

FOR IMMEDIATE RELEASE

**2019 Heterogeneous Integration Roadmap (HIR) Identifies Long-Term  
Technology Requirements to Inspire Collaboration in the Electronics Industry**

*The HIR defines future trends of electronics innovation  
to accelerate progress and advance technology for the benefit of humanity*

**PISCATAWAY, NEW JERSEY, USA, 10 October 2019** – IEEE, the world's largest technical professional organization dedicated to advancing technology for humanity, today announced the 2019 release of the [Heterogeneous Integration Roadmap \(HIR\)](#), a roadmap to the future of electronics identifying technology requirements and potential solutions. The primary objective is to stimulate pre-competitive collaboration among industry, academia and government to accelerate progress.

The roadmap offers professionals, industry, academia and research institutes a comprehensive, strategic forecast of technology over the next 15 years. The HIR also delivers a 25-year projection for heterogeneous integration of emerging devices and materials with longer research-and-development timelines.

“Today, we are seeing emerging technologies—such as AI, 5G, edge, cloud, and data center, autonomous vehicles and wearable technology—that hold great promise for improving the lives of individuals across the globe,” said William Chen, chair of the Heterogeneous Integration Roadmap and ASE Fellow. “The HIR, with its broad input from industry and academia, represents an invaluable resource that sets the course for continued electronics industry growth, greater technology innovation and enhanced performance of devices across a wide variety of applications that can bring increased benefits to humanity.”

The electronics industry relies on the integration of separately manufactured components into higher-level assemblies to enable enhanced functionality and operations. This heterogeneous integration of wireless and mixed signal devices, bio-chips, power devices, optoelectronics and microelectromechanical systems in a single package places new requirements on the electronics industry as these diverse components are introduced into System-in-Package (SiP) architectures for the tremendous array of industries where electronics are used.

“When you consider the scope of the HIR, the numerous application domains it addresses, and the level of valued input from a wide range of global stakeholders, it’s clear that there is a strong commitment to advance the entire electronics ecosystem,” said Ravi Mahajan, Intel Fellow, High Density Interconnect Pathfinding, Intel Corporation, and IEEE, ASME Fellow. “Today’s innovators, as well as future technologists, are encouraged to leverage the extensive, informative guidance contained within the HIR and actively participate in its future evolution.”

The 2019 edition of the Heterogeneous Integration Roadmap includes 22 chapters and can be downloaded by visiting <https://eps.ieee.org/technology/heterogeneous-integration-roadmap/2019-edition.html>. Additional chapters currently under peer review will be made available upon final approval.

"The broad industry support for the HIR is a clear mandate for us to stay ahead of the innovation curve and identify barriers that could slow the pace of growth in the electronics industry," said Ajit Manocha, president and CEO of SEMI. "SEMI is firmly committed to support and connect the HIR with our members worldwide for long-term technology guidance and industry validation. HIR and other collaborations spanning the full supply chain are vital to identifying technology needs and ensuring the microelectronics industry thrives well into the future."

The HIR is sponsored by the IEEE Electronics Packaging Society (EPS), SEMI, the IEEE Electron Devices Society (EDS), the IEEE Photonics Society and The American Society of Mechanical Engineers (ASME EPPD Division). For stakeholders interested in contributing to the 2020 Heterogeneous Integration Roadmap, please visit the roadmap’s [member page](#).

To learn more about IEEE EPS and the institutional sponsors of the HIR, please visit the organizations’ respective home pages: [IEEE EPS](#), [IEEE Photonics](#), [IEEE EDS](#), [ASME](#), and [SEMI](#).

### **About IEEE EPS**

The IEEE Electronics Packaging Society is the leading international forum for scientists and engineers engaged in the research, design and development of revolutionary advances in microsystems packaging and manufacturing. The Society promotes close cooperation and exchange of technical information among its members and others through technical conferences and workshops, peer-reviewed publications, and collaboration with other organizations. Learn more at <http://eps.ieee.org>.

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