

Three New Year's Resolutions for Engineering Leaders

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Let me guess: You're settled in, back from the holidays, and staring your 2015 work resolutions in the face. If you're like most leaders I speak with, you're being asked to do more with less. More and faster design, more and faster test, all at less cost. Our company is no exception. It can feel daunting.

Yet, day after day, I encounter leaders who are making the hard decision to try another approach. Their resolve, and success, is inspiring. Below are three ways I see leaders regaining control of their organizations. Is 2015 the year you do the same?

Resolution 1: Adopt a modular hardware platform.

If you're like the majority of organizations, racks of traditional instruments are on your test floor. As a result, you're paying for a lot of duplicate power supplies, LCD screens, dials, buttons, CPUs, and digital I/O lines. You'll likely find that you're paying a lot to power and cool these systems, as well as for the physical space they occupy.

Many organizations are now taking a different approach. They're embracing a modular hardware architecture in which they buy only what they need, replace only the I/O that needs replacing, and in the process, change the historically constraining expense paradigm. Be bold in 2015 and give this a serious look. [Recent data from research firm Frost & Sullivan](#) indicates that you won't be alone in this process.

Resolution 2: Implement a scalable test software architecture.

More and more tests require automation, sometimes a simple script and sometimes a parallel test sequence. The importance of software in test is indisputable, but not all approaches yield the same results.

In my role, I visit customers of all sizes across many industries. During a recent Automated Test Regional Advisory Council forum of test leaders, I witnessed an exchange between a large semiconductor manufacturer and a smaller aerospace company that reinforced to me, and others in the room, the value of a scalable architecture.

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When asked how an instrument end-of-life (EOL) would impact their productivity, the two test managers had

y different answers. The smaller company estimated four weeks to get the new instrument integrated and dated, whereas the large semiconductor manufacturer estimated four hours. The difference? Scalable software. The smaller company never got around to building a proper hardware abstraction layer (HAL). On the other hand, the larger company made it a point, a few years ago, to implement a HAL. The upfront investment is now paying dividends every time a vendor EOLs an instrument.

Wherever I travel, more and more of our peers recognize the value of scalable software to meet the demands of increased test throughput and/or new test requirements, or to insert the latest technology from a vendor. It can be difficult to justify the upfront cost, but the payoff is great. Don't be the last in your market to discover how a scalable software architecture can bring sanity to your life and organization and maintain your competitiveness.

Resolution 3: Demand openness from your vendor.

In an ideal world, you'd be able to buy a turnkey test system with exactly the functionality you need and no more, at a very low cost, from a vendor that will upgrade that system when needed, and do so at a modest cost. Obviously, this is not reality. If you're prepared to buy enough, you can usually pay a vendor to deliver a turnkey system. This approach gets you up and running easily.

Trouble can arise, however, when your test needs change and you depend on the vendor to provide the necessary system changes. Conversely, you can buy the test software and hardware yourself and develop a tester that meets your needs and is under your control. The fast pace of technology change means flexibility is needed to adapt quickly. However, building your own test system from scratch requires time and expertise you may not have.

Perhaps you already picked up on a solution to this "build versus buy" challenge by drawing a connection between Resolution 3 and Resolutions 1 and 2. By all means, your vendor should offer, either directly or through partners, turnkey testers to meet your specific needs. At the same time, you should insist that those testers be open and based on modular hardware and a scalable software architecture. If they aren't, then you may have bought a tester that can't be upgraded or is only modifiable through the vendor. You've given the test vendor control of your ability to flexibly manage your business. Even if you have no intention of modifying the tester yourself, knowing that it's built on an open platform ensures that options exist for meeting future requirements.

Of course, you may want to add your own capabilities, especially those that might be unique to your business. For years, instrument vendors have given themselves (and their customers) an upgrade/modification path through FPGA-based firmware, which is flexible by its very nature. However, many discovered that such flexibility required specialized languages like VHDL and Verilog, costly digital design experts, or payments to instrument vendors for each customization. That isn't the openness, or control, demanded by increasing numbers of organizations. If your ability to innovate—to rapidly apply new commercial technologies or implement your own IP—depends heavily on the instrument vendor, then you're likely not in control.

My advice is to take control of your test strategy in 2015. Regardless of whether you buy a turnkey tester or build your own, you should demand an open approach, based on a modular platform and scalable software architecture, that puts control of your business in your hands—not the hands of the instrument vendor.

Do you have similar or different resolutions for your test engineering team? Post them in the comments and continue the dialogue.

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