

Coaching Points for Successful Leadership in Large High Technology Companies

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Abstract

A system engineering and process management approach is offered to mitigate risks for strategic decision making in large high technology based companies. This approach is based upon the risk mitigation methodology of project management together with a process approach to deploying a full scale engineering development for a complex hardware system. The cost of decision making is related to the specific industry and coaching points are developed and presented in a four-step longitudinal process. Risk mitigation guidelines are identified to help ensure a senior management team's success emphasizing agility for addressing nonlinear problems such as when innovation is required in both the technology itself and the business model.

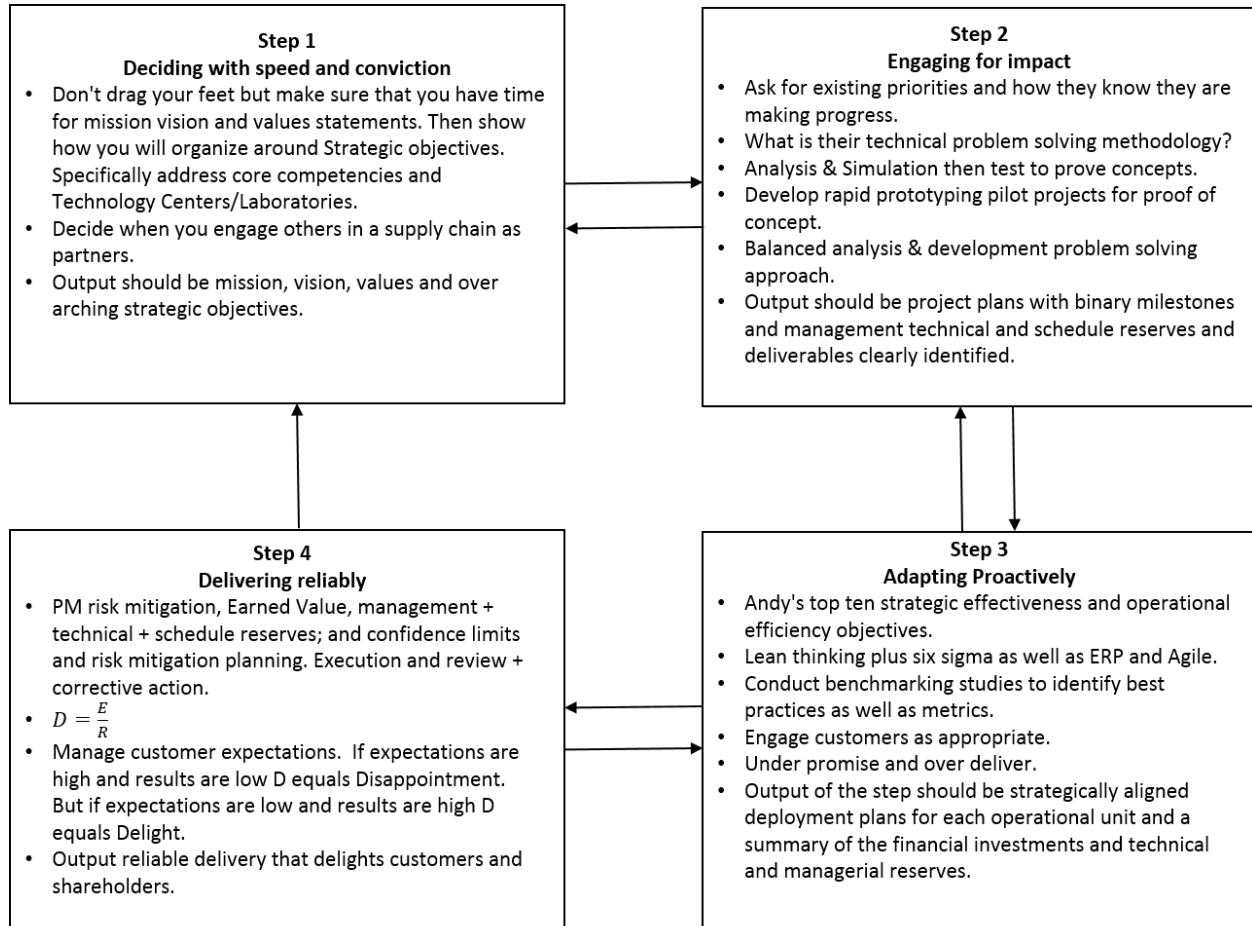
Introduction

The Harvard Business Review (HBR) cover of May-June 2017 states "What Great CEO's Do Differently." The article itself on page 70 identifies the four behaviors for successful leaders (1). The problem is that too many CEOs fail in their jobs. The article states, "High performing CEOs understand that a wrong decision is often better than no decision at all (1)." Although that may be true in software and retail industries it is not true in automobile, chemical and defense industries where huge economic investments are required to implement innovations. In large industries a wrong decision is catastrophic for both the company and the CEO.

