CEO CFO

DfR Solutions
reliability designed, reliability delivered

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With their world-renowned Expertise in Applying the Science of Reliability Physics, DfR Solutions is radically Transforming the way Customers in Industrial, Automotive, Medical, Military and Electronic Component Companies Test and Qualify Electronics

Business Services
Life Cycle Management

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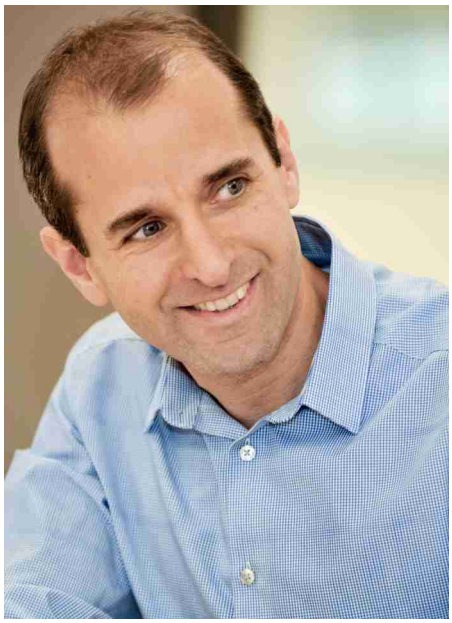

Dr. Craig Hillman
CEO

About DfR Solutions:
DfR Solutions has world-renowned expertise in applying the science of Reliability Physics to electrical and electronics technologies and is a leading provider of quality, reliability, and durability (QRD) research and consulting for the electronics industry. The company's integrated use of Physics of Failure (PoF) and Best Practices provides crucial insights and solutions early in product design and development and throughout the product life cycle. DfR Solutions specializes in providing knowledge- and science-based solutions to maximize and accelerate the product integrity assurance activities of their clients in every marketplace for electronic technologies (consumer, industrial, automotive, medical, military, telecom, oil drilling, and throughout the electronic component and material supply chain).

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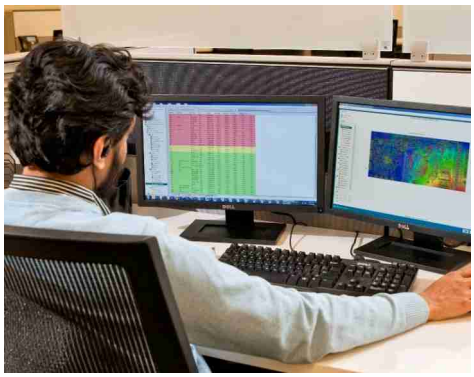

Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine

CEOCFO: Mr. Hillman, what is DfR Solutions?
Dr. Hillman: In one phrase, DfR Solutions provides support services to companies in regards to insuring the quality and reliability and safety of electronics.

CEOCFO: What happens day to day?
Dr. Hillman: What we pride ourselves here at DfR Solutions is that we provide a turnkey solution. In terms of day-to-day activities, we have organized this company in three basic ways. One is in high level consulting from subject matter experts; people who have been in the trenches, who are very smart and have PhD's, who can guide companies on some of the more challenging problems that they face when designing, manufacturing or using electronics. That is sort of "up and down" the hierarchy, from the most simplistic materials that use electronics to very large and complex systems. That is one thing that we do. Consulting is very nice, but one of the problems of consulting, especially with complex problems, is you often need to do something physical in order to understand what you are looking at and solve the problem. In addition to our high end experts we also have a full scale test and characterization laboratory. If you can imagine, if a customer has a problem and that problem is complex they need some very smart and well experienced people to frame the problem and figure out how to solve it. However, if the solution requires some testing, or some failure analysis, or some measurement that can also be done here at DfR Solutions through our laboratory staff. Environmental testing, shaking things, breaking things, making things, measuring things are done here at our facility. So, we do consultation, we do test and measurement; and the third thing that we assist companies with is actually through our software. One of the things that we came to realize is with quality, reliabil-

ity and safety, is that much of the pain could be avoided if you could do "due diligence" as early in the process as possible. Therefore, we "rolled up" all of our expertise, industry best practices, and the science of Physics of Failure and developed a new software tool, Sherlock Automated Design Analysis™ that brings the power of this expertise to our customers.

