RB Productions

Actel SmartFusion Introduction Video

Written by Robert D. Brilliant, Client: ICV Digital Media Inc. for Actel

FINAL draft January 26, 2010

VIDEO	*AUDIO*
FADE UP: 1. Animation Template background Fly in text, line by line, to music beat, with graphical "fireworks," INNOVATIVE INTELLIGENT INTEGRATION SMARTFUSION Fade out text and background to black	*FADE IN:* *(1)* Rock theme, strong beat Music pays off and fade out

2. Composited motion graphic: Images depicting 21st century high tech: computers, smart phones, similar. Add historical images: Wright Brothers' first flight, first telephone. Change visuals to images depicting globally connected world: Internet, GPS, video, etc.	Fade in new music theme *(2)* NARRATOR (VO): Did you ever think we'd be here – in a world where technology thinks and moves faster than the human brain? After all, it wasn't that long ago that the Wright Brothers took to the air and Alexander Graham Bell made the first phone call. Today our globally-connected world is a direct result of this heritage of technological innovation.
3. Venn diagram: see brochure pg. 2. Animate three circles together. Add SmartFusion logo in the middle. Label each circle in order: FPGA ARM Cortex-M3 Programmable Analog	*(3)* As innovation pushes forward, **integration** is the key that makes our digital lives smarter and faster. Welcome to the world of **SmartFusion,** the integration of a **full featured FPGA,** an **ARM Cortex M3 processor**, and **programmable analog** in a **single device.**

4. SmartFusion Architecture block diagram, see brochure page 3. Highlight ProASIC FPGA architecture (purple). Add text as mentioned: • ProASIC FPGA • 130nm, CMOS • Densities from 60-500K system gates • 350 MHZ performance, up to 2020 I/Os.	*(4)* SmartFusion is a fully programmable design platform for complex embedded designs. SmartFusion devices feature Actel's proven, flash-based **ProASIC3 FPGA architecture.** Built on an advanced 130 nano-meter, CMOS process, Actel offers densities ranging from 60 K to 500 K system gates, with 350 MHZ performance and up to 204 I/Os. This combination of density and I/O count allows for integration of existing functions from other devices. This substantially reduces board size, complexity, and power consumption of the overall system.
5. SmartFusion Architecture block diagram, see brochure page 3. Now highlight ARM Cortex M-3 section (blue). List out peripherals as mentioned: • Multi-layer AHB matrix with up to 16 Gbps throughput • 10/100 Ethernet MAC with RMII interface	*(5)* Intelligence is added to the FPGA in the form of the microcontroller subsystem which features **a hard ARM Cortex-M3** running at 100MHz. A full complement of processor peripherals include: • Multi-layer AHB communications matrix with up to 16 Gbps throughput, • 10/100 Ethernet MAC with RMII interface,

5 CONT. • Two each: SPI, I2C, UART, 32-bit Timers • Up to 512 KB flash and 64KB SRAM • External Memory Controller • 8-channel DMA.	• Two of each: SPI, I2C, UART, 32-bit timers, • Up to 512 KBytes of nonvolatile flash memory and 64 KBytes of SRAM, • Multi-layer AHB communications matrix with up to 16 Gbps throughput, • External memory controller, and • 8-channel DMA controller.

6. SmartFusion Architecture block diagram, see brochure page 3. Now highlight Analog area (yellow). Highlight ACE section. Add text: ACE. Add text bullets as mentioned: • ADCs and DACs with 1% accuracy • Up to 3 12-bit ADCs with up to 600Kbps sampling rate • Up to 3 12-Bit first order Sigma Delta DACs • Up to 10 50 ns high-speed comparators • Multiple integrated temperature, voltage, current monitors	*(6)* The innovative and proprietary **analog compute engine** - ACE - performs sample sequencing and processing, which offloads the Cortex-M3 processor from analog initialization and processing. The programmable analog system features: • ADCs and DACs with 1 percent accuracy, • Up to three 12-Bit ADCs with up to 600 Kbps sampling rate, • Up to three 12-Bit first order sigma delta DACs • Up to ten 50 ns high-speed comparators, • Multiple integrated temperature, voltage and current monitors.

