

# Goodbye Lean and Six Sigma—Now System Reliability Engineering is Here

**Abstract:** System Reliability Engineering has new solutions for designing process efficiency and effectiveness into businesses when Lean and Six Sigma cannot. The scientific method of reliability engineering gets you to first design a process and then prove how effective and efficient it is before you put it into use in your company. With reliability engineering the factual causes of great operational success are identified, proven, and imbedded into an organization’s processes by design, thereby giving you a way to turn any operation into a “system of maximum success”.

Keywords: Operational Excellence, Reliability Engineering, Success Engineering

Every company, business and organization is a man-made “system” with goals to reach. Such systems use people, processes, materials, infrastructure, information and knowledge arranged in some coordinated fashion. Designing and building the most effective and efficient man-made systems belong to the recently developed discipline of Reliability Engineering. You can build the most successful business and organizational processes and procedures with the same principles used to design and make aerospace craft, space stations, and Mars rovers.

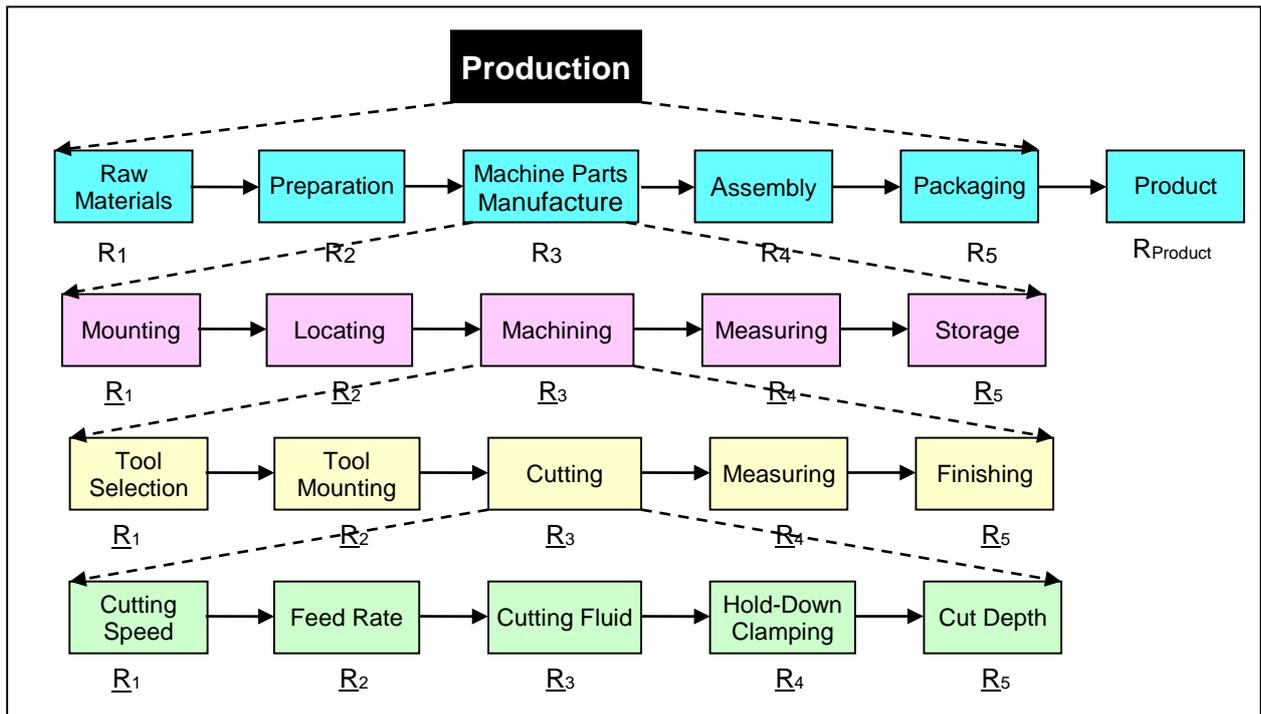


Figure 1—Numerous Processes Interact across Every Business Process Chain

Using reliability engineering brings to business process design the unique benefits of a methodology based on sure physics and science; of utilizing risk analysis and mitigation correctly; of applying sound statistics, probability and reliability math to engineer, design and build business processes so work flows purposeful deliver successful results. When you use the principles of Reliability Engineering to design organizations, like industrial enterprises, you get business risk elimination, optimization, robustness, anti-fragility, operational excellence, efficiency, waste eradication, loss prevention, simplicity, cost removal, continuous improvement, innovation, experimentation, learning organizations, and high reliability organizations. With Reliability Engineering you now have a scientific way to get the utmost operating profits and business



achievements possible, sustained throughout the future of an ever increasingly successful operation.

