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News Release

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WHY INTEL MIGHT WIN AND ARM CAN'T LOSE

London, England; October 9, 2013; September saw the launch of the Z3700 series of Atom processors from Intel, the supplier's latest assault on the smartphone and tablet processor market. While its market share in applications processors remains small today, Intel continues to aggressively mount a challenge and has firmly parked its tanks on ARM's lawn.

With the industry in transition from PCs to smartphones and tablets, there is no doubt that the applications processor has been the semiconductor market's star performer in 2013. Few semiconductor suppliers have been more impacted by the trend away from PCs than Intel itself, for many years the leading semiconductor vendor and by far the leading supplier of PC and server CPUs. The emergence of smartphones and tablets has shaken up the wider IT industry too and caught a number of companies by surprise, with established manufacturers such as Blackberry, Dell, HP, Motorola and Nokia either sold or forced to undergo significant restructuring in order to survive; in comparison, Apple, Google and Samsung are establishing the new order.

In times of such rapid change, anything can happen...imagine it is 2016 and Intel's Atom family has been universally adopted as the applications processor in smartphones and tablets. Having worked together to change from Power Architecture to x86 in the Macintosh, Apple and Intel have collaborated again to adopt Atom in the iPad and iPhone, with Apple abandoning its investment in the Ax processor family; Samsung, one of the earliest adopters of the ARM architecture, has moved exclusively to Atom for its smartphones and tablets, stopping production of its Exynos ARM-based applications processor family; Google has ceased support for the Android operating system on all but the Atom (x86) architecture; Microsoft has abandoned Windows RT; Broadcom, Mediatek and Qualcomm have exited the applications processor market. ARM's market share for applications processors in smartphones and tablets has collapsed from more than ninety percent in 2011 to zero in only five years.

In this extreme scenario is ARM finished? Not at all. While ARM's early successes were almost all in the cellphone, its strategy has clearly been to diversify into other markets throughout all of former CEO Warren East's tenure. Today, cellphones and smartphones still represents the largest market for ARM-based silicon, estimated at about \$18 billion out of a total of \$38 billion in 2013.

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However these totals for ARM include a mix of applications processors, baseband processors, wireless controllers, camera controllers, GPS processors and even the humble microcontroller. Any scenario in which Intel wins with Atom in applications processors still leaves ARM with substantial volume in these other chips. It is fair to say that companies like Broadcom and Qualcomm know a thing or two about competing in the mobile industry, while Apple and Samsung abandoning ARM is a big deal.

Intel is clearly challenging ARM in the smartphone and tablet market, and Intel's recent announcement of the low power Quark family moves the battle into new territory. However the scale of the lead built by ARM in the wider embedded processing industry is considerable and Semicast does not see this changing, at least in the short to medium term. In 2018 Semicast forecasts a total market for applications processors in smartphones and tablets of more than two billion units; shipments of Atom/x86-based embedded processors in applications other than smartphones and tablets of around 100 million units; and shipments of ARM-based embedded processors of around 20 billion units, up from around eight billion in 2012. Assuming a scenario where Intel wins 100% market share in applications processors for smartphones and tablets, Semicast still forecasts annual shipments of ARM-based embedded processors approximately ten times greater than the best case scenario for Atom/x86. Thus in the context of the wider embedded market ARM's leading position, when measured in units, does not currently look threatened by Intel. Colin Barnden, Principal Analyst at Semicast Research and study author, commented "ARM is forecast to reach annual shipments of ten billion units in 2013 and having taken almost thirty years to hit that milestone, it is forecast to then double annual shipments to twenty billion units in around four or five years".

In Semicast's view the Intel versus ARM battle now moves to the "Internet of Things". One particularly interesting development that Semicast is following is the announcement of the Weightless SIG; Weightless aims to establish a new communications technology with a greater than ten kilometer range, greater than ten year battery life and a sub-\$2 radio. Weightless takes wireless communications into an as yet unexplored opportunity of long range, low cost, low power, low bandwidth applications which today cannot be served by other technologies such as 3G/LTE, Bluetooth, Wi-Fi and ZigBee. The Weightless-enabled device, be it a smart sensor, smart switch or smart light, is highly likely to use ARM IP, most probably integrating a Cortex M0 or M0+ core.

With a portfolio ranging from the low-end M0 core up to the 64-bit A57, ARM has developed a suite of IP which encompasses everything from sensors to servers. According to findings from Semicast's Embedded Processing Service, in both unit and revenue terms ARM is already the leading 32-bit embedded processing architecture in the automotive, digital home, imaging/printing, industrial/medical and storage markets, and the leading architecture for 32-bit microcontrollers. Whatever success Intel goes on to have with Atom in smartphones and tablets, the architecture is not as suited to the wider embedded marketplace in the way that ARM is. Barnden summed up "Semicast is firmly of the opinion that while Intel might win, ARM can't lose".

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Notes for Editors

1. Semicast has a strategic focus on embedded processing and provides on-going research services to the global industry. Its Embedded Processing Service has been developed specifically for semiconductor and software suppliers to understand detailed trends in 23 key application areas across the five main end-use sectors. The service has a particular focus on trends for the ARM, MIPS, Power Architecture and x86 product families in embedded processing.
2. Semicast is always willing to work with journalists to provide quotations, opinions and market information for articles. If you require further information, please contact us at [press\[at\]semicast.net](mailto:press@semicast.net)
3. Semicast is a respected provider of independent market research on the semiconductor and electronics industry. It specializes in coverage of industrial and medical semiconductors, automotive electronics, telematics/infotainment, automotive semiconductors and embedded processing.