

GCG Abstract: Common Platform Technology Research Report

The Common Platform™ technology initiative, with IBM, Chartered, and Samsung as members, has the potential to transform the semiconductor industry, fueling faster innovation and lower costs for foundries, solutions providers and end customers alike. GCG recently completed a new research report (“Common Platform technology – Extraordinary Returns for the Semiconductor Industry”) that discusses the semiconductor industry in depth and outlines how the Common Platform technology alliance is addressing industry challenges. This abstract is a much shorter and less detailed discussion of the same topics...

It's obvious that semiconductors have become a critical component in a myriad of products. In an increasing number of industries, advanced semiconductor design provides the key points of differentiation and competitive advantage. The features that make a hot new cell phone or PDA a hit in the market are most likely made possible by cutting-edge semiconductors. The company that brings new technology to the market first often reaps much higher profit margins than their lagging competitors. Thus product manufacturers are working hard to push the limits of chip technology so that they can incorporate greater functionality, higher performance, and smaller form factors into their offerings as quickly as possible. However, this task is becoming increasingly difficult due to the fact that as semiconductors grow more sophisticated, their design and manufacture become much more complex, expensive, and risky.

Much of the performance gains in semiconductors arise from shrinking the distance between chip circuits and transistors, making room for more circuits and transistors. More circuits and transistors mean greater functionality, performance, and, unfortunately, higher complexity. Designing and manufacturing these denser chips is becoming increasingly difficult. Design costs for a 90nm semiconductor are almost triple the costs for designing a less dense 130nm part (\$25 million vs. \$9 million), according to industry sources. These costs are predicted to rise even more as chip density increases and designs become exponentially more complex.

These highly dense and complex chips are becoming increasingly difficult to manufacture. While semiconductor design and testing tools are much more advanced, actual design validity can only be determined by physically producing the chip. In the move from 130nm to 90nm chips, the likelihood of a design failure (fabbing a chip that doesn't work) has risen from 35% with 130nm parts to 55% on 90nm designs.

The structure of the foundry industry also plays a significant part in complicating the lives of firms who design their own chips. Semiconductor manufacturers, or foundries, each have their own set of proprietary and incompatible processes they use for manufacturing chips. A design that works for Foundry "A" can't be fabbed by Foundry "B" without significant modification or perhaps complete redesign. The time and cost associated with this redesign tend to lock customers into a particular foundry, reducing their ability to utilize multiple sourcing and thus, to some degree, increasing their overall risk.

Enter Common Platform Technology

A new semiconductor industry collaboration, the Common Platform technology alliance, has the potential to radically change the landscape of the semiconductor industry and address the challenges facing foundries and foundry customers alike. The Common Platform technology alliance of IBM, Chartered Semiconductor



Common Platform Technology – Extraordinary Returns?

Manufacturing, and Samsung has at its foundation a joint development agreement for semiconductor process technology development at 90nm, 65nm, and 45nm which includes contributions and efforts from Infineon Technologies. The foundry partners expanded this initial collaboration beyond joint development to include the synchronization of manufacturing facilities. This resulted in the three companies creating a “global virtualized manufacturing entity” allowing a single chip design to be seamlessly manufactured by any of the three manufacturing partners.

In addition to the foundry partners, the Common Platform alliance also has a robust set of ecosystem partners (including Cadence, ARM, Synopsys, Magma, Mentor and others) who provide a wide range of industry standard tools and IP, each of which have been custom tuned to fit the Common Platform process. There are benefits for chip designers and ecosystem partners alike: designers are able to use tools they are already familiar with, while the ecosystem partners will save time and money by designing for fewer process technologies. The consolidation of processes under the Common Platform should also result in faster and more efficient tool and IP development.

Customers designing semiconductors using the Common Platform technology will realize considerable benefits, including the ability to design a part once and then have it manufactured by any (or all) of the Common Platform technology partners. This gives customers the ability to select the right fab for the job, based on specialty, capacity, or cost considerations. It also eliminates the need for costly semiconductor redesign in order to enable multiple sourcing for parts. This will pay dividends on the design innovation front: with only one process to deal with, designers can spend more time enhancing designs as opposed to working on process issues or learning multiple processes.

Risk mitigation is also a big part of the Common Platform value proposition. Using multiple, geographically dispersed manufacturing partners reduces the risk that a manufacturing problem or even a natural disaster will disrupt production. The fact that the Common Platform partners are spread almost equidistant across the globe also means that production or design work can take place 24 hours a day.

Another advantage inherent in the Common Platform is that process improvements are shared between all of the Common Platform partners. Each of the players in the alliance has dedicated considerable R&D resources towards improving the technology. technology advances are refined and shared by all, which should fuel faster-paced innovation when compared with a single foundry that has only their own R&D resources to draw upon.

We believe the Common Platform initiative signals a sea change in the semiconductor industry. As the Common Platform expands, we expect the benefits from shared processes, tools, and development will result in productivity gains for foundries, which will give foundry customers quicker time to market, more control over manufacturing, and lower overall costs. For a more detailed discussion of these issues, please contact GCG to receive our “Common Platform Technology – Extraordinary Returns for the Semiconductor Industry” research report

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phone / 503.372.9389

gcginfo@gabrielconsultinggroup.com

www.gabrielconsultinggroup.com