The reliability properties used to maximize system success will work on any system, including all corporate structures, organizational processes, and workplace jobs. With Reliability Engineering you can solve for the best process or procedural design; select how to make each process step highly productive; get the most optimal and profitable output from a step; construct a robust, reliable method to run a process; specify the most excellent way to do each task in a job; even drive business continual improvement at “booster rocket” pace. You use reliability engineering principles to design and create industrial and manufacturing organizations that are robust, reliable, self-improving, integrated business systems best suited for getting maximum success in today’s and tomorrow’s world.

So what is it about Reliability Engineering that gets operational excellence results? Let’s start with the definition of reliability as the beginning of the explanation. For Reliability Engineers, its formal meaning is: *Reliability is the probability that an item of plant will perform its duty without failure over a designated time.* Though true and correct, it limits your thinking to using reliability only on machines and equipment. The military definition of reliability is better for opening up new business process design possibilities: *Reliability is the chance of completing the mission.* Now you’re thinking about doing what is necessary to accomplish an objective. Here at LRS Consultants: *Reliability is the chance of success.* Where success is whatever you want it to be. The last definition means reliability engineering is “chance-of-success engineering.” It makes the use of reliability engineering justified in every situation where you want to ensure greater success—whether it be items of machinery, military missions, job procedures, complete business processes, or whole global organizations.

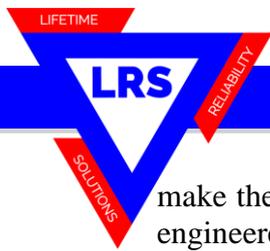
An aspect of Reliability Engineering that makes it so powerful in business process design is that it treats organizations as a holistic system. Reliability Engineering sees an enterprise as shown in Figure 1—sets of interacting tasks within interacting processes that require the coordination of numerous steps and people throughout the life cycle. The underscore distinguishes work task reliability (R) from system reliability (R), which does not use the underscore. Formula 1 is used to calculate system reliability, i.e. the chance of doing a whole series of steps successfully.

### Formula 1

$$R_{\text{series}} = R_1 \times R_2 \times R_3 \times \dots \times R_n$$

To determine the series chance of success, you multiply together each step’s chance of success. When one step fails and its reliability falls to zero, ( $R_i = 0$ ) then the whole process is also failed. When one step is badly done and its success drops to, say, half, ( $R_i = 0.5$ ) the process success is also halved. The reliability with which each step is done impacts the chance of the whole series being right—one poor, all poor; one wrong, all wrong! The role of reliability engineering in business process design is to lift the chance of success to 100% for every step of every process.

Another aspect of Reliability Engineering’s great business process design strength is that it makes you change your business DNA. Reliability engineering requires you to detail your processes and procedures down to their elemental parts. You build what are called “reliability block diagrams,” much like the exploded process drawing of Figure 1, where you expose all the inner workings of a process step or procedural task to scrutiny and analysis. Then you reengineer and rebuild a step or a task in ways that optimize performance. You also will continually innovate and test for more successful process and system designs. New solutions devised from reliability engineering will



make the company work better and better, every day in many ways, because the organization is engineered to be highly successful from the DNA level up.

The scientific methodology of System Reliability Engineering works in every culture, and any organization, process, job and task can be designed or improved for outstanding success. Use “Success Engineering” to intentionally build more productive and prosperous businesses and operations. It protects organizations against making the wrong choices by showing them what to do to get the best outcomes.

The suite of reliability engineering methods and techniques let businesses optimize their entire organization, as well as any job, process or department. You reengineer the future for a company, or just for an operation, or only a process line and introduce exactly what is needed for greater successes throughout its lifetime. When you use reliability engineering principles and methods you’ll find and use the best ways to make your business be naturally more and more successful and profitable by design.

All the very best to you,

Mike Sondalini  
Director  
[www.lifetime-reliability.com](http://www.lifetime-reliability.com)

**P.S.** The new possibilities and novel techniques of “success engineering” used to make business and enterprise are introduced and explained in the book *Industrial and Manufacturing Wellness*, published in April, 2016, by Industrial Press. The key reliability concepts to use are presented in the free 2009 precursor book, *Plant and Equipment Wellness*. Get your free copy of the PEW book by completing the form at <http://www.lifetime-reliability.com/cms/home/request-pew-pdf-book/>.