The Year of Mobile Chips

2013 turned out to be a milestone for the chip industry in many ways. From a more competitive posture against the behemoth of PCs and servers, to a move to increasing reliance on the ARM architecture by the many new contenders, to an abandonment of a revolutionary architecture now past its time, the year reflects on the growing dominance of mobility and sweet spots in the market..

There were many accomplishments during the year, but below we briefly highlight what we consider some of the key trends and accomplishments in the mobile chip market for 2013.

The Year for Mobile 64? The chip suppliers are pushing 64 bits as the next wave of mobile empowerment, but will the OS and apps be able to take advantage of the new found power? Which of the mobile vendors will have the most impact? Apple started the wave and will soon move all its mobile OS and apps to take advantage of its 64 bit chips (A7). Intel's Atom Nvidia Tegra, QUALCOMM's Snapdragon and many others have announced 64 bit devices. It's likely that many of the early 64 bit chips won't be all that successful since at least some are "upscaled" rather than designed as such. Top suppliers in the ARM camp will likely be Qualcomm (who also has put 64 bit on the map in the Internet of Things with their new Snapdragon 410), and Nvidia. And of course Intel will fight ARM with Atom devices and Quark for IoT. MediaTek and the other Chinese upstart chip vendors also see 64 bits (and multi-cores) as a way to differentiate and will pursue this course aggressively.

Downsizing x86 Quark by Intel signals a new direction for the company as new management has now squarely focused on mobile as a key growth area, especially as PC markets continue to shrink. Lower in the food chain than Atom, Quark, built on the venerable Pentium architecture, signals a commitment by Intel to go after the controller and Internet of Things market, and compete more completely with ARM and MIPS. The ability to port existing x86 code to a low end controller chip may give it an advantage with so much existing code available. And it completes a top to bottom chip strategy for Intel with Core, Atom and now Quark.

Heterogeneous Computing Lead by Qualcomm, the market is discovering the need for a more balanced approach to mobile chip design encompassing a variety of building blocks (e.g., DSP, video, imaging, RF) in additional to the standard CPU and GPU. It's becoming clear that the best way to achieve performance while also maximizing battery life and minimizing heat is to include in hardware specific functional areas to enhance device operations. The next battleground in mobile is moving beyond core counts to available functional blocks that complement general GPU and

CPU capability. Expect to see increased emphasis from those vendors who have the expertise to do this effectively (e.g., Qualcomm, Intel).

Will Intel Finally get Traction in Mobile? Yes, we believe 2014 will be the breakout year for Intel in mobile, starting with higher end tablets (BayTrail), then making their way down into smartphones (Merrifield). But 2015 should be the year that Intel finally achieves the scale it needs by including a full LTE capability into an SoC and catching up with equivalent capabilities of Qualcomm. Ultimately, it will be a race between Qualcomm and Intel for the higher end of the mobile market.

Is Samsung Serious in Chips? Samsung continues to send mixed messages, as its Exynos chips power some of their own devices (and other vendors' devices), but many of the higher end Samsung devices use competing chips. We expect Samsung to continue to be a power in the foundry business, but we don't expect Samsung to be a leading supplier of processors like a Qualcomm or Intel. They will compete aggressively with the up and coming Chinese vendors however for the middle of the market.

The Era of China Mobile Chips has arrived. MediaTek is leading the way with some significant design wins at the mid to higher end. But may other producers are coming on line. So far most have been at low end commodity device levels, but we expect to see them slowly move up the value stack to challenge the leading current suppliers (e.g., Qualcomm, Samsung, Nvidia) in the mid tier. They will have a major impact on the large number of devices targeted at emerging markets, and casue some concern (and lost business) to the incumbents.

IBM Goes Open Source. The OpenPower alliance was formed this past year to pursue open sourcing the once groundbreaking Power PC architecture. We see this as more of a desperation measure than a true initiative, as the marketplace has largely passed the Power PC architecture by. IBM will continue to support it and use it to push the edge in process technology, which it is required to do to keep many of the non-captive chip producers (e.g., GlobalFoundries) competitive.

Intel achieved 22nm production, Intel is throwing down the gauntlet yet again to the other chip producers to catch up. Intel has fairly consistently maintained a 2-3 year lead in process technology and we don't see this shrinking anytime soon with 14nm appearing shortly.

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For more in-depth comments or analysis on this or other subjects, feel free to contact us.