7. Venn diagram animation, SmartFusion logo in middle, Add text to each circle as mentioned: • Full Design Customization • Ease-of-Use (Maybe the Venn diagram could be next to or in front of visuals that depict each of the areas as mentioned.)	*(7)* SmartFusion's unprecedented integration provides: • **Full design customization** to optimize hardware / software tradeoffs on the fly without board level changes, and remarkable **Ease-of-use**. Actel's Libero IDE and SoftConsole deliver easy and natural design flows for both FPGA and embedded designers.

7A. Continue Venn Diagram graphic by labeling third circle "IP Protection" Transition to: SmartFusion chip icon or image. Add animated arrows depicting secure data flow. Transition to: CU of logic unit area on SmartFusion. Add text: "Nonvolatile" Add text or icon/logo: FlashLock	*(7A)* **Intellectual property protection** is superior to any other integrated or discrete solution in the market. In SmartFusion, all the data transferred from the processor to the FPGA, or from the analog to the processor, or between the FPGA and the analog, are on-chip and secure. Additionally, every logic cell in our flash FPGA is non-volatile and thus does not require the use of an external configuration device. Because there's no bit-steam transfer to intercept, your IP is protected against theft. Actel FPGAs feature **FlashLock,** a 128 bit hardware key that controls access to the device's security settings. The key can be used to reopen the security setting later.

8. Animated graphic based on the Ecosystem stack diagram, see brochure page 7. Build or fly through vendor logos as mentioned. Add SmartFusion logo or images of SmartFusion FPGA.	*(8)* Actel has partnered with microcontroller industry leaders to create a robust **SmartFusion ecosystem.** ARM processors are the most widely used embedded processors in the world. Designers now have access to the vast ARM-based ecosystem. Actel has also partnered with **Keil** and **IAR to** provide software IDE support to SmartFusion designers, and **Micrium** provides RTOS and middleware support, as well as other third party vendors for protocol stacks and interfaces. The SmartFusion ecosystem leverages these partnerships to deliver optimum ease of use and productivity to customers

9. Graphic: Build on three icons or images depicting the three types of designers: FPGA, Embedded, Analog. Add insert boxes with screen grabs of various software tools as mentioned. Other ideas?	*(9)* Whether you're an **FPGA designer** with a desire to offload communication management and sequencing functions, or an **embedded designer** with a need for hardware algorithm acceleration, or a **designer wanting to enhance analog usage and integration**, SmartFusion offers the ideal design platform for design teams or individuals. For **FPGA Designers**, Actel offers Libero IDE: a comprehensive design environment for designing all Actel FPGAs. For **Embedded Designers,** Actel offers support through SoftConsole , Keil, or IAR. The MSS Configurator creates a bridge between the FPGA and embedded design, so device configuration can be easily shared between multiple developers. And for **Analog Design,** the MSS Configurator provides graphical setup of current, voltage, and temperature monitors, sample sequencing set-up, and post processing configuration, as well as configuration of the DAC outputs.

10. Graphic: SmartFusion Head with animation, Build on text bullets as mentioned: • Low Power • IP Security • SEU Immunity and Reliability	*(10)* Remember that only Actel's flash technology allows for the integration of an FPGA, a complete microcontroller subsystem with a hard ARM cortex-M3 and programmable analog On a single chip. Don't expect to see this from any other FPGA vendor.
11. Opening graphics animation background, fly through text as mentioned: **Innovative,** **Intelligent** **Integration** Fly through "head graphic" Fly in and hold on Actel logo FADE OUT with music	*(11)* Innovative Intelligent Integration. **Get Smart** with **SmartFusion,** only from **Actel.** <u>Music pays off and fade out</u>