In 1966 Robert F. Kennedy delivered a speech that mentioned a curse, “May you live in interesting times.” Like it or not, we live in an interesting time—a time of danger and uncertainty, but also a time of great possibilities.

Social and business challenges include the COVID-19 pandemic, which is in its sixth month, high unemployment from sheltering in place, trade friction between the USA and China, and others. The impact to the economy and peoples’ lives is sobering. According to the June 2020 World Bank forecast, the global economy will shrink by 5.2% this year. The U.S. economy is forecast to contract 6.1%, reflecting the disruptions associated with pandemic-control measures. Europe’s output is expected to shrink 9.1% in 2020 as widespread outbreaks take a heavy toll on activity. Japan’s economy is anticipated to shrink 6.1% as preventive measures have slowed economic activity.

Looking ahead, every economist is optimistic that 2021 will see an upswing in economic activity. The World Bank sees the recovery in the range of 4%. However, the losses of the 2020 contraction are “like a meteor hitting the earth. It is a massive number,” according to Ken Rogoff, professor of economics at Harvard and former chief economist at the IMF. In response, governments are financing businesses to alleviate immediate issues, but will have to deal with an increased national debt in the long term.

How has COVID-19 affected businesses? We now have a new virtual way of doing business. This means more usage of cloud infrastructure and more network bandwidth needed to support meetings and conferences for health care, real estate, and many other industries including ours.

At Silvaco we are dealing with these challenges by working from home, where in the short-term, output from our technical staff has risen by as much as 20%. Questions remain, however, about the longer term impacts on quality of life, corporate loyalty, and sociability. According to a study by Nicholas Bloom at Stanford University, 40% of tech workers (and perhaps 60% in Silicon Valley) are working from home during COVID-19 restrictions. Pre-COVID-19 roughly 5% were doing so. In the future, he predicts that 20% of working days will be from home.

On the business front, we are in an industry that embraces change and cannot stand still as we continue to move to smaller process nodes, with greater circuit complexity and quantum level physical effects. Even though the industry is reacting to COVID-19, we have seen no slowdown in investment in EDA and IP and there are many new opportunities in front of us.

The automotive industry consumes a wide range of semiconductors, from transistors in the powertrain, to control units, and to the processors and vehicle networks that tie it all together. While demand for new car purchases has been delayed (it’s a great time to buy that shiny new car you have been eyeing), the industry is continuing to build infrastructure including wireless connectivity for vehicle-to-vehicle (V2V) and vehicle-to-anything (V2X) communication.

While the demand for semiconductor memory has fallen, smaller device nodes and new Gate-All-Around (GAA) transistors are being adopted by the industry for next generation designs. Similarly, for display companies, consumer demand has slipped, but roadmaps point to improvements in resolution, durability, and color depth, which will help the industry recover.

For wireless networks, the adoption of the 5G infrastructure will drive electronics purchases in the hundreds of billions of dollars. Novel high bandgap devices in the RF stages matched with advanced signal processing and AI management of the networks is driving new design activity.

The continued growth of AI and ML is driven by many different market segments including health care (vaccines, gene sequencing, and medical research), transportation (self-driving delivery vehicles and cars, traffic control), commerce (on-line fraud detection and image recognition), and many more. Industrial automation is continuing but it is hampered by the legacy infrastructure. New standards will enable smart buildings and cities that can coordinate multiple systems for optimal energy usage and working environments.
We are living in an interesting time, but fortunately the drive for innovation in products and services, especially in AI/ML, 5G, and smart transportation is creating new markets and business opportunities. Silvaco is enabling these semiconductor business opportunities from atoms to systems, and we will continue, along with the rest of the design ecosystem, to address the need for innovation.

In summary, I do not see any major slowdown coming to our industry. However, as part of the changing landscape, there will be more mergers and acquisitions as some smaller players with marginal businesses will not be able to survive as standalone entities. This is to be expected and is part of the natural cycle that occurs in the design ecosystem.

I wish everyone a healthy future. My advice to all of us is that we continue to raise our awareness so we can better handle both the opportunities and challenges that lie in the days ahead.

**New ESD Alliance Members; Webcast Considers Mobility Disruptions on Semiconductor Design**

Bob Smith, Executive Director, ESD Alliance, A SEMI Technology Community

Since January, the ESD Alliance welcomed four new members to our growing community — AMEDAC, Avery Design Systems, CEMWorks and D2S. Each brings a different and welcome perspective. Speaking for the entire governing council, we look forward to their contributions. The ESD Alliance is almost perfectly positioned to change or expand your perception of the semiconductor supply chain and the electronic system design ecosystem’s role within it, especially as a SEMI Technology Community. Connecting Design to Manufacturing also neatly ties into SEMI’s own “SEMI is More” campaign.

