REPORT

Removing Time-To-Market Barriers for Design and Test Engineers

Keysight Survey Reveals Data Sharing Enabled by an Integrated Product Development Solution Significantly Improves Time-To-Market Across the Entire Product Development Workflow

In December 2018, Keysight Technologies commissioned Dimensional Research to conduct a survey measuring time-to-market barriers for design and test engineers across the globe. This report focuses on the challenges identified by survey respondents across the entire product development workflow. The results showed that while design and test engineers face many challenges, the most pressing are in the areas of data correlation and software integration. These findings underscore the need for improved data sharing across the workflow with an integrated product development solution.

Executive Summary

This research finds there is tremendous opportunity to reduce the time-to-market across each phase of the electronic device product development lifecycle. Today, most challenges slowing the lifecycle can be distilled down to data movement, tool integration, and asset reuse. Nearly every company is trying to leverage and compare design simulation data to test results. This research shows that information sharing across the workflow is one of their biggest challenges. In fact, 9 out of 10 companies revealed that correlating test result data takes months.

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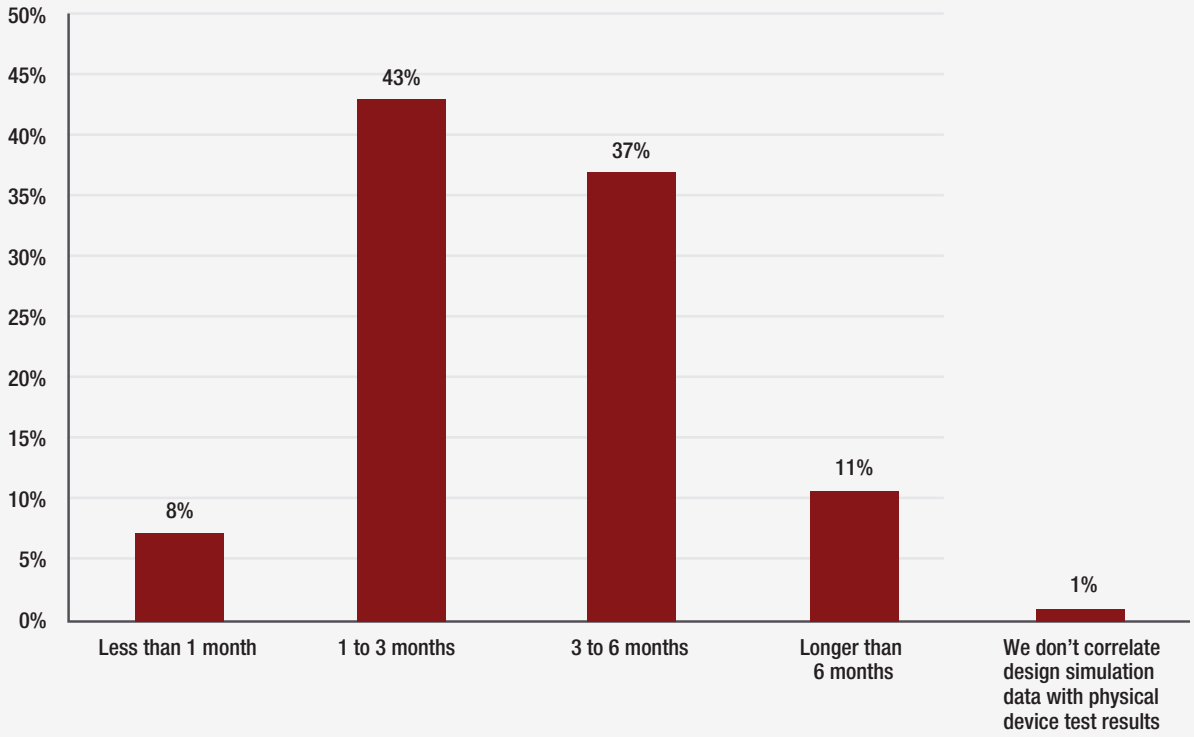
The data correlation issue is likely driven by the numerous tools used throughout the development lifecycle. These tools are not integrated and require hours of coding each week to share the data. Participants stated that an integrated solution that was usable by design, verification, test and production teams, and that leveraged shared data, would accelerate the development of their electronic products.

