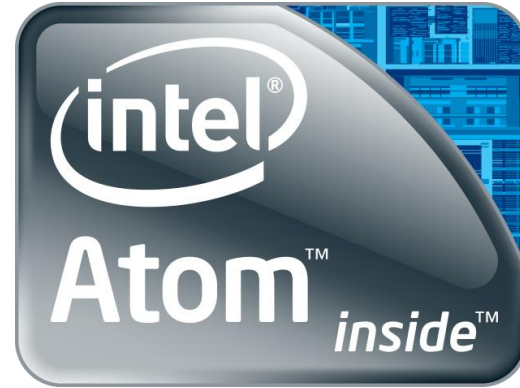
Light Peak was the codename for Thunderbolt™ Technology and sought to move media faster and simplify connections between devices. Intel Labs drove the architecture, specifications, and initial ecosystem development. Today, Thunderbolt™ technology delivers 10 Gbps data transfers using a single cable to connect devices in a daisy chain.

# Invented@Intel Labs: Low-Power Architecture

Invented@Intel Labs: Low-Power Architecture



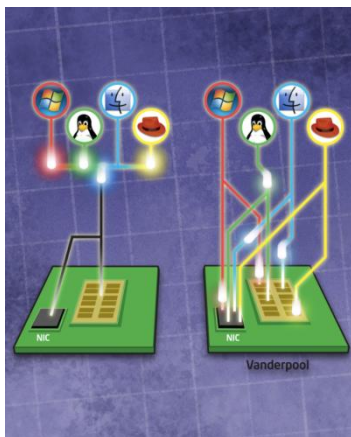
Impacted: Intel® Atom™ Processor



Low-Power Architecture increases battery life while maintaining maximum performance. Intel Labs research in extremely low-power architecture defined a critical new metric for Intel® –energy per instruction – and delivered architecture for the first low-power IA, which is now part of the Intel® Atom™ processor. Built with industry-leading 45nm and 32nm microarchitecture, low thermal design, & highly-integrated application processor the Atom processor will accelerate from 32nm through 22nm to 14nm.

# Invented@Intel Labs: Vanderpool

Invented@Intel Labs: Vanderpool



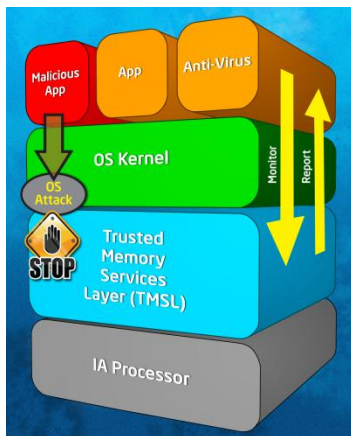
Impacted: Intel® Virtualization Technology



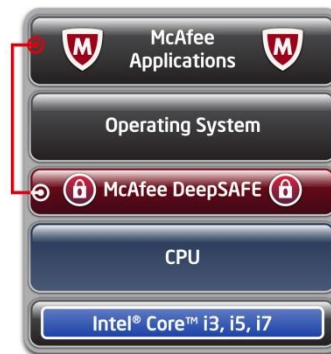
Vanderpool was the codename for technology integrated into Intel® Virtualization Technology (Intel® VT), allowing your system to split into several parts that work independently and use the same resources. Intel Labs architected collections of hardware assists to simplify the design and improve the performance and functionality of virtual machine monitors for IA-based platforms. Intel® VT is now available across all segments from servers to clients and embedded systems and is used to improve the utilization, security and reliability of systems based on Intel Architecture.

# Invented@Intel Labs: Patmos

Invented@Intel Labs: Patmos



Impacted: McAfee® DeepSAFE™ Technology



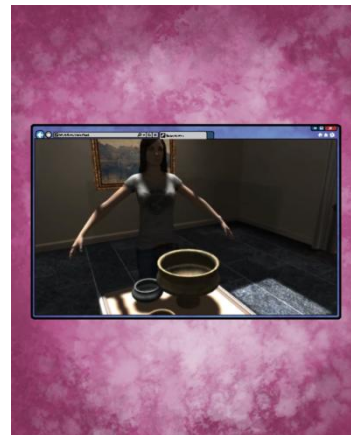
Patmos was the codename for technologies that were integrated into McAfee's DeepSAFE™ technology. Intel Labs created the Trusted Memory Services Layer, the key building block of DeepSAFE™ - which provides the vantage point to detect, block and remove stealthy malware. McAfee® Deep Defender™ product lives outside the OS and provides real-time kernel monitoring to detect and block advanced hidden threats.

