



Chip design is being handled internally by semiconductor companies as a way to have more control over their supply chains and product roadmaps. Reusing components and having a flexible design allow manufacturers to save development times for customized circuits.

OVERVIEW

Chip design is a critical activity that determines the operation and value of a semiconductor device. The design process consists of defining the product requirements for the chip's architecture and system, as well as the physical layout of the chip's individual circuits, which eventually enable semiconductors to receive, transmit, process, and store ever-increasing amounts of data in today's digital world. Aside from the current shortage of chips, OEMs are pushed to take control of design and development due to the proliferation of products tailored to each industry's requirements. In-house chip design provides a welcome answer to the worldwide chip scarcity caused by increased demand for personal electronics, IoT goods, growing electric vehicle technology, and AI/ML developments requiring high computational power. This in result has led many OEMs to pursue in-house production of the precious chips in response to the present shortage.

Apart from this, it has also been witnessed that IC Recovery operates under a "recovery as a service" business model, in which companies, including OEMs and ITAD firms, pay a charge to have IC Recovery gently remove higher-value chips from printed circuit boards in bulk. These chips are validated to be in functional order before being returned to the client, who can then reuse or sell them. This method creates chips that are cheaper and have a significantly lower greenhouse gas (GHG) footprint than new chips, and they can be delivered in a fraction of the time.

Client Challenges

The client is a non-semiconductor company and wanted to develop a custom semiconductor. Following are the requirements asked by the client:

- Roadmaps and plans to capture the leading application/industries
- Investment and strategic initiatives with potential partners
- Regulatory requirements and standards on country level
- Bottlenecks and barriers which will affect the development process
- Cost Analysis

DBMR Approach/Research Methodology

Data Bridge Market Research approach involved the usage of both primary and secondary research methodologies to estimate, analyze and validate the data. The study has been conducted considering both top-down and bottom-up approaches. The bottom-up approach includes tracking down the trackable revenue such as, revenue earned by the different companies through its focused products/solutions along with its geographical sales. Apart from this other factors such as financial analysis, certification, regulatory requirements, pricing, technological trends and other factors were also studied. The entire data was collectively analyzed and summarized to get the market analysis. The same data is validated by using top top-down approach. Top-down approach starts with a broader view in which we examined the business model of entire market covering every aspect including R&D, designing, production, revenue analysis, operational activities, procurement plans, driving & restraining factors effecting the market

For this, we conducted a literature survey where we referred to different secondary sources such as the company's annual report & SEC filing, whitepapers, government associations, press releases, journals and others. We also considered data from various paid sources such as Hoovers, Factiva, and others. The entire secondary study has been bifurcated into market assessment, technology assessment and company assessment. Finally, data validation was done through primary research, which involves e-mail interactions, LinkedIn and telephonic interviews with others to finalize the number.

Hence, by following the above-mentioned approach, market insights were provided to the client accordingly.

OUTCOME AND BUSINESS IMPACT

Following are the outcomes founded while analyzing the overall company scenario in relation with in-house chip design:

The most crucial criterion for building a successful in-house chip is to have a team with the necessary expertise to carry out bespoke chip development flawlessly. Thus, DBMR recommended the client to have a team which should be a combination of both design and production abilities. This entails hiring professionals with extensive experience in the semiconductor sector and the ability to build semiconductor solutions through long-term R&D.

With the capacity to modify designs for specific use cases and budgets, DBMR suggested to form strategic alliances with the tech companies in order to stimulate innovation and for generating profitable growth opportunities. Moreover, if a business without a semiconductor experience begins in-house chip development, it should ensure that a significant amount of funding is accessible for an extended period of time. This is why DBMR also highlighted the importance and the necessity of long-term investment activity in chip development and research pays off for its client.

Companies that operate data centers, automotive and others rely significantly on several companies for silicon chips to power their systems. Thus, developing in-house semiconductor chips might also provide opportunities to broaden the application range. This is also especially true for smart device vendors, who frequently have to create solutions based on what is available in the market. In-house chip development initiatives, when properly organized, will help the client to extend their application portfolios by driving new end-products for their customers along with customization.

DBMR solution towards the product development, along with in-depth knowledge of industry regulations and procedures has helped the client to create small, economical, and extremely effective solutions. This not only enables them to meet safety and security criteria but also helps them in accelerating their product development with increased efficiency.

One of the primary motivators for producing chips in-house (particularly the design phase) is cost. Having control over what chip has to be created and how to deploy it (based on features) has the potential to improve user experience while reducing costs. Thus, DBMR has provided estimated cost analysis including financial statements, P&L A/C and others considering from the initial that is R&D, deigning to final production stages. This will ultimately help the client to plan its working capital accordingly.

Thus, DBMR comprehended the various needs that drive the development of in-house semiconductor chip while also being profitable.

Conclusion:

Data Bridge Market Research has provided in-depth insights in relation with the development of in house chip to cater each requirement. Adding to this, the report's factual and consolidated information will help the client to evaluate the company's growth in terms of technology, penetration and can also be further utilized for decision making and future planning. Apart from this, the client can even access/capture the business opportunities from the reports' information.