

THE QUALITY GAME  
MANAGE QUALITY TO WORLD-CLASS STANDARDS  
OR RUN THE COMPANY INTO THE GROUND AND GET FIRED

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**ABSTRACT**

*A lot of WIP on your manufacturing floors? Late deliveries? Running at 2 sigma? High returns, rework or scrap? Running over budget? Inventory turns low (3-5/year)? Can't seem to get people to fix problems so they don't come back over and over again? Don't know how to get them to work the system issues so things smooth out and continuously improve? Stuck in the "If it ain't broke, don't fix it" way of thinking?*

*Prevention is a concept that is difficult to teach, difficult to learn, difficult to grasp and most difficult to implement. The business that learns to prevent its problems can easily outdo competitors, save money and improve operations. Prevention is a concept of critical consequence in health, manufacturing, health and safety and has applications in many other industries. But can a game attract players and teach preventive concepts to a degree that results in buy-in and bottom-line results? This paper and "The Quality Game" present basic preventive concepts in the form of common manufacturing problems and solutions. The game is played online and allows teams or individuals to assume real business roles as players "manage by walking around" a company. Rewards for choosing preventive solutions and penalties for band-aiding problems separate learners from losers as department budgets and company funds are wasted or improved. Players learn to manage quality to world-class standards or run the company into the ground and get fired*

**INTRODUCTION**

There are two companies.

In the first company, the staff is trained to search for causes and solve problems in a preventive manner. The company runs relatively smoothly and employee lives are easy. The customers and suppliers both like to deal with this company. WIP is low and inventory turns are high. Shipments are on time and of high quality. People look forward to coming to work each day, attendance is high, turnover is low and profitability is keeping everyone gainfully employed and rewarded.

In the second company there are daily firefighting drills and everyone accepts these emergencies, schedule changes, and crises as the normal way of operating. There is a fair amount of finger pointing, badmouthing, arguing and politics. Returns are high and the company is often trying to get customer buy-offs. Employee turnover runs at twenty-five percent each year and no one minds if they miss a day or two. People work long hours and usually receive no reward because profit margins are low or nonexistent.

Which company would you rather work for?

As quality professionals, how long have we been struggling to teach, tempt, cajole, force and fight our way into a position where coworkers will finally get the point that unless they provide good causal analyses and preventive solutions, they will fight the same battles over and over again? Seems like forever. Even if we succeed in one company and that company goes belly up or is bought out, the battle begins anew with new management or when we move to a new "challenge". Teach employees all the SPC, six-sigma, TQM, teamwork, policies, and Kanbans you like. Unless they get to the root cause of problems, the uphill battle continues.

This difficult root cause concept is apparently difficult for graduate students to comprehend at the university level as well. Having just spent two years teaching operations, quality and project management as well as statistics for the California State University in San Luis Obispo, California, I have also found both graduate and undergraduate business students woefully ignorant of the types of common problems and solutions they will have to deal with in the work world.

I have worked in a number of US companies, both here and abroad and taught the same concepts over and over again. Yes, I have had great success due in no small part to the reversal of the age old theoretical "top down" approach and due in no small part to what I call "The Quality Game".

Let's face it; quality problems come from all directions and all departments. It is typical of most managers (hence, their employees) to find a band-aid, slap it on as quickly as possible and ship that product. They might fight among themselves or with the quality department. They might ignore the problem. They might secretly ship the problem

Figure 1a On-line Playing Surface



or rework it into a mess. But it is not nearly often enough that we get solid cooperation in terms of changing the system that causes problems. Most often, the rewards are attached to dollar values shipped on a monthly basis without reciprocal penalties instilled for returns, scrap, rework, complaints and lost customers.

So, here's a fun tool to measure, help train and correct those brainiacs stuck in the "if it ain't broke, don't fix it" mud. I call it The Quality Game. The premises are these:

1. Every company has recurring problems that impact product and service quality
2. Those problems have causes
3. Small problems left unfixed tend to become large problems