CEOCFO: How does it break down between the three segments of the business? Do you see a change in how that works?

Dr. Hillman: Absolutely, right now, in terms of revenue, our breakdown is probably about fifty percent test and measurements, about forty percent consultations and about ten percent software, at this point. The software is the newest part of the business, newly launched back in April of 2011. It is only about eighteen months old at this point.

CEOCFO: Where would you like to see growth?

Dr. Hillman: We really see it in software. That is where the biggest payoff is. The great thing about offering services, both consultation and test and measurement, is it is not necessarily a capital-intensive part of the business. It is the part of the business that people tend to understand very quickly. The turn time from initial contact to close and winning the opportunity is a relatively short time frame. But, when I think of what provides the greatest benefit to our customers in the long term is the use and incorporation of our software within their business practices. Our services can provide a band-aid, whereas our software can help you to avoid the accident in the first place.

CEOCFO: What does your software do? What are the kinds of things that people can do with your software?

Dr. Hillman: One of the challenges in electronics compared to other industries is that it can be an extremely complex product involving multiple technologies from multiple suppliers. You ultimately see this in other industries, such as pharmaceuticals, for example. Or bridge building. You buy your steel from one steel plant or the drug manufacturer is the one who actually makes the drug. He is not buying various drugs from multiple supply chains and tying it all together involving multiple materials. This is very different with electronics; because of the complexity, electronics often has a very hard time really assessing and understanding what the reliability of their design is going to be once it gets out into the field. Traditionally, one way to try to deal with this is to do lots of testing. A good example of this is automotive electronics. They do a lot of testing in automotive electronics to make sure that the electronics are highly reliable, and they have seen some success with that, in terms of the quality numbers and the reliability of automotive electronics increasing year after year; or they try to assess reliability through similarity. They say, "This design is somewhat similar to designs that I have used in the past, or designs that other people have used in the past, and I will assume that the reliability will be about the same." That is pretty much the way that most of the industry has dealt with reliability, unfortunately, resulting in some severe consequences. Either the reliability is way off and there are some serious issues with the design they just put out, or testing takes up a lot of time and a lot of money. You will see that a lot with avionics for example; a lot of testing. Medical electronics requires a lot of testing. What our software is designed to do is to take the design at various stages in the lifecycle and literally subject it to a virtual test environment. These are the technologies that you have in your design. What happens if I subject it to temperature? On the other hand, what happens if I subject it to being dropped on the floor? What can happen to that product? We are able to do all of that inside a computer, rather than building the actual product and doing physical testing. This concept has been around for or years. This is not a new concept. What is new is that we at DfR Solutions have decided to focus our software only on electronics. This software is not designed to test reliability of desks or of playground equipment. Because of that focus, it has allowed us to really simplify the usability of the software. People can now go from loading in a design and doing a very complex evaluation and getting some very valuable and insightful results within a matter of hours, whereas with a more generic piece of software this would potentially take weeks of someone's time to do. That is a big revolution in terms of the software we have developed.

"Most importantly, the reason why people should pay attention to DfR Solutions is that we are radically transforming the way that people test and qualify electronics. I believe that we are going to be a key reason why automotive companies are going to shorten their time to market, why avionics are going to shorten their time to market, why we are going to see electronics become more robust than they have ever been."- Dr. Craig Hillman

CEOCFO: How have you designed software that really can do that simulation without the physical component?

Dr. Hillman: There are a couple of reasons. One is you can never really test the reliability. All of this testing that you do never really closes the gap. It might be surprising, but simulation often gives you more insight into the limitations of a design than testing. One reason that is, for example, is margin assessment. For example, you have a piece of electronics in your car door. What they do in the automotive world is, they would literally take that piece of electronics and they will "shock" it one hundred thousand times to replicate someone opening and closing a driver's side door one hundred thousand times over the life of a vehicle. When they are done, all they really know is whether it passed or failed. That is all they really know. When you do simulation, you can run the analysis and start to see if there are marginal points in the design. There are certain components, for example, and they were being stressed more than others were. What you can start to see is, maybe during the manufacturing process someone does not do something