The purpose of the current article is to examine high technology businesses and to offer some coaching points and perhaps contribute to how the senior management team can mitigate the risk to enhance their performance. Risk can be quantified in terms of financial estimates so the idea is you can start on a trajectory where you know the endpoint and where the cost of poor decision is acceptable. In other words, beginning with the end in mind (2) quantify or break the trajectory into time increments. We can select a point midway between the starting point and the endpoint. The challenge is how firm the decision has to be made at the onset. In this article we suggest a risk mitigation approach that offers a cost impact assessment of a wrong decision versus no decision at all. The framework in Figure 1 illustrates the dynamics of the decision making process and the need to know the uniqueness of each specific industry. When a decision is required it may be better to get on a trajectory that goes in the direction of the midpoint. Compute the cost of that trajectory rather than waiting until you have all the answers at the end.

A system engineering and process management approach is taken to introduce the dynamics of the longitudinal dimension and offer risk mitigation along that path. It is important to note that the risks are industry specific.

Figure 1: Coaching Points for a Senior Management Team’s Successful Innovation Leadership



Ultimately the cost of the wrong decision will be measured against the cost of no decision at all. In terms of being able to make corrections the software industry allows these changes to be made with relatively low cost. However, in the full scale engineering development of a hardware program wrong decisions cannot be corrected without significant investment and here is the Eureka.

The 20/80 (Pareto Principle) allows you to make up valuable time on the time scale with huge payoff in terms of completing a project on time. In the software industry changes can be made that allow you to make up time at a relatively low cost. However, in the hardware industry a wrong decision discovered part way down the longitudinal dimension in time is much more costly to recover from because you have to go back and redesign everything from the hardware design, manufacturing process, test and assembly through to delivery. So when the Harvard Business Review article cited here states that the cost of no decision is greater than the cost of a wrong decision a caveat must be introduced to ensure that you have quantified the risk of this wrong decision if you are in the hardware business such as Lockheed, Boeing, Martin-Marietta, Raytheon and General Dynamics because a total system design is impacted. This illustrates why a wrong decision made early can result in huge cost overruns in the defense industry. See Figure

1 which offers detailed guidance for making the longitudinal decision process in a highly nonlinear environment.

Review of Relevant Literature

In “What Leaders Really Do” (*Harvard Business Review*, December 2001), John P. Kotter states that leadership and management are two distinctive and complementary systems of action (3). Circa 1972 the author of this paper with Colonel John R. Boyd, U.S. Air Force, defined leadership as inspiring others to aggressively take action to achieve extraordinary goals whereas management was defined as the ability to get work done through others (4).

Kotter notes that management is dealing with complexity. However, we said that complexity is just a lack of understanding. Kotter goes on to say that leadership complements management and we concur with that (3). However, we feel that leadership also inspires others to take action to achieve extraordinary goals. These stretch goals and inspiration make a leadership function different from a management function. For example, the Peter Principle says that managers rise to their level of incompetence in an organization (5). However, we take umbrage with that. We feel that if you lose the will to learn then you are in trouble. If you break the system down to its fundamental parts (6) and analyze those parts as subsystems of a larger system (7) and employ Kurt Gödel’s theorem that “you cannot prove the consistency of a system within itself;” then you are on your way to showing how leadership and management complement each other (8).

“Farkas and Wetlaufer analyzed interviews with 160 chief executives around the world and examined the attitudes, activities and behaviors that shaped the answers to the question of the ways chief executive officers lead (9).” From these interviews they identify five leadership approaches that respond to the CEO’s challenges. These are 1) strategic approach, 2) human asset approach, 3) expertise approach, 4) box approach and 5) change approach. They go on to argue that it is important to focus on the approach with consistency and not every senior management team can adapt to all five approaches. During a 2001 forum they stated in the framework for understanding leadership that some CEOs try as they might simply do not lead. In their research they stumbled on an answer to a question that they did not anticipate which is that even though they try some CEOs do not lead at all. The stakes are so high that the CEO must maintain focus instead of jumping between five different leadership approaches cited above. The challenge is that one must take the nonlinear factors of a specific industry into consideration before we can have a framework for implementing leadership. For example, if one is in the banking or tourism industry (10) then a box framework makes all the sense in the world but if you are in a highly changing technology industry that requires innovation in design, development and manufacturing then the box approach would not be appropriate for a senior management team (11). We felt that the research behind the 2001 forum did not take into consideration the highly nonlinear effects that are unique to specific industries.

