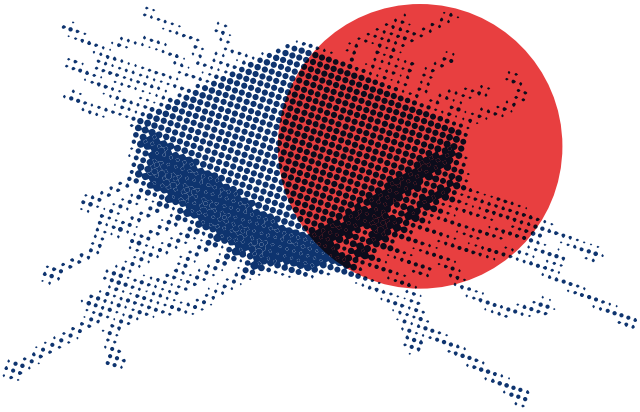


Semiconductor Outlook 2020:

Exclusive Insights from Top Executives



A dipstick survey report based on inputs from 50+ C-suite and senior executive participants at Wipro's Semiconductor Summit.



The New reality

Supply chain disruptions. Travel bans. Lockdowns. These are the new realities facing the semiconductor industry due to COVID-19.

IDC[1] predicts a nearly 80% chance for significant contraction in worldwide 2020 semiconductor revenues. Gartner predicts[2] overall revenue will drop $55 billion from its original projection to $415.4 billion.

Still, the longer-term outlook for the semiconductor industry remains strong. As businesses of all kinds seek a return to growth, they will need to control operating costs and get better products to the customers, faster. Semiconductors are vital to both objectives. We expect that emerging technologies like 5G, IoT, and AI-driven intelligent systems will be core for the recovery of the technology sector.

Next generation electronics, machines, medical devices, and beyond will all require new and better semiconductors. For instance, over 7% of all new vehicles will have Level 3 or higher autonomous driving capability, with high-volume production starting after 2020. And over 40% of security surveillance cameras will ship with on-device real-time monitoring and analytics functions within the camera, up from less than 5% in 2018.

[1] https://www.idc.com/getdoc.jsp?containerId=prUS46144920

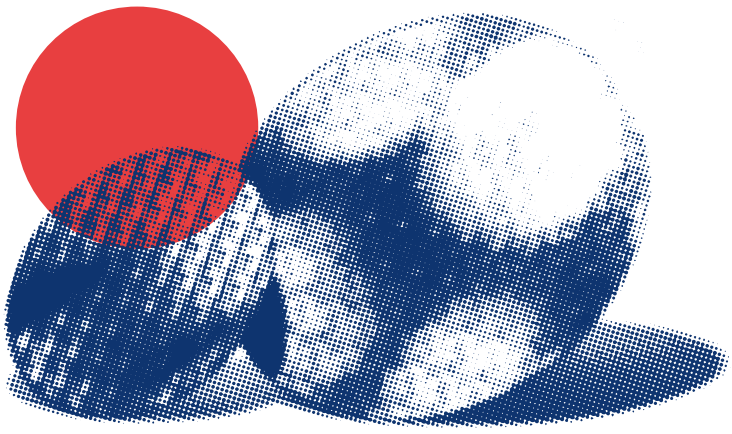
[2] https://www.gartner.com/en/newsroom/press-releases/2020-04-09-gartner-forecasts-worldwide-semiconductor-revenue-to-0

In discussions at our most-recent Semiconductor Summit in March in Wipro's Silicon Valley Innovation Center (SVIC), it's clear that at leading companies, that process is already underway.

Dialog acquired Creative chips and Adesto technologies to broaden its IIoT presence Micron has announced a powerful new set of high-performance hardware and software tools for deep learning applications (for IoT & Edge computing) with the acquisition of FWDNXT, a software and hardware startup. Marvell unveiled their first generation of client SSD controllers that are designed to meet the need for lower power and higher performance in next-generation data centers and edge devices. Digital transformation initiatives are also high on the agenda of top companies.

In addition to the keynotes and panel discussions, we built a survey focused on technology investments during the digital transformation, the roadmap for further investments and key challenges that organizations need to overcome.

The respondents were comprised of 50+ C-suite and senior executives handling IT and Business portfolios in leading, US-based, semiconductor organizations and their answers are revealing.