exactly the way it is supposed to be done and it is not actually perfect, like maybe the first few prototypes are. Then you have a situation where you start to have problems. You would never have noticed that in the past. Now, with Sherlock, you can actually identify that and take action in a simulation. Because simulation will not only try to replicate the one hundred thousand shocks that you will see, but it is also giving much more data than any kind of test they necessarily give you. The other reason why people often have these problems is that a lot of time and effort and resources are spent on testing. The problem is that all that time and effort are spent on resources and they are therefore unable to be focused on what some of the real issues are or where the real benefits would be. For example, if I am spending thousands and thousands of hours doing testing that is all I am able to do. Because of all of these thousands and thousands of hours, I am not going to be able to test many samples. Therefore, maybe I will test five or ten, or maybe if I am lucky I will test twenty. Even though I might build hundreds of thousands or millions, I am going to go to market having tested twenty. There is no way of indicating whether those twenty are representative of the millions that you are going to build. That is all the money and the time that you have to spend on this activity. If I do simulation, this amounts to taking the thousands of hours of testing and doing it in a day; with the time saved, I can really get a feel for where my weak points in the design are. I can then actually go ahead and do a broader study of a larger number of samples and do it over such a period of time. Now, rather than testing twenty samples for two thousand or three thousand hours, maybe I can test or characterize hundreds of samples in a very short period of time. Get a real feel for what the variability in the manufacturing is, what the variability in the supply chain is and really open my eyes to what the real risks are that you as a consumer experience, rather than just blindly following a series of arbitrary test rules.

CEOCFO: To your knowledge, has anyone tried software for electronics before, or is this something brand new?

Dr. Hillman: In some respects, it is brand new, and in some respects, it is very, very old. We realize, as a company, that engineers are a very conservative bunch. They are not necessarily the people in line waiting for the newest iPhone. They are the ones who have duct taped their old iPhones or are using it for about four years. Therefore, you cannot bring in anything too dramatically different into that world; otherwise, you will receive a lot of skepticism. There is a lot of trialing and assessment and tire kicking to insure that what you are giving them is really solid. The foundation of our software is using techniques and algorithms that have been used and validated by the industry for years. For example, in complex integrated circuits, they use Black's equations to predict a phenomenon called electromigration. It happens when the interconnections are very, very small. We have known about Black's equations since the 1960's. We have not developed a whole radically new algorithm for that mechanism which is called a failure in a CPU or GPU. What have simply done is we have leveraged that knowledge through a very strong user interface and software dedicated to electronics to allow designers to evaluate a CPU using an equation without even knowing that they are using that equation. It also allows them to do that evaluation on multiple parts on a single computer or on multiple boards in a complex avionics box and be able to do that with a lot of trade off analysis and a lot of "what if" kinds of analysis very rapidly. The way we do it is "under the hood". When they bring up our software, we are asking them to "upload the design files that you know and love." Then the software does the heavy lifting. It takes the design file and identifies the technology that is existent throughout the product. It knows what this component does, and what that component is made of and then it starts automatically developing a 3D model of that design so that we can evaluate electrical issues, mechanical issues, thermal issues and we do it in a very automated and transparent manner. It is the foundation that has been around for a long time. It is just that being very specific on electronics has allowed us to really streamline the process. A very smart software person, far smarter than myself in terms of software, once told me "the more flexibility that you give the user, the more complex the software." Most of the software out in the market that you could say that we compete against, and I use that term very lightly, is "created by geeks for geeks". Geeks love to do everything. They want to play, they want to be able to design this and design that; and that is great. The problem comes when you make a very complex piece of software that can take weeks to do an analysis and get a result and it requires a person with very specialized expertise. That is kind of the way it has been done for years. We have brought a new fresh face to the approach by saying, "I am not going to let you do everything you want to do. You can only look at electronics; you can only look at this design." By restricting what you can do we have really simplified the process.

CEOCFO: Within the electronics industry, what types of companies are using your product? Is the industry aware in general? How do you reach and develop new clients?