The 1999 cover of *Fortune* magazine had pictures of 12 executives that had failed as CEO (12). The article inside went on to ask the question why they failed and sparked some questions that might be useful for an MBA class such as did the CEOs have vision, had they implemented strategic planning, were they engaged in a marketing program, did they have a systematic approach to manufacturing, had they used lean thinking and six sigma and the list goes on. The

answer was they all had strategic vision. They all had implemented strategic planning process. They all had deployed customer relationship management. They had partnerships established with suppliers but they failed in having detailed deployment plans. Execution was a common thread of failure of each of the CEOs in the Fortune article. Interestingly in 1999 the 12 CEOs that appeared on the Fortune cover were all male. This gave women a false sense of security because Carly Fiorina failed as a CEO of Hewlett Packard, a high technology company in 2005. Coaching points for deploying a successful strategy are fundamental in high technology companies and the need for agility is underscored. Furthermore, when innovation is required in high technology the importance for a nonlinear solution to a nonlinear problem is emphasized.

In the current article we start with the May-June 2017 HBR success factors that were derived from a database of 17,000 people in leadership positions (1). In the HBR article the four success factors were

- 1) Deciding with speed and conviction
- 2) Engaging for impact
- 3) Adapting proactively
- 4) Delivering reliably

As pointed out in the article it is rare for successful leaders to excel in all four areas but they find when they score well in these areas they are more likely to succeed in a CEO's job. The challenge is that too many CEOs fail in their jobs and as pointed out in the Introduction of the HBR article 25 percent of the Fortune 500 CEOs were forced out of their jobs by lack of performance (1).

One of the conclusions was that "high performing CEOs understand that a wrong decision is often better than no decision at all." Here we must take into consideration the unique requirements of the specific industries because the statement made in 2017 HBR article seems to apply to all industries across the board (1). In the HBR article database one third of the leaders got fired because they did not make a decision at all. The issue is the amount of information you have when you make your decision. When you are engaged in a high technology company the risk mitigation process is missing in the HBR article and it is vital in a high technology business when you have huge capital investments involved.

Perhaps taking a Systems Engineering Process Approach will be helpful in enhancing our understanding of the way decisions can be viewed and assessed in terms of risk and impacts. Figure 1 is offered as a way of formulating the senior leadership team's risk and rewards associated with timely decision making in high technology organizations. Starting with the four factors in the HBR article and the seminal work of Zaleznik (13) we feel that the framework in Figure 1 makes a contribution by offering a model for analysis of the dynamics of the cost of indecision in the highly nonlinear world. Hopefully the coaching points offer insight into the blending of art and science in the leader's role.

Conceptual Framework for Implementation

The first step is to decide where you are in the supply chain. See Figure 1 for a flow diagram of how a CEO should be engaged in all four steps of the HBR article. The important concept is to

include the dynamics of a decision making process and the key success factors that are industry specific and have an impact on the risk of completion of the work to be done by the organization.

In engineering we teach linearization methods for approximating nonlinear solutions. However, at a senior management level a linear approximation to a nonlinear problem is often the starting point and it is the wrong way to go. Hence when huge economic investments are made to deploy an innovation manufacturing strategy the need to have a joint business model and manufacturing solution becomes paramount. The enlightening concept is that the technology innovation itself must be developed simultaneously with the business opportunity to sell the product.

Coaching Points for Successful Innovation Implementation

Coaching Points for Step 1 in Figure 1

Deciding with speed and conviction

Do not drag your feet but make sure that you have time for mission, vision and values statements. Then show how you will organize around strategic objectives. Specifically address core competencies and Technology Centers/Laboratories.

Conduct a strategic planning process with a focus on where you are in the supply chain. If you are at the beginning of the supply chain you must have a different approach than if you are at the end of the supply chain where you can pull innovation through. At the beginning you push it through. At the end you pull it through. This is the senior management team's first dilemma.