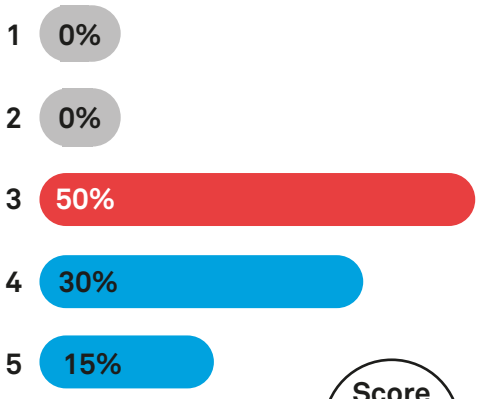
Ready to make digital transformation succeed?

Absolutely yes! Over the last few years, many semiconductor companies, have made foundational investments in technologies that enable digital transformation. Much of these early investments focused on standardizing the enterprise or on improving front ended customer experience technologies.

But those investments were just the beginning of a longer journey. A comprehensive approach to digital transformation will require navigating across various levels of the organization. When we asked industry leaders if they were ready to tackle larger digital transformation, 50% of respondents said yes, and most felt they would be ready soon.

"In the next wave of development, semiconductor companies can look beyond basic underlying solutions to address the full systems and intelligence above it. As they look far into the future to predict use cases across verticals, they can develop powerful chips to take advantage when solutions appear in the market," says **Utpal Bakshi, Global Head of Hi-Tech Vertical, Wipro Limited.** "Companies across all verticals are evolving to be tech-first and deploying many of the same solutions, but for different industry applications. This 'hyper convergence' is one of the key features of the new economy. The semiconductor industry is its bedrock."

How do you rate your organization's preparedness with regards to Digital Transformation?
1-5 (5=fully prepared, 1+ not at all)



Score
3.7

What are the biggest industry challenges?

Cost pressure is the most serious issue, and one that is exacerbated by demands for innovation related to this is the challenge of hiring enough experts with required skills – especially given the need to attract a diverse workforce and address gender imbalances.

What are some of the biggest challenges that you are facing today?

34%	Cost pressure
34%	Lack of experts/ skills
13%	Managing end- customer's request
9%	Legacy landscapes/ products

What are companies looking for from their IT partners?

Nearly 40% of respondents are feeling the pressure to ramp up the right expertise faster. Executives know AI, IoT, and 5G will all create new opportunities and new demands the semiconductor industry.

Already in 2020, an external partner is essential to manage the uncertainty arising from complex processes and systems.

By 2022, over 50% of enterprises will deploy AI accelerators in their server infrastructure, growing from less than 1% in 2018[3].

[3] https://www.gartner.com/smarterwithgartner/gartner-predicts-the-future-of-ai-technologies/

Wipro's Utpal Bakshi notes, "advances in data analytics, artificial intelligence, and 5G have created opportunities for integrated products and experiences that never existed before.
The semiconductor industry demands IT partners with the right expertise (including cross-industry expertise), with the ability to help reduce costs while helping to drive innovation.

What are your expectations from an IT/ Engineering partner?

38%	**Faster ramp up for right expertise**
24%	**Cost reduction**
24%	**Co- innovation**
10%	**Innovative business model**
5%	**Ability to bring cross industry expertise**

What is top priority in 2020?

AI / cognitive / deep learning moved up from the tenth to the third spot for driving semiconductor revenue in 2019.

Add to that the continuing rise of IoT and digital supply chains, and it's no surprise that for 45% of respondents, technology innovation is urgent, with M&A not far behind at 35%.

"There's a significant trend from historical semiconductor markets toward a more integrated offering," says **Utpal Bakshi.** "Just five years ago, manufacturers were still almost entirely focused on building microchips as components of larger vertical-specific systems. Today, technology companies expect chipmakers to provide not only the underlying hardware solution, but also fully integrated software systems and business intelligence capabilities to accompany that hardware"

That need for integration is driving business-level consolidation among semiconductor companies. "We're not seeing as many acquisitions as we did in 2015 or 2016 but reports on industry merger and acquisition activities indicate that the total value of deals completed over the past year are still significantly higher than at the beginning of the decade."

What is the top strategic priority in 2020

45%	**Technology innovation**
35%	**M&A**
15%	**Talent management**
5%	**Diversification into new areas**
0%	**Geographical focus**

"As the industry becomes increasingly consolidated, chipmakers are placing greater emphasis on focused integration and collaboration. A big part of that involves integrating the various information technology systems these companies rely on to power the manufacturing process. Moving forward, this will likely become even more important," he says.

