Appendix III-A-3: Ethics Scenario and Class Activity

Project Management and the Ethics of Deception: A Fictional Scenario Based on Volkswagen's Emissions Scandal

*<u>Note to Faculty</u>: There is a teaching note available to **faculty only** for this case. To obtain the document, please request it directly from the PMITeach.org administrator at pmcurriculum@pmi.org on your school letterhead or send an email request with a URL pointer to your school webpage indicating your faculty status.*

Part A: Fact

CEO Martin Winterkorn proudly boasted about Volkswagen's ambitious strategy in his 2011 speech launching a new plant in Chattanooga, Tennessee. VW, he proclaimed, was on the cusp of becoming the world's largest automaker—a goal he intended to achieve under his leadership. To do this, growth in the U.S. market would be critical. He promised energy-efficient cars with high gas mileage—and committed to the kind of car the American driver demanded. VW would surpass Toyota and the others by creating safe, environmentally friendly cars without compromising on fuel efficiency, affordability, or performance. While other auto manufacturers focused on hybrids, VW would rely on its diesel design. America, he believed, was poised to provide the boost VW needed to dominate the car industry worldwide and especially the United States. And he put himself on record promising this achievement and committing to the actions to make this happen.

With about eleven million vehicles on the roads, VW's diesel market globally was already huge. But less than five percent of these cars and trucks were sold in the United States. Winterkorn argued that this provided a key opportunity for increasing VW's presence in the United States.

The U.S. Environmental Protection Agency (EPA), meanwhile, had ratcheted up its emission standards. What might have passed the tests at one time would not succeed now. The European Community was adopting similar standards, but lacked the capability for enforcement.

At the outset, it was clear to some members of VW's executive team that what appeared to be the winning combination of factors were in conflict with one another. Volkswagen could not achieve one without compromising another. VW's diesel car could not easily satisfy the regulators *and* the consumers. This would require some careful and creative efforts to fulfill the expectations that Winterkorn had publicly set in his vision for Volkswagen.

Winterkorn's dream of world dominance did come true in the summer of 2015. The boost in the U.S. market had pushed VW into the status as the largest automaker in the world. But he would only have two months to enjoy this achievement before being forced to resign in one of the biggest scandals in automotive history.

Part A: Fiction

Stephen Musberg was exasperated. As chief of Volkswagen's R&D unit within diesel operations, he oversaw the computerized systems installed in the new diesel cars that VW would be introducing into the American market. He was also responsible for addressing the emission standards the Environmental Protection Agency had set, and for ensuring that VW passed all regulatory requirements. He knew that diesels typically emit more air pollutants than conventional engines, and the cost of compensating for this would undermine company

objectives.   He had a fundamental existential dilemma: The car he needed to produce could not comply with the conditions of both his CEO and the United States government.

How could Volkswagen fulfill its promise to provide better gas mileage and high performance yet still meet emissions standards?   One solution would be to add expensive, complicated pollution-control systems.   But this would impact the delivery schedule of the automobiles and drive the cost up and perhaps compromise the car's performance.   He worked through the arithmetic and found this could add about five thousand dollars to the price. Americans were not likely to embrace a higher price tag, a less powerful car, or a reduction in gas mileage.   How could Winterkorn not have known this?   He had led the R&D department at one time, and knows the science behind this.   Perhaps he was thinking that because all car manufacturers, not just VW, had been getting away with higher nitrogen oxide (NOx) emissions in Europe for years, VW could initially ignore EPA technicalities and innovate in due course to comply with standards.

This posed a series of dilemmas for Stephen.   The CEO had made it clear that the highest priority was a substantial increase in U.S. sales, and that the diesel line was critical for this to happen.   He could not go back to senior leaders with news that this highly publicized goal was unachievable.   Stephen had no choice but to figure out a quick solution.

Stephen had an epiphany: VW could design specifications for the IT project team to write software code that calibrated emissions specifically to meet the U.S. standards under test conditions.   It seemed that easy. He would not provide any larger context to the team, nor in any way implicate them in how this could violate U.S. regulatory standards.   He would treat this more as an abstract intellectual challenge to address creatively, not as a moral issue with potential human consequences.   He knew the team loved a challenge and respected their company's otherwise high production standards (along with a low opinion of how Americans build cars). Stephen believed the IT project team could be persuaded that the cars were safe and well-designed, but simply needed to get beyond the minor, nuisance technicalities of Washington bureaucrats. They, like he, were dismissive of the seemingly arbitrary inconveniences that Americans imposed on their cars.   They were, after all, the world's worst polluters, and did not deserve to dictate to a company like Volkswagen how best to design an automobile.