Using an agile project management concept first identify core competencies in terms of where you must excel in technology to be best in class. In addition you must understand the manufacturing process as well as the design process. A senior management team must make a strategic decision where we are going to lead and where we are going to partner with suppliers or other prime contractors.

A fundamental reason for failure in high technology programs occurs at the interface between step 1 and step 2. The interface between step 1 and step 2 is the first opportunity for failure for a new CEO and her senior management team because you really have to understand the marketplace and the changing pace of technology to see how it is going to impact the performance in that marketplace. As a starting point the senior management team must find out where the strategic thinking of the organization is now and what changes are necessary in strategic vision and objectives for the future in order to reach growth targets. This is a way of engaging others for impact.

Coaching Point Two

Engaging for Impact

Coaching point two is to identify your core competencies and the technology that you must be a leader in to be a winner. This requires the knowledge of the pace of change of technology and its

impact on where you are in the supply chain and where you have to modify your strategy to ensure a sustainable competitive advantage in a global marketplace. One way of engaging people is to start with a mission vision and values statements that you developed in the first step of the strategic planning process. Your meeting agenda is to address where we are going to excel and where we are going to follow.

Once you have found those technologies where you need to be best in class they become technology centers for the organization. Leaders in this area will have to have operational plans that identify investments and outcomes that will keep you in a leadership position. The senior management team should have a review process to ensure that the organization maintains its leadership especially with regard to the areas of leadership which differentiate the organization to maintain a competitive advantage. Ask for existing priorities and clarify how they measure progress in maintaining a leadership position. This is a time consuming process but it is essential for the current and future success of the operation.

A leadership opportunity is to look at their technical problem solving methodology. The first step is to determine the problem solving culture. Are they analysis oriented or development oriented? Often the conflict is between the two cultures. It can be disastrous to a CEO's future when he does not understand the nuances between the analysis and development problem solving cultures. Our experience suggested a balanced analysis and development approach to nonlinear technical problem solving. Use analysis and simulation to get the initial design and then iterate between tests to prove, validate and select the final design concept. Then consider rapid prototyping and pilot projects to get the final proof of concept. Now iterate back to step 1 because now you have the information and details necessary to make a strategic make or buy decision. This is one way to solve a highly nonlinear problem. The output of step 1 would be mission, vision, and value statements; and overarching strategic objectives. Specific goals for maintaining technological leadership and core competencies will be identified for each technology center. Output should be project plans with binary milestones and management technical and schedule reserves and deliverables clearly identified. By binary milestones we mean that the task is completed or not completed. Avoid percent completions such as in software development because you will always be 99% complete and the last percentage point will be three times as costly as the first 99% points. Now in the review process go back to existing priorities and ask how they measure their progress. Most research areas do not bother to do this and it is catastrophic to the senior management team because they have the schedule du jour and they lack focus. By controlling the resources you have a financial reserve and a technical reserve which is excess capacity. Your schedule reserve is the difference between a 90%, 95% and 99% confidence level. The contract schedule should be at the 95 to 99% confidence level and the internal project plan should be at the 90% confidence level to build up a schedule reserve.

Notice the interaction flow and feedback loops between steps 1 and 2 and steps 2 and 3. Feedback between steps 1 and 2 is vital because the CEO often thinks he has his people engaged but they have not committed. For example, integrity may mean honesty to you or to your people but the organization has more than honesty for integrity. In Raytheon's case it was important to have the courage for your subordinates to tell you the story today because bad news does not get any better with time. When you have profit and loss responsibility and challenges occur you need to seek help immediately because you need to react to these challenges or you may have a

going out of business plan. The senior management team's challenge is how these crises situations are handled. In order to understand the full impact of integrity your people must experience it in you before they can experience it themselves and be fully engaged in the core value of integrity for your organization. One way to help them to absorb the impact of the culture of integrity in the organization is to ask them to explain their current job to you (that becomes their mission statement). So by interacting with them from the mission viewpoint you can find out how they know they are making progress. You will find that nine times out of ten the person does not even know how to measure progress when dealing with a nonlinear process such as innovation. You must inspire them to want to become engaged in this core value because it is fundamental to your organization's success.

In step 1 your output would be mission, vision and values and then you would present these to your people in the engagement step. You can present these to your subordinates in a group environment and the key is to have a vision that is inspiring. For example, John Kennedy's man on the moon in a decade and bring him back alive was inspirational for the country in the 1960s. The CEO must use his vision like Kennedy did to inspire his people and that will carry him through step 2. The output from step 2 should be project plans with binary milestones and management technical and schedule reserves and deliverables clearly identified.

