MOBILEPHONE CONFERENCE

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duced in March of this year.

The organization of the NX 1005 is shown in Figure 1 (right).

The NX 1005 also offers CMOS/CCD camera support up to 3M resolution with an input format of YCbCr4:2:2 (8-bit), a user (OEM) programmable sensor clock, programmable timing signal polarity, programmable input data order (YCbCr/RGB), and a sensor control by embedded MCU.

Am I seeing double?

At the MobilePhone Conference NexusChips showed a demo of a stereo display (using a lenticular lens) in a mobile phone configuration (Figure 2, right).

Although you can't show a stereo display in a photo, we can confirm that the screen shown on the left was indeed showing a stereo image. What's more, it derived from the two image sensors on the vertical board shown on the right of the dev board.

And the company is not stopping there. Next up, and due later this year, is the NX 1006, which adds an ARM9 to the chip and gives it the power to manage and deliver audio with SRS 3D sound, MP3, and AAC capabilities (see Figure 3).

Both chips, in fact all of NexusChips's parts, are OpenGL ES 1.1–compatible as well as JSR-184.

Also, later this year the company is planning to introduce yet another 3D accelerator, the NX 1007, and this puppy will pump out 12.5 million polys/second with WQVGA (480 x 272) resolution. What's more, the 1007 has built-in MCM memory (see Figure 4, next page).

The company says the Gi-Pump NX1007 will be especially for 3D mobile game enthusiasts who want 3D full graphics with mobile devices. Based on its power consumption management, Gi-Pump NX1007 supports screens up to wide QVGA display (480 x 272).

NexusChips was founded in December 2001 and has been concentrating its R&D efforts on 3D mobile graphic acceleration solutions. The company delivered what it claims was the world first low-power and high-quality 3D graphics accelerator, Gi-Pump NX1004, in January 2005, which it says is optimized for mobile environment and fully compliant with mobile 3D standard OpenGL ES.

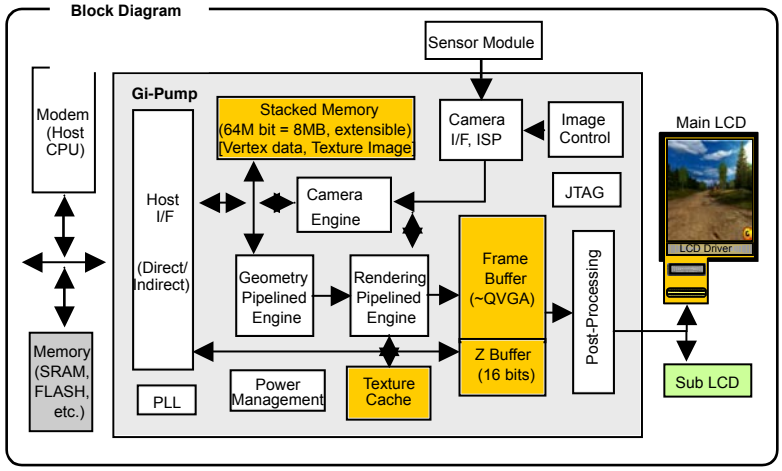

FIGURE 1. NexusChips's Gi-Pump NX 1005 3D mobile graphics accelerator. *(Source: NexusChips)*

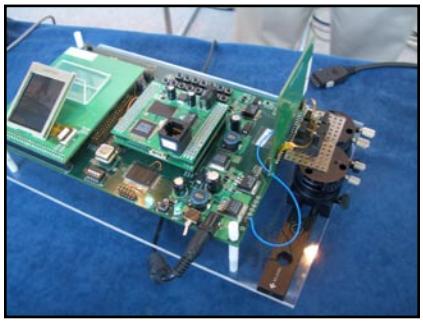

FIGURE 2. NX 1005 with dual camera input for 3D stereo display. *(Source: Jon Peddie Research)*

Bridging functions with sand

What can you do with four DSPs that you can't do with, well, one and a RISC? If you ask Tanuj Raja, Sandbridge Technologies's VP of biz dev, the answer is everything—literally.

