



## A Cloud-based Robot Risk Assessment Software, Robot Safety Center Inc. is creating a Safer Work Environment for Humans



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### **CEOCFO: Mr. Kunkle, what is the idea behind Robot Safety Center, Inc.?**

**Mr. Kunkle:** I will have to explain a little about how I got started. My partners and I are members of the ANSI/RIA Standard committee. We are also members on ANSI B11, UL 1740 and the ANSI/RIA R 15.08 Mobile Robot Safety Standards Sub-committee. I have been a member of the RIA standards committee since 1995. In my former job, I worked for Harley Davidson Motor Company as a manufacturing engineer, but also had the additional responsibility to approve or disapprove a risk assessment for every robot manufacturing system we bought. In 2010 I left Harley Davidson and started my own company, MEK Consulting, specializing in teaching robot safety and doing robot risk assessments for integrators and for end users alike.

As I was doing that, I became more heavily involved with the RIA (Robots Industries Association) and became their auditor for the RIA Certified Robot Integrator program. Many of the initial companies that I certified had worked with me before from Harley Davidson and they kept saying, "You should come up with software to help with robot risk assessment. We always used your format before and without it we are kind of lost." I kept telling them, I do not know enough about software to be able to develop that." Through my associations with the standards committee I met one of my other partners, Dan Junker, who was familiar a little bit with software and he kept urging me on. He said, "You know, I think we could do this." I said, "Yes, but we still need software development assistance." Dan said, "I have a close friend who happens to be a software developer." Therefore, we took a look at it and Safety Center was formed at that point. We brought out Robot Safety Center first, which is a cloud-based robot risk assessment software that is full accordance with the current robot safety standard, the ANSI/RIA R15.06 2012 and its risk assessment technical report, RIA TR R15.306.

### **CEOCFO: What are the challenges in robot safety?**

**Mr. Kunkle:** The challenges are that the new versions of ISO\_10218, ANSI R16.06 and CSA Z434 Robot Safety Standards charges every robot manufacturer, integrator and end user with the responsibility of performing a robot risk assessment on every robot or robot system that is built or installed. Previous versions only charged the robot manufacturer and end user with that responsibility. Robot Safety Standards for the first time in history are harmonious all over the world. Therefore, what you are tasked with is assessing every task, hazard and risk associated with the robot or machine installation in order to make sure that you have taken the safety of your personnel into consideration to provide a safe work environment.

### **CEOCFO: What are you looking at and assessing?**

**Mr. Kunkle:** We assess every task. For instance, tasks you might look at would be **loading and unloading** of the robot system, how is this going to be done and what risks are involved for the operator and how have you mitigated those risks.

Another task might be Simple Maintenance Integral to Production. This would be a maintenance item that might happen while an operator is doing the job. For instance, the robot dropped the part and now they have to retrieve it; how do they do that and do it safely. Another task would be Teaching of the robot; how is going to get taught and how are we going to protect the individuals teaching? Another would be Bystanders or passerby's. Bystander / Passerby is a task that represents anybody in the factory or facility that is coming by the robot; how they are protected and how we are keeping them safe. You must Identify all reasonably foreseeable tasks associated with the robot and robot system, the stage of development, hazards associated with each task, repeating until all task/hazard combinations are determined and then provide mitigation for each of them.

Our software provides menus which provide comprehensive lists for Tasks, Hazards, Safeguards and Complementary Protective Measures. To get started an individual would select a task such as **Loading/Unloading**. Next they would select a **Hazard**, they then would be asked to assess the risk level of that hazard using a **risk matrix** provided from the RIA TR R15306. After assessing the risk that hazard, they would be given the **Performance Level** and **Category** of the safeguard required to mitigate the risk involved. Next the person would use the **Safeguard** drop down menu to select all the appropriate safeguards they are planning to use to mitigate that risk. Then they would select the appropriate **Complimentary Protective Measures** from that drop down menu. Now they have completed the first Task and Hazard of their risk assessment. Again, our software works with an easy to use drop down menu system. Once an individual starts, the software guides you through the risk assessment process.

**“Our focus is always on trying to make the best product, with the greatest ease of use, always listening to customers for ways to make it better. We are working on including calculations for safe distance, safety circuit structure or architecture and performance level to set the stage for design.” - Mike Kunkle**

**CEOCFO: Are companies reluctant to use robots as there are so many things that could be a problem or is it just a matter of education as a part of normal business?**

**Mr. Kunkle:** It is a matter of education. For some companies it is a matter of normal business. After they get used to robotic automation they will continue to use it and robot risk assessment becomes an everyday part of that process. When I worked for Harley Davidson, risk assessment was a requirement of our company, placed on each robot system purchase order. Even in the beginning of the purchase process when the RFQ went out, we told the integrator that they had to do robot risk assessment in accordance with the applicable safety standards before we would accept the equipment. We had to accept that risk assessment and that is where my job came in. Primarily, because I got involved with the RIA Standards committee everyone just said, “Mike, you might as well do all of the risk assessments.”