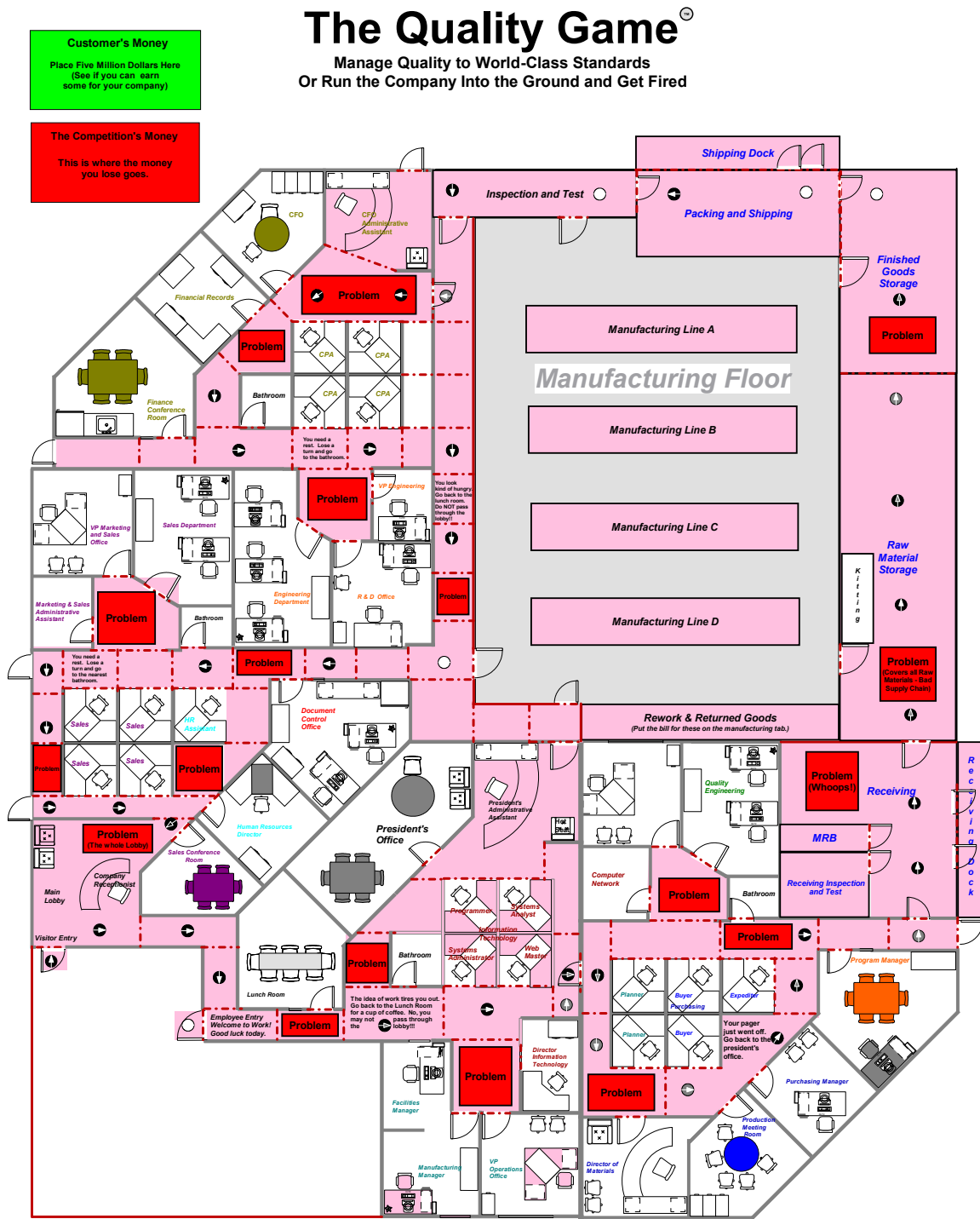
4. Large problems cost a lot of money (which is usually lost to the competition).

5. Employees (managers too!) can be evaluated and can learn to eliminate system level causes.

I know number five is a bit of a stretch, but I have found that it is possible to change attitudes. I have also found that it is easier to change attitudes from the bottom up than from the top down.

Take a typical company, say in the five to fifty million annual sales range. Lots of WIP on the floors, MRB piled high, good sized rework and repair area, no engineers working the processes, shipments going out as usual with an acceptable return rate, lack of maintenance support. Sound

