

# Globalfoundries impact and evolution could be significant, says Petrov Group – Part I

Contributed by The Petrov Group [Monday 3 May 2010]

The emergence of Globalfoundries (GF) could be one of the most significant events in recent semiconductor history. While the new company faces significant near-term operational and, especially, organizational challenges, there are also several likely strategic actions that GF will undertake to enable its evolution and transformation, according to Boris Petrov, managing partner of The Petrov Group.

Among several major stages in GF's evolution, two are quite predictable. The first stage could be near term: the acquisition of IBM's IC fabrication facilities. There is another and related stage of GF's evolution that is possibly more significant but also more difficult to implement: GF's potential acquisition and adoption of IBM's IC design expertise.

## **Evolution Stage One: IBM and Its IC Fabrication Business**

Why would GF take on IBM's semiconductor manufacturing, which struggles to turn a profit even in good years? Why would this be a good fit for GF? Is this what GF needs most among its operational and strategy challenges that are threatening its very launch? What will it accomplish by taking over IBM's semiconductor manufacturing? To clarify these questions one should first analyze the changing role of the IC fabrication business at IBM.

IBM's core businesses are systems and engineering services; IBM is a technology-based solutions company that functions at multiple economic and geopolitical levels worldwide. IBM's primary challenge is how to profitably double in size and grow to a US\$200 billion company within a decade or so. IC fabrication is unlikely to play any role in the solution to this complex corporate challenge.

IBM's "DNA" and culture strive to automate business processes of any kind; this is a core competency of IBM that allows IBM to embrace and penetrate all major businesses. IBM's research has been a fountain of basic invention, often of entire businesses and industries; its US\$3 billion Research division is a growth foundation for the entire company. It has remained unsurpassed by any commercial or government research institution; it is the benchmark that defies the common belief that creativity and innovation cannot excel within a large corporate bureaucracy.

IBM is also a military-like business machine, always at war and despite what other companies may publicly say, IBM is typically 5-7 years ahead of the industry in strategy formulation. For all its positives, IBM also has considerable challenges that plague the company. For example, it has lost market share in the IT business for many years.

IBM's semiconductor business, including IC fabrication, was historically a key strategic element to its entire server system and software businesses. In the semiconductor industry, system companies have been IBM's customer engagement targets because IBM can enable them

technologically along the entire 360-degree silicon integration continuum (from concept design, to silicon, to board, to end-product). Here IBM stands alone with an array of advanced technologies in each segment of the silicon integration continuum -- a one-stop technological weaponry-shopping place.

However, there has been a shift in the electronics industry – from Computing to the Consumer IC sector, where low cost is the primary requirement. If we broadly define the Consumer sector and include segments of cell phones, notebooks, netbooks and games consoles, such a Consumer-like sector will soon account for 60% of the total IC industry. But, low-cost IC fabrication is not among IBM's core strengths.

The Petrov Group projects that IBM's US\$3 billion Research division will continue to drive IBM's evolution as well as the evolution of the entire IC industry – and much beyond silicon. IBM's material science and microelectronics research will not only be maintained but also accelerate. However, to accomplish its research and corporate growth goals IBM no longer needs IC revenues that have been held for decades around the US\$2.5 billion level.

Internal IC fabrication stops being the requirement if IBM can ensure access to fabrication of its custom designed microprocessors. If GF can provide IC fabrication that IBM needs, then IBM no longer needs its internal semiconductor manufacturing capability.

If this is indeed a win-win evolution stage, what would be the benefits to GF? There are many benefits, including acquisition of IBM's advanced SOI (Silicon on Insulator) technology and customers, and acquisition of SiGe and RF CMOS productized processes (IBM's device models are considered the best in the industry). IBM is the source of all of GF's advanced processing technology; it is IBM's technology that makes the Common Platform such an increasingly invaluable brand in IC manufacturing. By manufacturing advanced microprocessors for AMD and IBM, GF would effectively preempt fabrication in that challenging segment; penetration into processor manufacturing has been one of Taiwan Semiconductor Manufacturing Company's (TSMC's) corporate objectives for many years. GF would also broaden its customer base and further increase its manufacturing scale. The economics of IC fabrication in advanced nodes is exceedingly harsh – being first to market and having early volume production are mandatory prerequisites for profitability.

## **In Summary**

It is highly probable that IBM will consider a business alliance of some sort with GF. In GF, IBM has a potential partner with an infrastructure and management style that has elements inherited from Big Blue itself. With its fabrication facilities worldwide, and a foundation in complex processor design and manufacturing, GF should be able to incorporate state-of-the-art support for IBM, drive business economies, and ensure growth, noted Petrov. GF could be an ideal outlet for IBM's IC fabrication business, enabling it to sell a business that has not met financial performance requirements for years, and still providing it the depth, scope, and resources needed to not only provide manufacturing security for IBM but also further ensuring success of its foundry business.

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