Dr. Hillman: What we are very proud of is that we are sort of a quirky company. We are very focused on electronics. We do not compete against our customers. We do not design, build or sell electronics. We simply provide the support services that they need to go from concept to customer. However, within that space we cover the breadth and depth of the electronics industry. Our customers include material providers; some companies who make solder, who make encapsulants, who make adhesives for the electronics industry, some who make epoxy's, laminates, prepregs. We have many clients who are component or part manufacturers. We work closely with companies who make resistors and relays and microcontrollers and microcomputers up to OEMs; the companies that we all know well. Companies who work in personal

computers are our clients; mobile phones, medical electronics, industrial electronics, automotive electronics. We are finding a lot of business in the Green technologies, so we do a lot of work with LED manufacturers and users of LEDs, solar electronics and electronics for wind power. Then we take it one-step further, for not only the companies who are doing the materials, parts, assemblies and full product, but also their customers. Therefore, our customers include BOEING, General Motors, Verizon; some companies who do not design or manufacture electronics at all, but actually use them to put together a robust system. We help them understand how to evaluate their suppliers' product in a way that you are insuring their overall system is robust.

CEOCFO: Given that wide range of potential clients in industries almost everywhere how do you target your marketing and how do you reach the various segments?

Dr. Hillman: That is actually a very challenging issue for a CEO with a limited budget. We do a couple of things. The revolution in electronic marketing has just been a boon for small businesses like me. You can imagine, just ten years ago you would have to send out mailings or you would have to put ads in magazines, for example, as the only way to target a market that was very expensive and very uncertain in terms of its ability to really generate sales. Through the use of automated marketing, the use of emails and electronic newsletters, we have been able to stay in touch with a very large client base at a very low cost per opportunity. It automates and really directs how we can reach out to our market. What is great is that it is all within a database that we have built up. We have a database of about twenty thousand people in the electronics industry who are focused on quality, reliability or safety. We can send very targeted emails to ensure that we are not overloading them with communication. We can send targeted emails that are only relevant to the automotive market. We know every one of our clients who are in automotives or are relevant only to people who are going to be in the Phoenix area. We know everyone in the Phoenix area. The emails can be much more personal and they can have a much more powerful punch in terms of reaching out to those customers that have known us. We find that also with the web and with Google, providing content is key. For example, I came from an organization that had a lot of content but hid it all behind a firewall. They wanted people to pay for it. That was their business model. When I left them, I realized that that was a very old school business model. Therefore, we endeavor here at DfR Solutions to write a lot very non-marketing technical content that we put up onto our website, www.dfrsolutions.com, for free. We also provide a great deal of educational information in the form of free online webinars. We find that this drives a lot of traffic to our website and it drives a very high percentage of visitors to our website to reach out and contact us if they should have an issue. That is how we are currently developing our market for services. For software, it requires a slightly different strategy. For software, we actually targeted three specific markets. We would see a very high return on investment for certain markets implementing our software and that was automotive, avionics, and telecom/enterprise. There we targeted specific magazines, primarily digital and internet based publications. We targeted some specific conferences where we set up our booth and reached out to our existing contacts, and invited them to come by our booth and see the software.

CEOCFO: How is business these days?

Dr. Hillman: Business is great! I read the news and I try to figure out when everyone else is going to have a year like us! It is a combination of being in the right market; electronics has been one of the major drivers for economic growth for the last several decades and will probably continue to be that way for the next couple of decades, at least. Therefore, we target ourselves directly within that space and we have really been able to leverage that. These are companies, for example, that have struggled within their overall market. Let us take solar, for example. There are many articles about solar and the struggles that solar has had. However, the solar electronics portion has been very strong, because electronics provides such an important part of solar. It provides such key differentiators in the market, provides continues improvement in terms of efficiency that even though solar has had its ups and downs, especially in the stock market, the solar electronics portion has been very, very strong and continues to be that way. Building and construction has been way down, but one of the major bright spots has been the change over from fluorescent office lighting and fluorescent industrial lighting to LEDs. The return investment can be as short a period of time as one to one and a half years. An enormous number of buildings are switching over to LEDs. The LED market is extremely strong for that reason.

CEOCFO: Why should investors and people in the business community pay attention to DfR Solutions?

Dr. Hillman: For a couple of reasons, one is that we are a unique company that provides a very powerful punch in terms of providing a return investment for our customers. That is because of the breadth and depth of our expertise and our ability to provide a turnkey solution. Most importantly, the reason why people should pay attention to DfR Solutions is that we are radically transforming the way that people test and qualify electronics. I believe that we are going to be a key reason why automotive companies are going to shorten their time to market, why avionics are going to shorten their time to market, why we are going to see electronics become more robust than they have ever been. That is because people are going to be able to do a very complex and in depth analysis in a relatively short period of time and be able to do that multiple times throughout the products lifecycle.