Coaching Point Three

Adapting Proactively

Adapting to change in general is key in determining the overall effectiveness of the senior management team. In addition we can use this iteration between steps 2 and 3 to assess the impact of making a decision or not making a decision at all. This is important because the approach is industry specific. Using the risk analysis mitigation techniques and critical path analysis from the project management discipline we will assess the impact of the wrong decision versus no decision at all. Using Covey's guidance of the seven points of effective leadership we will begin with the end in mind (2). This is useful in the transition between steps 2 and 3. In the transition between steps 2 and 3 look at the time critical path and the key success milestones. Compare the 90% confidence level to the 99% confidence level. The difference between these two is the measure between risk and reserve. It is also an indication of the investment risk of the overall program success. It is the sum of all these risks that determines the time sensitivity of a senior management team's decision making process. This will be demonstrated in the section below illustrating the conceptual framework.

It is imperative that the senior management team focus on the most important strategic effectiveness and operational efficiency objectives. One technique that works is to have a monthly review session with your direct reports. In practice what we found effective is to find the top ten strategic and operational objectives and to have one objective for each of the key reports. Each of these objectives should ensure operational alignment between strategic effectiveness and operational efficiency tasks. Lean thinking, six sigma and agile project management are often helpful in finding intermediate binary milestones. In addition independent benchmarking studies to identify best practices as well as metrics are encouraged. For each business unit reporting to the CEO they may have up to ten operational and strategic objectives

that are strategically aligned to the overarching objectives identified in the organization's strategic plan. This helps ensure an effective review process and also gives the senior management team an indication of when a decision must be made in order to minimize the risks and the cost of overruns in the process. In developing a detailed implementation tactic customers should be engaged as appropriate. But when we do engage customers we should under promise and over deliver. Step three then becomes the strategic framework for implementing each business unit's projects and gives the organization a measure of the organization's decision making process itself. This is a key contribution of the current article. The output from step three consists of the decisions needed to make financial investments to achieve growth and cash flow progress.

Coaching Point Four

Delivering Reliably

A matrix management approach is often effective for a large organization and it is the one we are going to use to illustrate how the organization delivers on commitments reliably. What we do is starting with the risk mitigation plan and the critical path and the detailed project management milestones we ensure that we have adequate financial management, technical, and schedule reserves. Earned value is fundamental to the overall success of the organization and its decisions. For example binary milestones avoiding percent completion give the organization a way to measure the current status of each business unit. Having the willingness to drill down when necessary into technical and managerial details is a fundamental attribute of a successful senior management team in a large high technology organization. Using the project management discipline further and conducting program reviews for areas where unfavorable variances occur gives the organization the discipline of taking timely corrective action. An overarching guideline is offered by the equation $D = \frac{E}{R}$. If expectations are high and results are low D equals disappointment. However, when expectations are low and results are high D equals delight. Delighting all the customers becomes a fundamental vision statement and by that we can manage expectations to ensure that we under promise and over deliver. The effectiveness of a senior management team's decision making process can be measured by looking at each business unit and defining for that unit what needs to be done to mitigate the risks associated with each of the key success milestones and what it takes to move a time critical path milestone to an earlier completion date with a high confidence level. This is specifically illustrated in the Raytheon second source programs in the section below on "Illustrating the Framework."

Illustrating the Framework

The senior management team in a company at the beginning of the supply chain may find a merger and acquisition strategy the way to go to mitigate risks in acquiring your product and manufacturing innovation. When a merger and acquisition strategy is selected and/or when you engage others in the supply chain as partners see Heise, Czuchry and Byrne flowchart for implementation guidance (14).

What if you are the senior management team at the end of the supply chain pulling innovation through? Your strategy could be to look at the innovations lying dormant and pull them through to reduce cost and increase performance.

For example at Raytheon the second source standard missile program was a build to print firm fixed price full engineering development program to produce a missile design by General Dynamics. In that case Raytheon's strategy was to go out and talk to all the production line contractors and decide which system would be produced in house or bought from the suppliers. The "aha moment" occurred when Raytheon discovered the innovations that were lying dormant in the supply chain could be pulled through to improve reliability while simultaneously reducing cost.