**CEOCFO: What is your approach to making safety a profit center?**

**Mr. Kunkle:** Many companies do not consider safety a profit center. However, if you do it correctly, you can use that for part of your justification in buying equipment, because robots, for example are used many times to replace jobs where injuries are common, like repetition or maybe heavy lifting or working in proximity to dangerous machinery. Now, as part of cost justification, the robot is going to handle that, so you can use safety as part of the cost avoidance and ROI. For instance, if you had someone that had a back injury in a plant, the company might be exposed to a fifty thousand dollar plus liability just from medical expenses, not including workers' comp cost increases, training and management time. A company can avoid that injury related expense by installing an automated robot cell or system lowering injury costs and helping make safety a profit center.

The Safety Center risk assessment software can be used by almost anyone associated with the robot, machine or process being assessed. This generates respect, inclusion and collaboration. We have seen major differences in the costs associated with worker safety after just one risk assessment with our software. We have seen injury related costs reduced by as much as 90%, when using our software to mitigate the risks. We have also seen major upticks in productivity with increases as high as 25% enabled by a safe work environment.

Risk Assessment for machines is very young and is just starting to be widely implemented. We are at the leading edge of understanding the impact a risk assessment makes. Our software doesn't just strictly follow the guidelines in the Standards, it transforms the way workers are part of the safety process, enabling safety to become a profit center.

**CEOCFO: What was the challenge in coming up with the software? What perhaps surprised you as you were doing the development?**

**Mr. Kunkle:** First of all, we had to keep in mind that we had to do everything in complete compliance with the RIA robot safety standard! For that we had 2 experts, but we still relied on another fellow to oversee and review it. He was the

former director of standards for the robot industry, to make sure we strictly followed the RIA Standard. Then we had to make it easy for people to use, much easier said than done. It also needed to current or early with standards version updates. Early on we decided that it would be cloud-based software. It is a SAAS (software as a service) subscription type software, where if anything changes in the standards, if a revision comes out, it is developed into the software immediately, usually before the New Standard is released! The old way of doing software with CDs was improved upon just by choosing the Cloud-based platform. Updates are automatic (forward and backward compatible) and compliance is assured. These are the type of stumbling blocks that we experienced and addressed. Many times, we revised the software's process of reducing risk to an acceptable level to make it easier, using less keystrokes, etc. We did this with input from increasing numbers of safety professionals as the software matured and sold. We helped integrators, OEMs and Users alike. The biggest surprise was how quickly our software affected safety culture. I think at first, we didn't appreciate that, but as time went on and we received this feedback from EHS Managers, we started to see this value was equal to or greater than the risk mitigation itself.

**CEOCFO: *What have you learned as people are using your services? What might be changes or tweaks as more and more people are taking advantage of what you provide?***

**Mr. Kunkle:** I think we are ending up with more and more safe versions for the consumer, the user and the workers themselves. What we find is that workers do not get put out of a job because of robotic automation. They simply get put into another type of work environment or something they learn. Therefore, they are not replaced by a machine. They are just doing some other safer function in the company.

There are many perspectives in safety. We are seeing the benefit of Safety Center software to the entire company. None of us thought sales, marketing and purchasing would be affected by the success of applying risk assessment methodology to a machine. Then we saw sales people recognize when they could talk about the core values associated with worker safety. Marketing responded and management also recognized the value. When we train, we now make sure to mention our training has value for the entire company. In one case where the training was set up for 5 people, we ended up with 35 people. It has been a year since that training and the company has increased sales dramatically, in part due to an understanding of the value of safety.

**CEOCFO: *What has changed in your software? What has changed in how companies interact with your product? Have you gotten much feedback?***

**Mr. Kunkle:** We are always about feedback! We are continuously improving. For instance, we will get feedback from a customer saying, "Sometimes this part gets a little confusing. How can we make this better?" Usually Dan and I will talk about it and then we will get with our software developer and say, "What can we do to make this happen?" Then we develop a prototype of the process and Dan and I will work with it until we are sure it is mature enough to hit the cloud-based software. A revision of the software is the result. Since we introduced Robot Safety Center in the end of 2016, we have probably gone through at least thirty revisions.