Are you seeing returns on your investments?

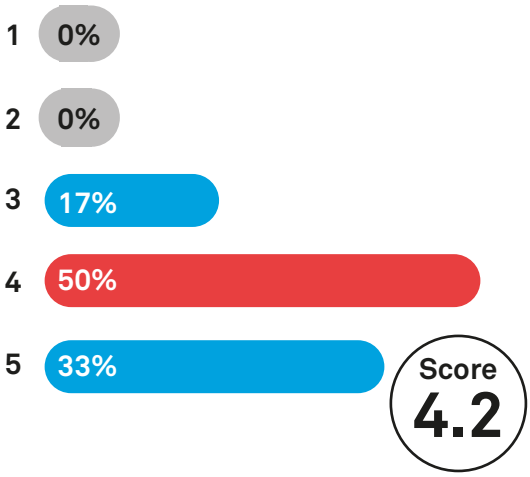
The answer is yes. Eighty-three percent of the respondents said that they were satisfied with the returns on their new age technology investments.

Yet there is clearly still room for improvement.

While semiconductor companies face a future full of opportunities, competition will be stiff.

Continued – and accelerated – digital transformation efforts will be required to meet those challenges and stay ahead. This is especially true for incumbents facing new competition from startups.

How do you rate the current level of ROI from investments in new age technologies?
(5-very satisfied, 1= not at all)



The right strategy for 2020 and beyond

Harmeet Chauhan,
SVP & Global Head, Industrial Engineering Services
Wipro Limited

"Semiconductors underpin vital sectors of the economy and IT systems that enable remote work and access to essential services across every domain, including medicine, finance, education, government, food distribution, and more," says **Harmeet Chauhan, SVP & Global Head, Industrial Engineering Services, Wipro**

The semiconductor industry has been revolutionary in adapting and building new age technology that is enabling the disruption that is taking place all around us. However, it is currently at a point of flux and Harmeet says, "In the interest of growth semiconductor companies must look at the following areas"



Rethink supply chains

In the near/long term, semiconductor manufacturers should examine their supply chain strategy and operating model to address the risks of geographical concentration and lack of resiliency. Consider moving to an "agile supply node network" model—which is flexible and allows for multi-pathways that help eliminate single points of failure. Spread concentrated capabilities to near-region (e.g., fabrication, A/T, tool manufacturing and support) and qualify alternate sources of supply.

Embrace new ways of working

In the modern world of the Agile/DevOps way of software development, the semiconductor industry is one which is way behind and needs to come to terms with distributed development/delivery. To be a viable contender in the software tool support market, semiconductor companies should, at a minimum, support major open source software frameworks such as TensorFlow, Caffe2, Theano, CNTK, MXNet, and Torch.

Focus on technology

Increased spending on semiconductor -dependent products (e.g., consumer electronics, automobiles, communications etc.) in the coming era should reinforce focus enabling and powering 5G, AI, Edge Computing, IoT, or HPC onto the chips. Companies also need to look at customization to balance power, performance, and cost for the required use case. The need of the hour is to move from the cloud to the edge to enable new architecture that allows more tightly coupled processors and memory.

Invest in talent

The industry should focus more on investing in talent in the areas of ASIC/FPGA design, high-speed board development, and firmware development and nurture them by providing opportunities in design and architecture and verticalized use case driven chip customizations.

Build a BCP (Business Continuity Planning) core team

It is most crucial now to tackle the current situation of COVID-19. Building a core team focused on ensuring business as usual, creating immediate fixes for a work from home scenario, and putting focus on predicting and planning for further business repercussions is more critical than ever now. At Wipro, we are helping our customers lead these initiatives with ready-to-implement value propositions.

A strategic approach to M&A

Think long-term Instead of buying a company based on the current market share it claims, look for additions that complement your core business. Identify key drivers – acquiring other companies is primarily about integrating their resources — typically talent. Look for synergy – combining two companies usually means discontinuing one product line and folding the customers into another.

Key takeaways

Continued focus on structural growth drivers in the emerging technology space shall help the semiconductor companies create a more resilient future for the world.

A plan for digital transformation, a trusted external partner, and a foundation of solid technology is key to leverage future opportunities and Wipro has been helping semiconductor companies take bold strides in this arena.

Write to us at info@wipro.com to kick start your journey now!