Study Setting 1986 Timeframe

Second Source Standard Missile Program (SM-2)

The United States Government elected to go to second sources to reduce costs of weapons systems acquisitions. Three candidate programs were Stinger Missile, Tomahawk Missile and Standard Missile. The author of this paper had responsibility for all three of the second source programs, Stinger, Tomahawk and Standard Missile. Winning one of the three would have been nice but we were fortunate to win all three. Let us focus on the Standard Missile example to illustrate how we successfully pulled innovation through the supply chain as the second source prime contractor. Our vision was to have an increase in captive carry reliability while simultaneously reducing cost by 30%. Raytheon was using the General Dynamics technical data package to bid against other contractors such as McDonnell Douglas. Given that vision we needed to find a way to achieve the reliability growth and cost reduction. We went through and talked to everybody in the supply chain. As program manager the author of this paper took his chief engineer, chief manufacturing person, and financial analyst and visited everybody in the supply chain for the 4,000 parts that were in the missile plus the three major subsystems that were included in the design package. The first eureka moment occurred when we discovered that there were many innovations lying dormant in the supply chain. We also discovered that Raytheon was a heavily analytical technical problem solving organization while the current prime contractor, General Dynamics, was more development oriented. Hence, this created an opportunity to pull innovation through the supply chain. With a balanced analysis and development approach we concluded that a \$20 million investment in test equipment combined with a sixth degree of freedom hardware in the loop simulation would give us a competitive advantage in the long run. In addition we found that the manufacturing technology associated with the hybrid electronics was the key success factor in the on time delivery for the full scale engineering development program. So with our CEO we made the decision to make an additional \$20 million investment for a total \$40 million full scale engineering development contract investment. This may have been the last time a full scale engineering development program was awarded because the contractor, Raytheon, was put \$40 million in the hole on day one. We had to fully engage all the suppliers to ensure that we could pull the innovation lying dormant in the supply chain through to our future missile production resulting in significant cost reductions.

Illustrating how we had to adapt proactively after winning the contract we made the investment in the test equipment. With the \$20 million investment in the special test equipment and an additional \$20 million investment in the hybrid production facility the risk was mitigated on the critical path and our confidence in being able to deliver the first Raytheon standard missile on the contract schedule was raised to 95%. This illustrates how we could adapt proactively after winning the contract. The critical risk milestone was test equipment redesigned to plate/subsystem test level and had the hybrid manufacturing capability to meet the full scale engineering development milestone on time. As a result Raytheon delivered the first standard missile, SM-2, on schedule with zero failures at the subsystem level. Captain Don McDougall, U.S. Navy, said “Andy and his team had done real well because they delivered the first standard missile with no failures at the plate level.”

Subsequently the flight test was conducted at White Sands Missile test range in New Mexico with resounding success. However, the second Raytheon missile delivered was flight tested 45 days later and was a disaster. The missile went up in the air and came down on the desert floor. What was the cause of the problem? Here the example of how we adapted proactively was we were able to utilize an additional analytical capability that our sixth degree freedom hardware in the loop simulation provided for us. We discovered that the only way this could have happened is the inertial navigation systems delivered to Raytheon by a major subcontractor, Northrop, had inadvertently put the Z gyro in upside down. Armed with the analytical analysis the author went to discuss this problem with Captain Don McDougall. The Raytheon hypotheses was that there had to be other General Dynamics flight tests that had similar failures that went in unresolved files. So low and behold when Captain McDougall went to look at the files he found that there were at least a dozen failures there were unresolved. Together Andy and Captain McDougall found that these 12 cases could have been caused by improperly inserting the Z gyro upside down in the inertial navigation system.

How do we use this information? Here is something we learned, never make a threat you cannot carry out. We asked Northrop how they could make a Murphy proof Z gyro insertion method and modify their delivery test to us as prime contractor to make certain the Z gyro is properly inserted. We went back and modified the design baseline to include a separate Z gyro test for the acceptance of the inertial navigation platform coming into the missile system. In parallel, we reviewed all the subcomponents in that system and found out that we could acquire them without difficulty without having Northrop in the loop. We went back and modified the make buy decision and decided to make it in house ourselves illustrating the feedback between step 2 and step 3 and also between step 2 and step 1. Feeding forward from step 1 to 2 and getting a zero cost engineering design change proposal approval from the Navy we were able to implement proactively a new production baseline eliminating the root cause due to the improper insertion of the Z gyro in the inertial navigation subsystem platform. Presumably this would benefit everybody in the program indicating the advantage of the second source beyond just cost reduction.