AMEDAC of Hefei, China is a startup providing semiconductor smart manufacturing EDA solutions including device and process simulations, mask synthesis, mask data preparation, and yield analysis and improvement. It joined the ESD Alliance because “it is an excellent semiconductor design ecosystem, and its resources and the connectivity it provides will help AMEDAC amplify its voice,” remarks Jacky Ni, AMEDAC’s CEO.

Avery Design Systems of Tewksbury, Mass., supplies functional verification solutions. As a member of SEMI, they wanted more involvement with our community. “Being part of SEMI’s broader mission and global reach is part of the ESD Alliance’s attraction to the design community,” states Chilai Huang, Avery’s president and CEO. “For an emerging company such as Avery, the Export and License Management and Anti-Piracy Committees offer a central resource for informed information to address a variety of vexing issues.” Huang also noted the ability to receive the detailed MSS (Market Statistics Service) data as another resource to help Avery make engineering and business decisions.

Winnipeg, Canada-based CEMWorks is developing innovative physics-based virtual prototyping tools that help businesses create tomorrow’s technologies and sees us as a bridge to connect with other electronic design companies through our educational and networking events. “The ESD Alliance offers us a way to learn more about challenges and opportunities in our industry,” notes Jonatan Aronsson, president of CEMWorks, who founded it in 2011 in response to the lack of comprehensive simulation tools for the electronics industry.

D2S is a supplier of GPU-accelerated solutions for semiconductor manufacturing based in San Jose, Calif., addressing the challenges of advanced node lithography with full-chip curvilinear inverse lithography technology (ILT) to improve manufacturing processes. “We share the ESD Alliance’s view that the various components of the electronic product design and manufacturing chain need to move closer together,” says Aki Fujimura, its CEO. “We believe curvilinear designs would help substantially to improve manufacturability of designs. The transition to curvilinear designs will require a close collaboration between design and manufacturing. It hadn’t been possible to manufacture curvilinear designs until multi-beam mask writers became available for the leading-edge nodes. The only missing link left to enabling the manufacture of curvilinear designs was full-chip curvilinear ILT.”

**The Impact of Future Mobility Disruptions on the Semiconductor Design Ecosystem Webcast**

Next up in our popular, continuing series of virtual webcasts, “The Impact of Future Mobility Disruptions on the Semiconductor Design Ecosystem,” is co-hosted by McKinsey & Company. If you aren’t on vacation, join us Thursday, August 20, to learn about new opportunities in design and IP driven by disruptions and rapid growth in the global automotive markets and supply chains.


Recordings of two popular webcasts we held during the first half of 2020 are available on the ESD Alliance website, [www.esd-alliance.org](http://www.esd-alliance.org). If you haven’t heard them, treat yourself and listen in to Jim Hogan and Methodics’ Simon Butler as they explore the path from bootstrapped startup to profitability along with our annual 2020 ESD Alliance CEO Outlook.

As always, I look forward to hearing from you. I can be reached at bsmith@semi.org
Committee Updates

Export (Larry Disenhof, Cadence Design Systems). The Export Committee continues to monitor government activities and rulings that might have a significant impact on your business.

Export regulations have become increasingly complex in the last year, and this complexity will continue. A significant development directly affecting the U.S. electronics industry was announced at the end of April, taking effect on June 29th. The U.S. Department of Commerce published the “Expansion of Export, Reexport, and transfer (in-Country) Controls for Military End Use or Military End Users in the People’s Republic of China, Russia, or Venezuela”, better known as the MEU. This was a final rule published in the Federal Register and imposes additional export restrictions on general purpose commercial dual-use electronics hardware and software.

For the purposes of this newsletter we cannot provide guidance, our purpose is to raise awareness and provide links so that if your company sells into these markets you have some information readily available to advance your understanding.


On June 26th BIS published helpful FAQs concerning this rule: https://bit.ly/BIS_FAQ

For information on this and other regulations affecting the electronics industry, the SEMI trade group has active committees where you can stay informed: https://bit.ly/SEMI_advocacy

License Management & Anti-Piracy (LMA) (Sashi Subramanian, Cadence Design Systems).

The ESDA-LMA committee continued to hold regular meetings to discuss matters of common interest. A subset of ESDA-LMA members have signed a Joint Development Agreement to specify a common protocol/use model for the Server Certification (formerly Machine Certification). The Server Certification protocol will be owned and managed by SEMI and will work towards addressing one of the key EDA piracy concerns - server cloning. The committee also continued to engage with Flexera on improving the license server capacity to support large transaction volumes, currently a limitation for the FlexNet license server.

Interoperability (Richard Paw, Amazon Web Services).

As the Electronic Systems Design market continues to evolve, the Interoperability Committee continues to explore factors that could impact the operation or the interoperability of electronic system design tools or IP.