Results

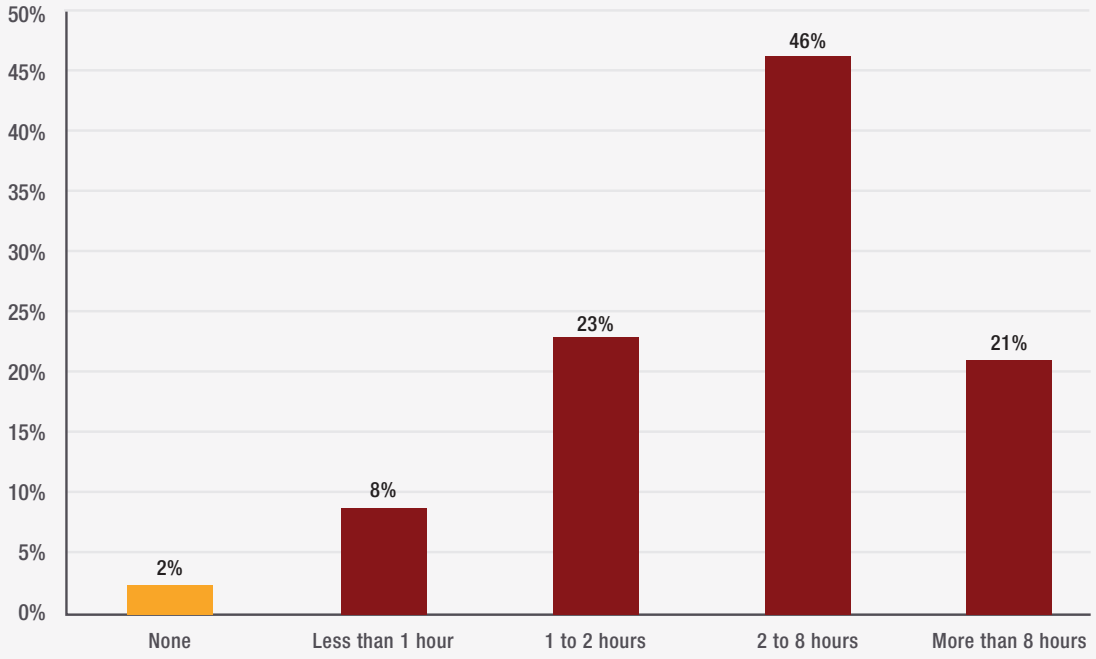
Electronic design and simulation software is pushing boundaries in the test and measurement industry with integrated electromagnetic simulators, 3D layout capabilities, and optimization cockpits. As designers continue to innovate, test engineers are struggling to keep up with all the data. 91% of survey respondents spend up to 6 months correlating simulation data to test results. Taking the time to correlate is important for reliability and performance, but it significantly slows time-to-market for electronic products.

Approximately how long does it take to correlate design simulation test data with actual physical device test results?



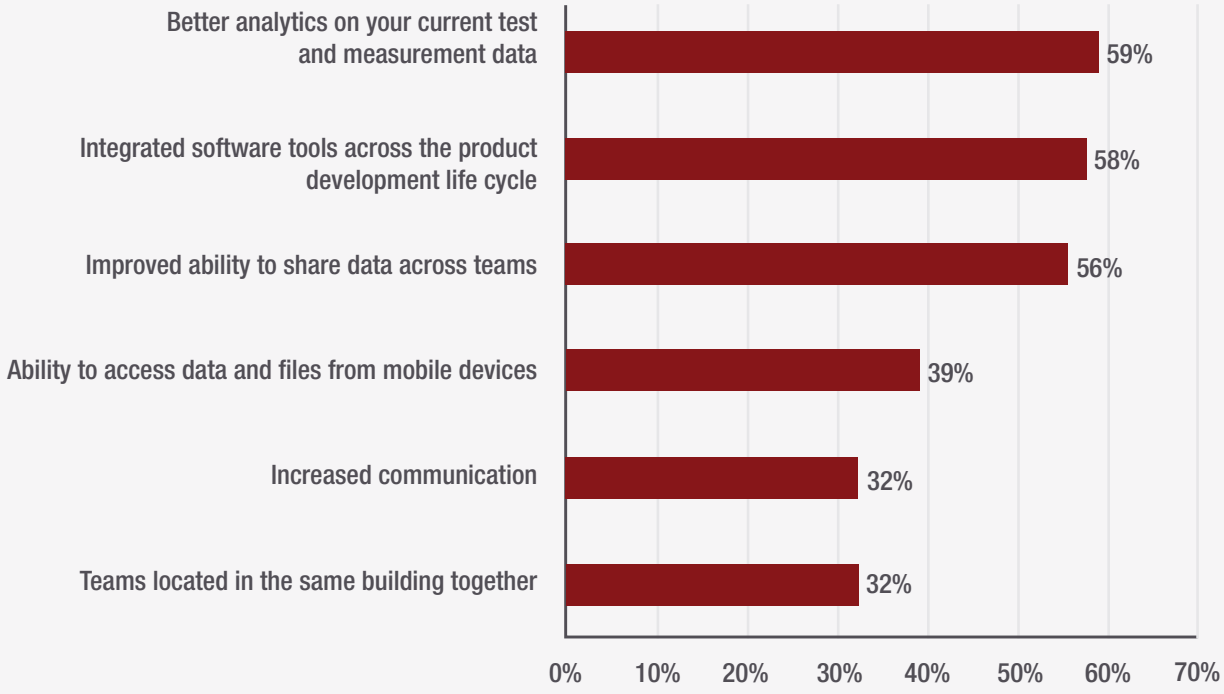
There are many reasons why it takes months for companies to correlate design simulation results with actual physical device test results. For example, data is often stored in different places and engineers are typically working on multiple projects at once. In addition, troubleshooting issues in both the software and hardware takes time. 20% of respondents spend more than 8 hours each week fixing software integration gaps. This is equivalent to one day of an engineer's time every week. Software integration gaps include writing custom scripts to pull data out of the database, adjusting code to calculate new specifications, and updating old test scripts to work with new software.

