

Deal Differently with Certainty, Risk and Uncertainty

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“There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns – the ones we don’t know we don’t know.” — Donald Rumsfeld

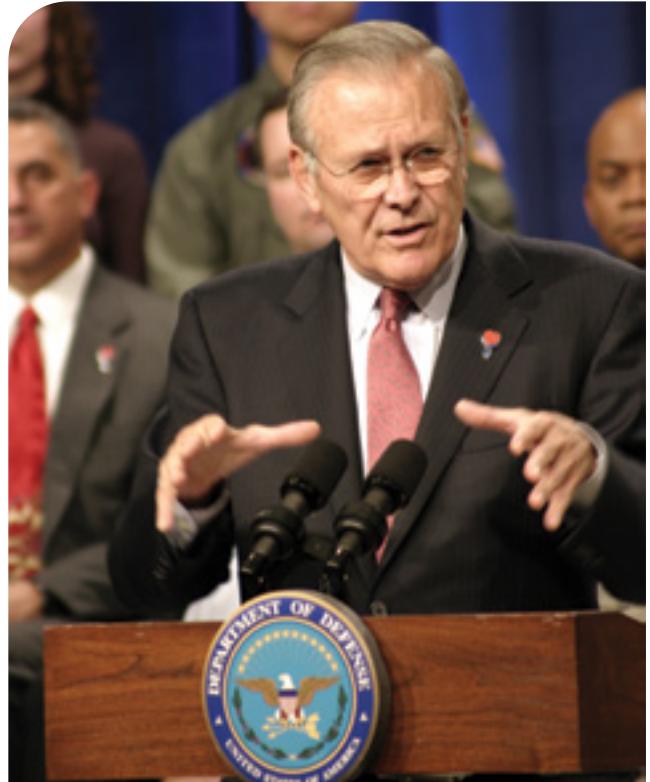
Making decisions when there is uncertainty is a different process than when you know the outcomes (certainty) or the expected range of outcomes (risk) for your machining business. The discipline of marshaling facts and using defined processes fails when the realm is uncertain.

Throughout my career, I have supervised and directed by acting to “intelligently manage risk.” Intelligently managing risk to me was to first, understand the potential consequences, then take actions needed to minimize the opportunity for those negative consequences to occur. Today I can see that my definition of risk was incomplete; while it covered the *known knowns* and *known unknowns*, it omitted the *unknown unknowns*.

Shop owners are increasingly facing this missing piece of uncertainty: the *unknown unknowns*. For example, the collapse of the economy in 2008. Let’s take a look at the differences between certainty, risk and uncertainty, and how we can respond.

How do we make decisions when we have certainty?

Examples of certainty include the need to meet customer, contract or regulatory requirements. The outcomes (con-



sequences) are known to you should you fail to comply. When we are faced with certainty in outcomes, our strategy is fairly simple: comply. When you know the requirements, you know also to whom you are vulnerable, those authorities, whether customer or agency that mandate the requirements. Failing to meet requirements on print or delivery time, failing to run a safe shop or failure to submit a mandatory government report will have known consequences (negative consequences) for your business and future relationship with the other party involved. Given certainty, or “known knowns” in the words of Mr. Rumsfeld, your decision as a manager is to build an organizational structure and discipline to assure compliance. Assigning responsibilities, authorities and robust contract review to assure that you know the known requirements is how you can best organize to handle the “known knowns.”

IN THIS ISSUE

- Deal Differently with Certainty, Risk and Uncertainty
- Technical Training for Employees Factors into Company Success
- Craftsman’s Cribsheet: Technical
- Listserve Topics
- PMPA Calendar

CONTINUES ON PAGE 3

CONTINUED FROM PAGE 2

Deal Differently with Certainty, Risk and Uncertainty

How do we make decisions when we know the risks?

Risk is when we know that the outcomes may fall within a range of expectations. Variation in shops and the materials used to produce products are examples of “known unknowns.” The tolerances on raw material or of our process are in a range of possibilities, so it is up to us to control the variability to reduce our risk of nonconformance. In this area, we are vulnerable to rejection from our customers (for variation) and to process problems in our shops (due to suppliers’ variation). To intelligently manage risk in this area, we can employ statistical methods to control outcomes and limit them to an acceptable range. This is why SPC, process capability and gaging studies are widely used in our industry. We know that there will be variation, “known unknowns,” so we use statistical tools to warn us when the processes move out of our range of control.

Controlling specifications for input materials is another way to deal with the “known unknown” of how a material may vary from lot to lot. Mandating a 0.02 percent minimum sulfur in a plain carbon or alloy steel for machining will assure that you have an acceptable surface finish, good tool life and minimum downtime on a job. Process expertise and knowledge of process inputs are two ways to control variation and thus your company’s risk of providing nonconforming products. Continuous improvement efforts to reduce variation by controlling specifications and better process control not only control, but also help to reduce risk.

How do we make decisions when we face uncertainty?

Uncertainty, Rumsfeld’s “unknown unknowns” cannot be successfully met with the tools that are effective in dealing with certainty and risk. In 2008, many shops were in compliance with their banking agreements, yet found the bank no longer willing to support them due to unforeseen changes in the broad economy and automotive market. Controlling financial positions to stay in control on banking covenants did no good if the bank was suddenly finding itself “overexposed” to the bankrupt automotive sector in its lending portfolio.

The adversary in the case of uncertainty is not the authorities, nor your customers, it is the market environment

itself. So what can you do to be better prepared for uncertainty, the truly unknowable events that you may have to face? Two approaches seem clear: *First, adding capability and competency, and second, being better attuned to the forces at work in the business environment.*

Adding capability and competency provides your organization with increased degrees of freedom to respond to whatever challenges arise, increasing the potential for a successful response. Increasing capability and competency (training, training, training) makes your shop and team more resilient. And can make you more agile in reassigning your talent.

In this area, continuous improvement is taking action to increase your knowledge of market forces. Environmental scanning, over-the-horizon business intelligence and just staying up-to-date on the latest indicators from the government and your trade association can help you gain context for what you do not yet know, but may soon face. For example, continued pressure on electric utilities by the current administration’s environmental rulemaking

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could indicate utility rationing and spot brownouts during periods of peak demand. How could you keep promised deliveries to your contract customers if you cannot run your machines weekdays between 2:30 and 8:30 p.m.? This is just one example of a high-probability “unknown unknown.” Having crews cross-trained could allow you to pivot and work nonpeak shifts when power is available. Adding capability of standby power is another example of how you could try to manage for the uncertainty of “unknown unknowns.”

When facing true unknown unknowns, I have always found it best to be over-prepared to assure that the worst-possible case is still manageable. I think that you will find this way of evaluating the certain challenges, risks through variation and genuine uncertainty, to be helpful management practices.