The ESD Alliance OS Roadmap represents industry guidelines regarding operating system versions that EDA vendors should publish against and customers should use for new designs. The "Max version for vendors" indicates the latest OS version vendors should use for software releases. "Min version for users" indicates the oldest OS version that customers should consider when starting a new design.

Operating system usage in our industry has been stable and the current OS Roadmap accurately reflects the current environment. We have not made any changes since the last update. Due to current restrictions, we are not holding our annual in-person meeting and will be holding our annual OS Roadmap review with the OS vendors later this summer. As always, you can find the latest OS Roadmap on the ESD Alliance website, esd-alliance.org.


The ESD Alliance’s MSS report captures EDA, semiconductor IP and services revenue data reported in complete confidence by companies providing these products and services and organizes it into a published report available to members. The most recent report, covering through Q1, 2020, shows quarterly industry revenue up 3.5% compared to Q1, 2019 on revenues of $2.7 billion, with the 4-quarter moving average up 5.2% The report includes historical revenue data by quarter organized by detailed product categories and geographic regions (chart). The report provides valuable data to help guide member companies’ business decisions. Additional information including the MSS Newsletter is available at esd-alliance.org.
Emerging Companies (Julie Rogers, SEMI). The Emerging Companies Committee continues to hold informative events on topics of interest to the semiconductor design ecosystem digitally during COVID 19.

We held our first webinar as part of the Jim Hogan Fireside Chat series featuring Methodics’ Simon Butler who shared with us his journey, ideas and challenges in the formation of this successful company. To view the interview head to http://bit.ly/37izemu. Jim will resume his interviews with entrepreneurs and their experience in building successful companies in the electronic system design ecosystem in the fall.

Our second webinar, generously hosted by Arm was a great success. The popular ESD Alliance CEO Outlook 2020 was moderated by Ed Sperling, editor in chief of Semiconductor Engineering and showcased panelists: Simon Segars (Arm), Joseph Sawicki (Mentor, a Siemens Business), Raik Brinkmann (OneSpin), John Kibarian (PDF Solutions), Prakash Narain (Real Intent), Babak Taheri (Silvaco). The panelists discussed discuss the impact of COVID-19 on our industry, along with many other current topics and can be viewed here https://bit.ly/3h1VTzf.

If you have a good story to tell that would help others, we would love to share it. Please contact us. We look forward to collaborating with other SEMI regions to bring valuable educational and networking activities to locations outside of Silicon Valley post COVID 19. As always, recordings of our past events are available in the ESD Alliance Resource Center. Be sure to visit the ESD Alliance website, esd-alliance.org, and the SEMI website SEMI.org for details of upcoming events as they become available.

Tradeshow (Bob Smith, SEMI). The committee represents the interests of ESD Alliance companies at trade shows including SEMICON West, Design Automation and Test Europe (DATE), SEMICON Europa, SEMICON China, and others.

2020 is proving to demonstrate the adage “change or be changed.” Here we all are attending the first “virtual” SEMICON West conference. This is ESD Alliance’s first experience participating in a virtual conference or trade show and we know we will learn a lot. Last year we had the opportunity to expand our reach by including design content and programming into SEMICON West, SEMICON China, SEMICON Taiwan and SEMICON Europa. This year our reach will likely be by virtual presence at these events.

It does appear that most other industry events planned in 2020 have shifted to virtual due to COVID-19. There are real advantages to virtual events including no travel costs, the ability to participate from any time zone or geography and continuing to participate by accessing online content that remains available. Most people agree that the disadvantages of a virtual event are the lack of face-to-face dialogue and spontaneous networking that goes on at live shows. We have to adapt and a virtual event is a better option than dropping an event entirely.

The design ecosystem and global electronic product markets are continuing to move forward and the ESD Alliance is as well. Let’s make the most out of our virtual interactions in 2020 and look forward to the future when we’ll hopefully be able to start including some live events.
The ESD Alliance organized a Smart Design session at SEMICON Europa in Munich, Germany, November 2019. The session included several talks covering a wide variety of design topics, and concluded with a panel, moderated by Jim Hogan.

The annual Phil Kaufman Award Presentation and Dinner was also held in November. Dr. Mary Jane Irwin was honored with the 2019 award for her extensive contributions to EDA. Dr. Valeria Bertacco presented a talk covering Mary Jane’s many accomplishments, followed by an interview with Dr. Irwin conducted by Ed Sperling, editor-in-chief of Semiconductor Engineering. The evening included an opportunity to network with other industry notables, including past award recipients.

COVID-19 forced many industry events to be held as on-line, virtual events; the ESD Alliance was no exception. The Jim Hogan’s Fireside Chat included an interview with Simon Butler, CEO and Founder of Methodics, about his experience building it from a start-up to profitability.

For information on these and other ESD Alliance events, visit esd-alliance.org and semi.org.