Figure 1b Draft Graphics

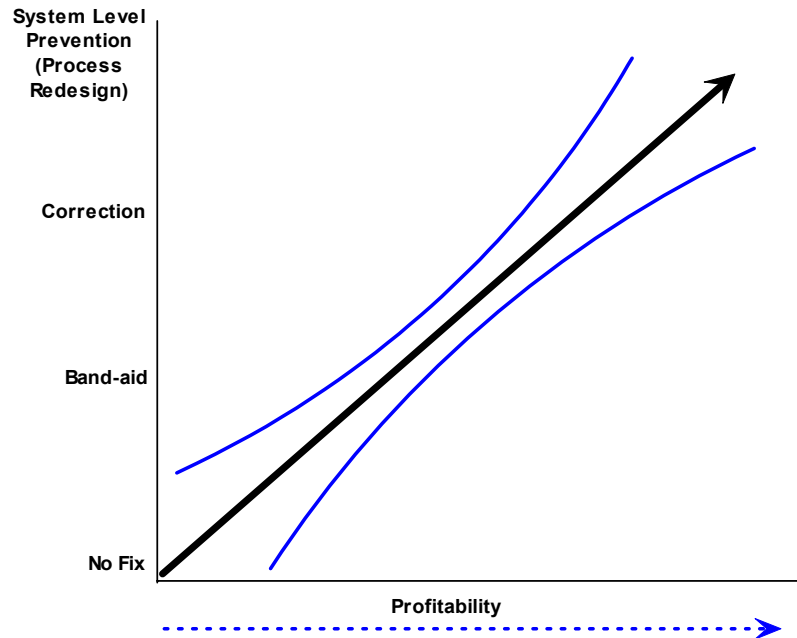


normal? Figure that there are 100 employees more or less in the company spread throughout the usual departments: HR, operations, manufacturing, engineering, quality, document control, materials, information technology and research and development. Each department spends the day fighting the usual problems. Not an overabundance of teamwork (or

interdepartmental love) going on. Everyone is just doing his or her jobs.

So, how is the game played? The board below depicts a common workplace with departments, offices, hallways, a manufacturing floor, conference rooms and bathrooms. Dice are rolled and employees and managers representing

Figure 2: Profitability and Preventive Actions



their own departments (or other departments) must move their representative pieces through the hallways as they "manage by walking around". Certain squares are labeled "Problem". When an employee lands on a problem square, a problem caused by that department is randomly selected from the problem deck and read to the employee. If the employee suggests a system level solution, the employee's department budget is rewarded. An on-line playing surface and draft version of The Quality Game are shown above as Figures 1a and 1b respectively.

The primary goal is for the players to team up and solve critical level problems thereby earning customer money. In this manner, the company flourishes and grows. Individuals and teams unable to work together to solve expensive problems cause the company to lose company money to the competition. When the company money is depleted, the company folds and the game is over. The relationship between profitability and the company's ability and willingness to implement system level preventive fixes (process redesign) is shown in Figure 2 below. As the company moves from no action to preventive action, profitability improves.

Individual players may build their own departmental budget to help their department flourish. Players can lose the department budget by providing band-aid answers to problems. When a player consistently fails to address problems at the system level, the department budget is used up and the player is fired. Profitability is reached as the players consistently learn to address problems in a more mature manner (preventively).

These player and company financial gains and losses are tracked on the Company Status Sheet (Figure 3 below).

Figure 5 depicts the relationship between the players' abilities to think in terms of problem root cause and their conceptualization of preventive process redesign solutions. True prevention is not possible without determining problem root cause. As the players learn to think in terms of root cause, they must discover the game strategy for winning: Redesign processes in order to prevent their recurrence.

What kind of problems does the game include? Here are a couple of samples for you to check your thinking against.

1. The purchasing department is overworked and feels it needs to add another employee to help handle engineering purchase orders. Purchasing personnel blame engineering and other departments because "they never fill out the purchase orders correctly". This results in many hours spent clarifying departmental needs and cleaning up incorrect forms and redoing orders.

**Correct Solution:** The purchasing department is at fault. The purchase orders are complex and have no instructions for completing the form. There is no written procedure for completion and the purchasing department has never trained other personnel in the correct procedures. The purchasing department must simplify the form and provide procedures and training.

If purchasing did not come up with a preventive system level solution for problem 1, the player in the purchasing role would have had to pay engineering part of the purchasing budget.

Figure 3: Company and Player Tracking Status Sheet

**Company Status Sheet**  
(Maintained by the Controller)

Department/Player	Dept. Budget	Problem #1	Problem #2	Problem #3	Problem #4	Problem #5	Problem #6	Problem #7	Problem #8	Problem #9	Problem #10	Weekly Bonus Tally	Weekly Bonus	Department Total
Finance/Acctg	200,000													
Marketing/Sales	200,000													
Engineering	200,000													
Human Resources	200,000													
Quality	200,000													
Materials	200,000													
Operations	200,000													
Information Tech.	200,000													
Document Control	200,000													
Research & Dev.	200,000													
Manufacturing	200,000													
<b>Company Total</b>	<b>5,000,000</b>													
<b>Customer Total</b>	<b>50,000,000</b>													
<b>Competition Total</b>	<b>50,000,000</b>													

For Each Pass Through the Lobby Add \$5,000

Minor Problem = \$10,000  
Major Problem = \$20,000  
Critical Problem = \$40,000

Marketing moves up the release date for a new product. Quality, Engineering, Material Control and Manufacturing all have to hurry the release. The result is the release of a marginal product.

Correct Solution: Marketing is at fault. Marketing should not have the power to crash release dates without negotiating schedule changes with all impacted departments. That is what conference rooms and operations meetings are for. Marketing must redesign its procedures to assure that crash releases are minimized and agreements with impacted departments are in agreement with regards to manpower and capacity.