The biggest change in how companies interact with our software has a lot to do with the Standards and OSHA requiring risk assessments. The first question OSHA is asking, when addressing an injury, is "Where is your risk assessment?"

It used to be that risk assessments were strictly the domain of the engineer. Our software has changed that forever. Now under the Risk Manager level of User ID, an operator, maintenance and/or a technician can input tasks, hazards, risk levels, safeguards and complementary protective measures. They can even Verify them. A safety expert (engineer) is required to take this to the design stage and Validation, but the majority of the front-end risk assessment can be entered by someone other than an engineer. Companies appreciate the cost savings in using a less expensive worker for data gathering and entry, but the real value is respect, inclusion and collaboration with the "owners" of a machine's safety.

The ROI on Safety Center occurs after the very first risk assessment, but companies were only buying after an injury occurred. Then the Fortune 500 leaned in. Now we are seeing companies buy at the direction of the Fortune 500 in a proactive manner. Preventing injuries instead of reacting to injuries. "An ounce of prevention is worth a pound of cure." comes to mind.

**CEOCFO: *What is your business model?***

**Mr. Kunkle:** Our business model is to provide the easiest and most complete software, that guides the customer through their risk assessment process, from task/hazard assessment through validation, documentation and training.

**CEOCFO: Are people purchasing your contract? Might people come to you just when they are looking to make a purchase? What is that side of the business? How does the money come in?**

**Mr. Kunkle:** Actually, it is by subscription. It is a yearly subscription. A normal subscription allows them to have two or four users at that site. However, we have some companies that have many users, because they authorized it as a North American standard. Therefore, they have many branches in their company using it, so we work out a price for a corporate license. Single site to enterprise process, we address the needs of all customers.

We recommend a training with the purchase of the software. Most companies don't understand the fine points of how to execute a risk assessment efficiently, incorporating risk assessment guidelines per the standards. We also recommend a refresher, once a year, to help stay on top of and take advantage of the new guidelines from the Standards.

Many times, we are asked to do the risk assessment and the company uses the software primarily for process and document control.

Regardless of what service we offer, the payback is usually in the first few months.

**CEOCFO: How do you stay on top of the changes, not only in regulation, but in the industry itself?**

**Mr. Kunkle:** Because Dan and I are heavily involved with the standards committees we are pretty well on top of it. Myself, I am still heavily involved with the Robotics Industries Association, a go to resource for everything in robotics right now. Members of Dan's group are machinery focused, sitting on ANSI B11 and UL Standards Panels, so he is aware of what is happening with machinery standards.

We have three versions of the software available right now. We have the robotic version derived from the RIA TR R15.306 and machine risk assessment that follows the guidelines from the ANSI B11.0 standard. At the request of some of our customers we developed a material handling version that deals with industrial overhead crane safety.

The software lends itself to a significant degree of customization, like we did with Toyota to incorporate their risk matrix, but everything else is framed according to the ANSI / ISO Standards. There are many other features aimed at addressing risk assessment within the EHS Process. Obviously, we feel robot/machine safety originates with a risk assessment.

**CEOCFO: What is next for Robot Safety Center?**

**Mr. Kunkle:** Our focus is always on trying to make the best product, with the greatest ease of use, always listening to customers for ways to make it better. We are working on including calculations for safe distance, safety circuit structure or architecture and performance level to set the stage for design.

**CEOCFO: We came upon your company as you will be at Automate in April. How do you stand out at a conference when there are so many new ideas?**

**Mr. Kunkle:** Oddly enough, that is where we get some of our customers and some of our ideas. We listen to the customer's problems and we write them down, thinking "Hey, this is something we might be able to do to help them out." Then, we explore the ideas to see if they can help. We have even customized some of the software.

Right now, we are working with a very large supplier in the electronics industry who wants to have this as their standard base software all over the world. We are adding some features to help them address their customers more efficiently.

We are always listening and improving for our customers!

**CEOCFO: Are you surprised at how much you enjoy what you are doing at Robot Safety Center?**

**Mr. Kunkle:** For a number of years my goal was to leave Harley Davidson and start my own software consulting company. I teach robot safety through my own company. I am also one of the instructors for RIAs robot safety training program. Therefore, I am heavily involved and I have gotten to know all of the principals from all of the robotics companies here in the United States. I sat on that board of directors for RIA for ten years, so I got to know all of the people. I have always had a goal to start my own robot safety training company. In 2010 that opportunity presented itself when Harley Davidson was restructuring and I left to start my own company. For the first time in a long time I can say that I am truly happy with what I am doing and Robots and Safety Center plays a huge role in that.