When going to step 3 notice that we have a different design baseline. So feeding forward to step four we were able to enhance our reliability because we had found the root cause that had been in the program since its inception. This showed the potential value of a second source contractor that was not available before because of the analytical problem solving approach that Raytheon

added to the standard missile team. Raytheon was more analytical and General Dynamics was more developmental giving us a balanced approach. The ultimate success of the program showed that we had a 30% improvement in reliability and a 45% reduction in cost.

By the way, when the next general design competition (SM-2 Block 4) request for proposal came out Raytheon's analysis experience allowed us to take the design role away from General Dynamics. Ultimately this led to the acquisition of the General Dynamics standard missile function and combined it with Raytheon's standard missile capability to form a subsidiary of the Raytheon Company. The cost of indecision in this case would have been loss of Raytheon's credibility to deliver the first standard missile on the contract schedule. Our confidence would have been 70% or less because of the need for the improved test equipment design at the subsystem level. In addition the hybrid manufacturing capability was on the critical path. We reverse engineered the General Dynamics hybrid design and put our own production facility in place with hybrids. This required an additional \$20 million investment, but as a result we were able to make the delivery on time as discussed above. We strongly believe this also gave us credibility for the next generation design competition which Raytheon also won.

Conclusions and Managerial Implications: The Cost of Making a Timely Decision

The standard missile example cited above illustrates the impact of making a timely investment, \$40 million investment upfront, and implementing leadership in the innovative process because even existing designs can be improved if they are complex enough. The cost of this decision was \$40 million but the rewards were obviously much more because Raytheon now has a standard missile business unit as part of its operations. The framework in Figure 1 illustrates the dynamics of the decision making process and the need to know the unique dynamics of each specific industry. Hopefully, this coaching point illustrates the risk mitigation approach that the senior management team can deploy to enhance their effectiveness.

¹Botelho, E.L., Powell, K.R., Kincaid, S. and Wang, D. (2017). "What Sets Successful CEOs Apart." *Harvard Business Review*, May-June, p. 70.

²Covey, Stephen R. (1989). *The 7 Habits of Highly Effective People*. New York, NY: Free Press.

³Kotter, John P. (2001). "What Leaders Really Do." *Harvard Business Review*, December.

⁴Coram, Robert. (2002). *Boyd: The Fighter Pilot Who Changed the Art of War*. New York, NY: Back Bay Books/Little, Brown and Company.

⁵Business Dictionary. "Peter Principle," <http://www.businessdictionary.com/definition/Peter-principle.html>. Retrieved July 5, 2017.

⁶Papadakis, V.M. and Barwise, P. (2002). "How Much do CEOs and Top Managers Matter in Strategic Decision-Making?" *British Journal of Management*, Vol. 13, pp. 83-95.

⁷Vroom, Victor H. (2000). "Leadership and the Decision-Making Process." *Organizational Dynamics*, Vol. 28, No. 4, pp. 82-94.

⁸Raatikainen, Panu (2015). "Gödel's Incompleteness Theorems," *The Stanford Encyclopedia of Philosophy* (Spring Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/spr2015/entries/goedel-incompleteness/>>. Accessed July 6, 2017.

⁹Farkas, Charles M. and Wetlaufer, Suzy (1996). "The Way Chief Executive Officers Lead." *Harvard Business Review*, May-June.

¹⁰Lee, Chung Hun and Cranage, David A. (2011). "Personalisation-Privacy Paradox: The Effects of Personalisation and Privacy Assurance on Customer Responses to Travel Web Sites." *Tourism Management*, Vol 32, pp. 987-994.

¹¹Reynolds, Scott J. (2006). "A Neurocognitive Model of the Ethical Decision-Making Process: Implications for Study and Practice." *Journal of Applied Psychology*, Vol. 91, No. 4, pp. 737-748.

¹²Charan, R. and Colvin, G. (1999). "Why CEOs Fail." *Fortune*, June 21.

¹³Zaleznik, Abraham (2004). "Managers and Leaders, Are They Different." *Harvard Business Review*, January.

¹⁴Heise, W., Czuchry, A., Byrne, T. (2013). "Partnerships between the International Business and Academic Communities: A Strategic Tool for Achieving Corporate Global Sustainability," *Journal of Current Research in Global Business*, pp. 11-24, volume 16, number 26, Fall.

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