On average, how much time per week is spent coding workarounds because your test software and hardware don't natively talk to each other?



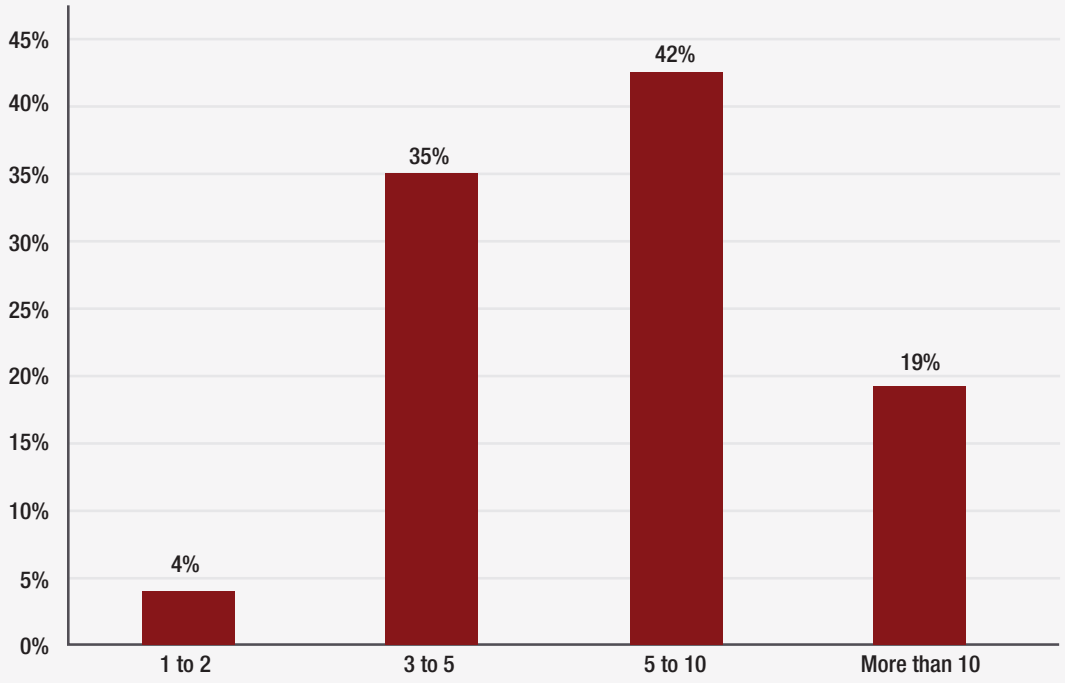
Gone are the days of simple electronic circuit design. Every year, companies are pushing new limits: longer battery life, smaller components, and higher levels of integration. As a result, test engineering requirements are growing exponentially. For example, the 5G New Radio (NR) standard specifies 20 more conformance tests than in the 4G standard. As the amount of data collected grows, companies know that they need a new way to share data between design and test teams. Over 50% of respondents surveyed say that improved data sharing would facilitate time-to-market. Respondents also reported that having better analytics and integrated software tools would have the biggest impact on reducing their time-to-market.

Which are the following improvements would have the biggest impact on reducing your time-to market? Select all that apply.