# Invented@Intel Labs: Data Parallel Extensions for JavaScript™

Invented@Intel Labs: Data Parallel Extensions for JavaScript™



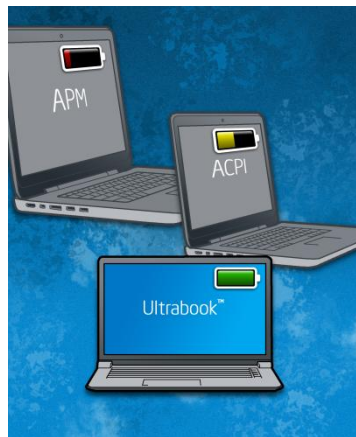
Impacted: River Trail Draft API



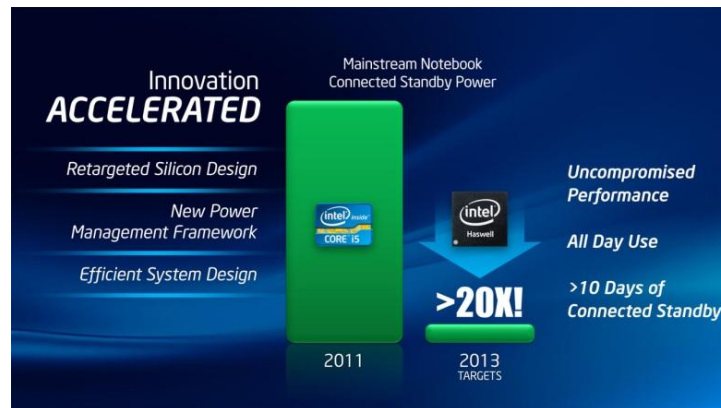
Data-parallel Extensions for JavaScript™ research targeted rich browser experiences, such as physics-based gaming and immersive 3D environments, applying multi-core processing to gain up to 10x performance improvements. In August 2011, Intel Labs made this technology available as an alpha Application Programming Interface (API) called River Trail. The River Trail API is now on a path to become an industry standard.

# Invented@Intel Labs: Platform Power Management

## Invented@Intel Labs: Platform Power Management



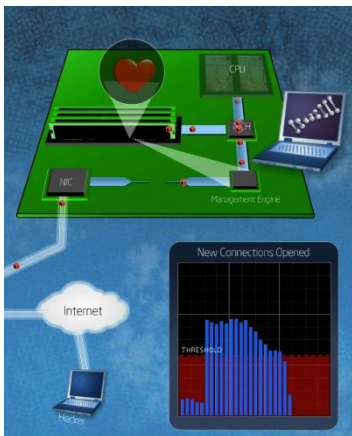
## Impacted: Intel® Power Optimizer



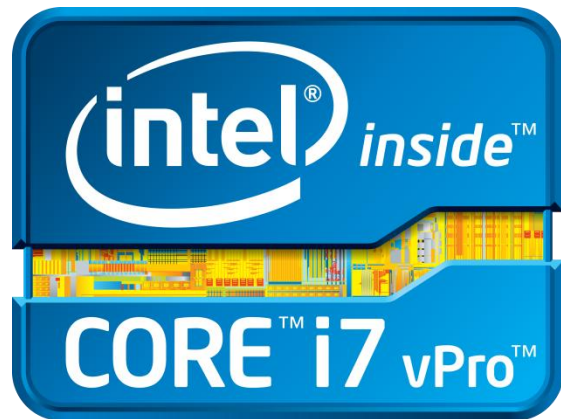
Platform Power Management invented in Intel Labs, combines hardware power management and new power states that fundamentally changes how power is managed across the platform. Intel® Power Optimizer in Haswell-based Ultrabooks™ are expected to achieve 20x reduction in idle power through a combination of process improvement and Platform Power Management.

# Invented@Intel Labs: Robust Self-Healing Systems and Networks

## Invented@Intel Labs: Robust Self-Healing Systems and Networks



## Impacted: Intel® vPro™ Technology



Robust Self-Healing Systems and Networks provide a framework for clients to detect integrity violations or subversion on Intel® platforms. Intel Labs research allows the hosts to collaborate and detect network-wide anomalies (such as infections, attacks, etc.) and regulate itself from zero-day threats. Intel® vPro™ technology is a set of security and manageability capabilities built into the 2nd generation Intel® Core™ vPro™ processor family, Intel® chipsets, and network adapters.

# Invented@Intel Labs: Always-On, Always-Connected

Invented@Intel Labs: Always-On, Always-Connected

Impacted: Intel® Smart Connect



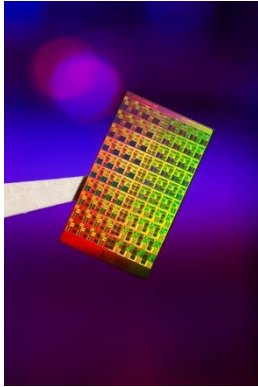
Always-On, Always-Connected allows application connectivity during "Standby Mode". Intel Labs architected new platform technologies to stay connected, while reducing energy consumption. Today, with Intel® Smart Connect Technology in your Ultrabook™, your email, favorite apps, and social networks are continually and automatically updated even when the system is asleep.



# Invented@Intel Labs: Teraflops Research Processor

Invented@Intel Labs: Teraflops Research Processor

Polaris



Single-chip  
Cloud Computer



Impacted: Intel® Xeon® Phi™



The Teraflops Research Processor (codenamed Polaris) was an 80-core research chip and was the first programmable processor to exceed 1 trillion floating point operations per second (Teraflops). This was followed by the Single-chip Cloud Computer (codenamed Rock Creek), a concept processor that built upon Polaris' floating point achievement by integrated more IA cores than ever before in a single chip. Intel Labs parallel computing experts, along with research chips such as these, helped to guide the development of Intel® Many Integrated Core architecture for future compute- and data-intensive applications. The Intel® Xeon® Phi™ product family based on this architecture will enable scientific research, financial analysis, climate simulation, and other HPC applications. It is the first commercial single chip to achieve 1 Teraflops of sustained performance.

# Invented@Intel Labs: Carry Small, Live Large

Invented@Intel Labs: Carry Small, Live Large



Impacted: Intel® Wireless Display (WiDi)



The Carry Small, Live Large vision reflects on our lives and how they can be enhanced, simplified and enabled through mobile technology. Intel Labs research focused on making mobile devices smaller, smarter and context-aware. With Intel® WiDi on your laptop, you can enjoy all of your personal and online content on a big screen with a simple wireless connection.