EFI and the Framework

Sounds like a cool new rock band, doesn't it?

Since the BIOS was first developed, processing power has increased, and many new peripherals have been introduced. But the BIOS is not able to handle the demands of the newest, cutting-edge architectures, new components, larger, more complex chipsets, add-in cards, etc. Developers actually have to make new technology appear to be OLD technology, in regard to the BIOS, which is still based on the x86 architecture.

Intel has introduced a new concept - the **Extensible Firmware Interface** and the **Intel Platform Innovation Framework for EFI**, aka "the Framework." EFI is a simple set of modular interfaces that replace the traditional BIOS interface. It is platform-independent and can perform boot as well as other BIOS functions.
Features of EFI and the Framework:

- driver-based, (low-level drivers)
- uses high level language coding, (high level C)
- easy to debug, easy to upgrade
- scalable
- modular
- designed to support innovation in the pre-boot environment
- open-architecture interface.

When used together, EFI and the Framework eliminate the need for the traditional BIOS. **It completely restructures how the operating system interacts with the motherboard.** Currently, the Framework is implemented on Intel Itanium processor based platforms.

Intel's goals for EFI and the Framework:

- to help BIOS vendors support the speed, power, and innovations of today's system architectures
- to improve system reliability and shorten boot time
- offer full legacy support
- eliminate VGA dependency
- be compatible with any Intel architecture

The Framework eliminates dependency on the video graphics adapter, for testing. Developers can test systems, then send the results to a printer or file. On a production line, power and LAN are all that are needed for testing the system.

Currently, add-on card architecture must match the system architecture. With the Framework, one card can be used for all Framework-based systems. Cards can be bought in volume, reducing overall costs.

Pre-boot Possibilities
Pre-boot RAM can now be greater than 1 MB, Code is no longer forced to run under the 1-MB line in memory. This means there is room to load all of the ROM drivers needed for any number of cards.

BIOS vendors can now use the framework to support pre-boot features. Applications can be run before the system actually boots to the operating system. These could include:

- A web browser that automatically goes to a site and downloads the latest upgrades for that system.
- self-configuration of systems via the Web

Summary:
The Frameworks modular design reduces the BIOS size. Settings are no longer stored in the CMOS. The Framework is stored in firmware, making it more secure. It "sits" beneath EFI and performs boot and other BIOS functions. Drivers for the Framework can be stored on the hard drive and accessed from there.

For more information:
Intel Platform Innovation Framework for Extensible Firmware Interface