At the MobilePhone conference Raja gave an impressive overview of the company's point of view about flexible multi DSPs with multi-threading for mobile applications.

Founded in 2001, Sandbridge offers a reprogrammable baseband processor for the mobile phone market and backed up by over 30 patent applications. The company recently rolled out its SBC 3000 SoC sporting four dual-

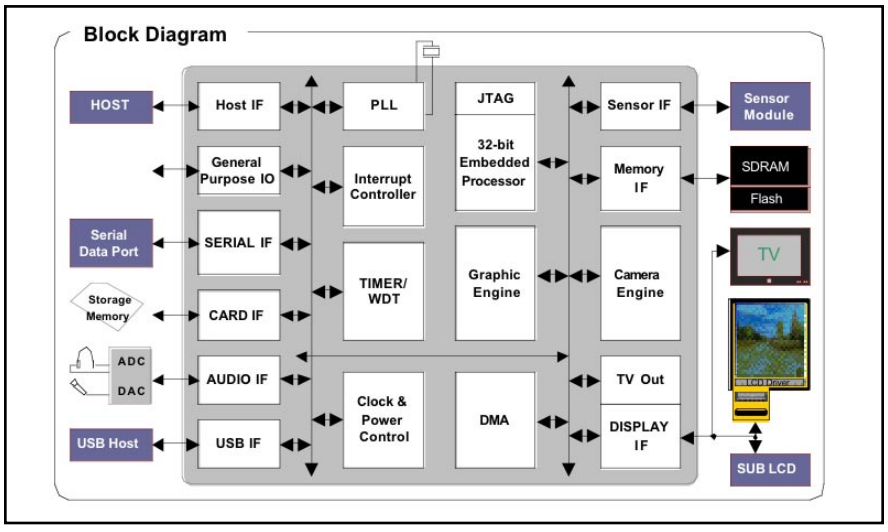

FIGURE 3. NexusChips's Gi-Pump NX 1006 3D mobile graphics accelerator. *(Source: NexusChips)*

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threaded "Sandblaster" DSPs with L1, L2 memory and an ARM9 core (see Figure 5, below).

From the start the company set off to define a wireless platform that would offer revolutionary capability to handset manufacturers, with the following goals:

- Efficiently implement a wide range of advanced communications protocols and multimedia applications
- Allow simultaneous execution of computationally intensive tasks in real time
- Provide for a high degree of flexibility and re-use of silicon
- Offer a programming environment that is substantially more efficient than traditional DSP programming

To achieve those goals while preserving low power appropriate for handset designs required new techniques at every level of design—architecture and micro architecture, logic and circuit design, plus algorithm and software design. And so the result was the company's Sandblaster Instruction Set Architecture (ISA).

The Sandblaster ISA employs multi-threaded design with eight hardware threads operate simultaneously—and the software system, claims the company, enables near-limitless software parallelism without the traditional performance penalties associated with task switching.

Sandbridge provides a C language compiler that it says can directly emit high-performance code that does not require assembly language programming or intrinsics. The Sandblaster architecture also includes an SIMD/Vector DSP unit, a parallel reduction unit, a RISC-based integer unit, and instruction set support for Java execution.

In addition, the chip provides programmable/configurable I/Os, supports commonly envisioned hardware–digital I/Q inputs (16 bits x 50 Msamples/second), and what the company calls "substantial CPU horsepower," for multimedia acceleration–competitive power with multi-protocol capability. Now you can't get much better than that, can you?

Raja says Sandbridge's SBC 3000 multicore processor can be programmed to create radios for mobile phones capable of changing from one interoperable wireless standard to the next. The radios can switch among CDMA to GSM and several other wireless standards using software either stored in the phone or downloaded over the air.

Sandbridge's argument is that fixed functionality ASICs cannot address the growing complexity of 3G/3.5G convergent devices. And, handset OEMs face a difficult task to service all markets with fixed functionality ASICs. Therefore, reprogramability is the key.