2. Research and Development releases the specifications for a new product to manufacturing but forgets to include the updated tolerances for key parts. The product has to be reworked by manufacturing.

Correct Solution: R&D is at fault. Tolerances and detailed blueprints reviews should be incorporated as a part of the process for new product releases from R&D to manufacturing.

Do you disagree with those solutions? Perhaps you are not thinking of the long-term impact of your decisions. Problems not solved in a preventive manner tend to reoccur time and time again adding to the company's ongoing inability to implement continuous quality improvement. In The Quality Game, you must learn to change your thinking or you will spend your department's budget (and the company's profits) on "penalties" and lost customers.

**SUMMARY**

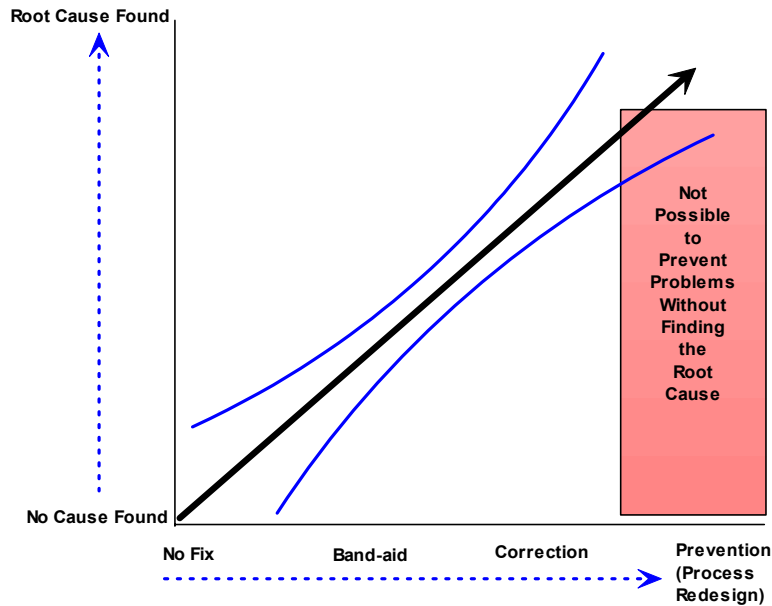
A lot of WIP on your manufacturing floors? Late deliveries? Running at 2 sigma? High returns, rework or scrap? Running over budget? Inventory turns low (3-5/year)? Can't seem to get people to fix problems so they don't come back over and over again? Don't know how to get them to work the system issues so things smooth out and continuously improve? Stuck in the "If it ain't broke, don't fix it" way of thinking?

The Quality Game simulates the work environment to an extremely realistic level. The problems presented to the players have come from actual businesses. These problems are the type of problems managers and employees can expect to encounter on a daily basis. The game is an intensive test of the player's ability to get to the root of the problem and provide system-level solutions. Player abilities and learning curves are tracked and can be used to determine training needs, promotion readiness and can be reported to upper level management for closer supervisory needs.

**About the Author**

Dr. John Ryan is a consultant (<http://www.ryansystems.com>) and past lecturer for the Graduate School of Business at the California Polytechnic State University in San Luis Obispo, California where he taught quality, operations, and project management as well as business statistics. He has written numerous quality and operations improvement articles for Quality, Quality Progress, Factory of the Future and other magazines. Dr. Ryan published his first book with the American Society for

Figure 5: Determining Root Cause to Reach True Problem Prevention Through Process Redesign



Quality (The Quality Team Concept in Total Quality Control, ASQ, 1992). He has served for more than ten years in an expatriate role for companies such as Seagate Technology, Read-Rite, Sumitomo Heavy Metals, Destron and others throughout South East Asia and has developed across-the-web test software now used by web site owners for web site security and navigability improvement purposes. The Quality Game may be found at <http://www.TheQualityGame.com>.

### ABOUT RYAN SYSTEMS

Ryan Systems provides the quality and operations management tools needed to achieve a continuous improvement operational level. Our mission is to form partnerships with customers based on trust, support and bottom-line, measurable results. Our customers trust us to deliver the training and consulting support to meet their needs in a rapidly changing global business environment. We specialize in customizing solutions to each operation's particular problems and situation.

Our recently developed Quality and Operations games provide clients with a unique ability to evaluate and change problem resolution thinking. These online individual or team played games drive problem solving away from quick fix thinking to cross-functional prevention levels. We welcome you to join Ryan Systems and the growing list of clients making the change that has saved them millions of dollars and kept them ahead of the competition.

Ryan Systems has been in business since 1990 and serves clients throughout the United States and Asia. Ryan Systems is headquartered in Laie, Hawaii.

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