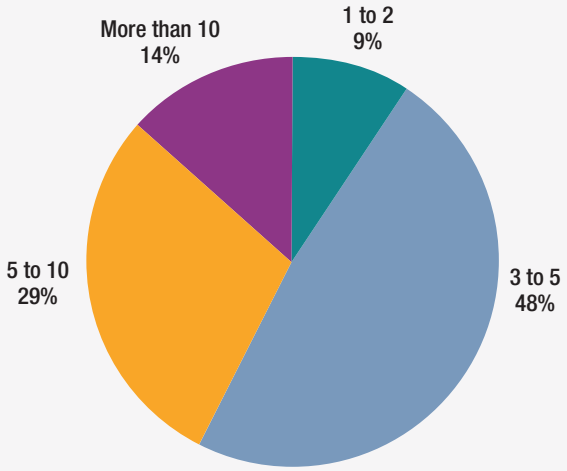


It's no wonder that engineers want an integrated solution. Some companies are using more than 20 software tools for design and test. 61% of companies use 5 or more design tools and 91% use 3 or more test tools. Switching between tools introduces errors and slows product development. There is also a learning curve for new engineers as they come up to speed on all of the software tools.

Approximately how many different software tools do you use for design?

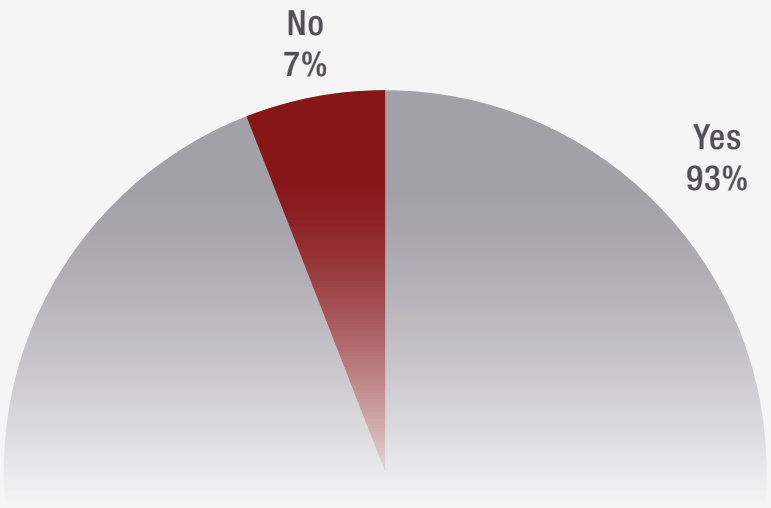


Approximately how many different software tools do you use for testing and verification?



Given all the complexities of multiple tools, an integrated way to share data is required for companies to stay ahead in the test and measurement industry. An integrated workflow includes simulated waveform files, test scripts and parameters, configuration information, target design performance parameters, and of course, test results, as well as margin and threshold analysis of pass/fail conditions. 93% of respondents want to accelerate time-to-market with an integrated product development solution that enables data sharing.

In your experience, would having access to integrated software tools across design, test and manufacturing teams improve your time-to market?



An integrated design and test workflow should also create meaningful interactions with the test equipment and the end user. Ideally, it would enable the transition of what are now written notes into digital workflows. An ideal integrated solution would include details such as script revision annotations, test algorithm or test procedure assumptions, and observe details relating to test methods and operations.

Conclusion

As designs grow in complexity and test data volume increases, an integrated product development solution must enable cloud-scale processing with a run-anywhere software architecture. The solution must have software engines capable of deploying on desktops, embedded on instruments, on enterprise servers, or at cloud scale on public or private cloud services. The scalability of the solution would enable data sharing now and in the future. An integrated and scalable product development solution that enables such data sharing offers the ideal approach to removing time-to-market barriers for design and test engineers alike.

Methodology

Keysight commissioned Dimensional Research to conduct this survey in the field. A total of 304 engineers, managers, and executives that design, validate, and test electronic devices completed the survey. The survey's aim was to understand the challenges associated with creating electronic hardware throughout the design to manufacturing development phases of the product lifecycle. Dimensional Research administered the survey electronically. Dimensional Research offered participants a token compensation for their participation.

About Keysight Technologies

Keysight Technologies, Inc. (NYSE: KEYS) is a leading technology company that helps enterprises, service providers, and governments accelerate innovation to connect and secure the world. Keysight's solutions optimize networks and bring electronic products to market faster and at a lower cost with offerings from design simulation, to prototype validation, to manufacturing test, to optimization in networks and cloud environments. Customers span the worldwide communications ecosystem, aerospace and defense, automotive, energy, semiconductor and general electronics end markets. Keysight generated revenues of $3.9B in fiscal year 2018.

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