The company, which now has 50 employees, has raised $40 million from leading investment houses and strategic partners and is led by CEO Guenter Weinberger, who built and helmed the wireless semiconductor divisions of both Siemens and Infineon.

The company is working with three handset OEMs and others including wireless carriers to deploy handsets for various markets (on the same HW ASIC). These projects are at various stages of development, and the company is continuing to work with the original two (un-named) customers as well. So stay tuned—we can expect hear about some design wins very soon.

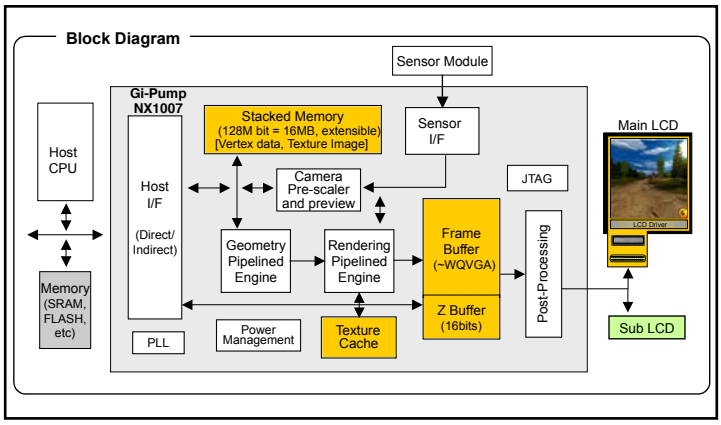

FIGURE 4. NexusChips's Gi-Pump NX 1007 3D mobile graphics accelerator. *(Source: NexusChips)*

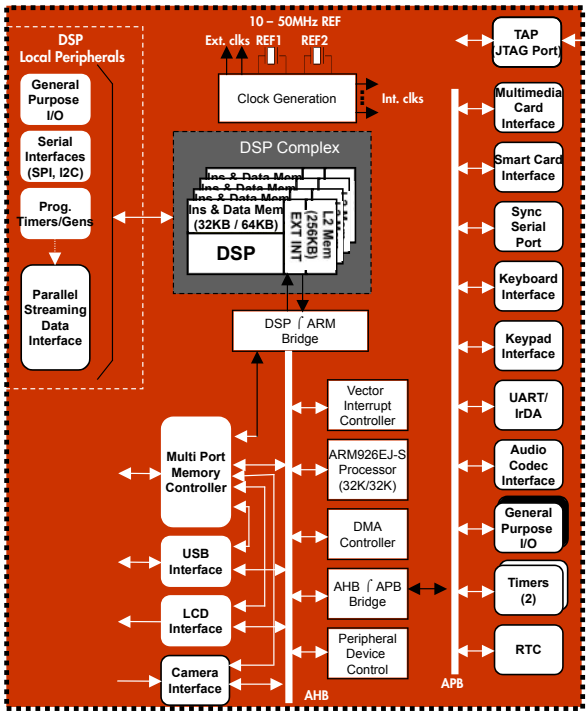

FIGURE 5. Sandbridge's SBC 3000 multicore processor. *(Source: Sandbridge Technologies)*

Palm OS in LG smartphones

Palm OS announced that LG Electronics has signed an agreement to license Palm OSs worldwide. Under terms of the agreement, LG Electronics can develop and market smartphones based on Palm OS.

Last week, you may recall, Palm OS said that it had signed a so-called tier-one electronics vendor.

LG, which has done some innovative things in the mobile phone space, is pretty pleased with the deal, and Skott Ahn, LG Electronics's EVP, said, "The flexible, open, and powerful nature of Palm OS is an ideal match for our industry-leading mobile handsets. We believe our customers will appreciate the new Palm-powered phones we will develop and distribute." That's one of the most positive things to come out about Palm in a while and we're glad to hear it.

However, there wasn't any information about when Palm-based LG devices would appear or which of Palm OS platforms LG would use. Currently, PalmSource offers the older "Garnet" platform, which is used by