He called in Anna Stein to lead this project.   She was immediately resistant:

Stephen, you're asking us to design software to fool regulators?   How do you expect us to accomplish this successfully?

Stephen was prepared for her concerns:

Anna, I have confidence your project team can figure this out.   How can we compare the cost of developing a few lines of programming code against the incremental production costs and production schedule delays?   Do you really want us to go back to VW leadership and say that the only way to meet these emission standards is by installing expensive features, which will raise prices and compromise performance and business goals?   How do you weigh one against the other?   I believe your team can solve this minor predicament through software.   Do you want to be seen as an obstructionist over a petty detail?

Anna suspected Stephen was right.   She began to think this through. Perhaps they could program the cars to sense when they were being tested, and rig them to perform cleanly during inspection.   Perhaps test conditions could be inferred so that the car would know an indoor treadmill versus the open road.   She had to admit this was an intriguing challenge.

In order to differentiate simulation from reality, perhaps the cars could be programmed to tell how long the engine had been running at various speeds, what weather conditions existed, and even how the steering wheel was positioned. (Anna knew that a steering wheel oscillates during road turns and changing highway conditions—but far less during artificial conditions.) During the simulation, the car could shift to a low emissions status, even though this would worsen fuel efficiency. But then on the highway, the diesel car would revert back to its normal high emissions/low fuel mileage state. VW would then pass the test without jeopardizing customer satisfaction. Stephen was right: This was an exciting exercise, with the added thrill of finding a quick fix to a perplexing corporate challenge.

Anna began to write her specifications for this—and how to define what constituted a test status for the car. But she was now conflicted over the ethical aspects of engaging her project team in a deception. How would she convey this to her staff, and how could she ensure this would not be leaked or uncovered? Her conscience bothered her, since she knew that her project team was going to be implementing a "defeat device." While she wondered whether there were any other options, Anna reconciled herself to undertaking the necessary steps for this admittedly intriguing project.

First Anna had to document a *scope statement* for the project with the goal of implementing computer software that could sense test scenarios by monitoring speed, engine operation, and the position of the steering wheel to send the vehicle into a low emissions mode. Otherwise the software would function in "normal" mode—where fuel efficiency would be paramount.

Communicating this to the software team would be critical. Maybe one way would be, "We have an exciting problem to solve. Can we implement software that sends our VW vehicle into a low-emissions mode when, for example, it is idling? Cold-weather Canadian and American customers are accustomed to idling cars in the morning. They even have remote starters, which turn their cars on from their kitchen, to warm up the interior and get the diesel engine warm and ready to go. Does this sound like something we can program? It will involve the embedded software team in productions and us."

Anna knew that she was deliberately hiding the real issue of designing a *defeat device* to pass EPA requirements. She recalled what she learned in one of the business courses. In one particular case study, it was important to listen to others' points of view, negotiate in good faith, and provide accurate information in a timely manner. She wondered if, as project manager, she was failing to communicate the project details to the project team and to disclose stakeholder interests in the outcome of the project. At this point, however, she felt that unethical or illegal conduct was not involved. The project was simply a hypothetical puzzle and intellectual exercise.

So, with the informal authorization to launch the project, Anna began working on project details. Anna's role as the project manager (PM) was to manage the project and focus on the product, customer, money, and schedule. Also, as PM, she accepted full responsibility for the quality of the deliverables. Projects are generally organized and executed in phases. The details differ from one industry to another, but all projects run in an orderly sequence of phases and activities. This was going to be true for Anna's IT project as well. A simple, informal way to remember the project life cycle was the B-C-D-E-F stages she recalled from a college course on project management.

- Business case [B]: Identify the need and its reason for existence.
- Charter the project [C]: Officially launch it and identify project manager.

- Develop the project [D]: Plan the project.

- Execute the project [E]: Do the project.

- Finish the project [F]: Close it down and learn its lessons.

The life cycle phases reduce complexity, presumably increase transparency, and allow for controlled transitions and handoffs at formal "stage-gate" review meetings. These reviews are meant to detect problems and suggest solutions, or terminate projects no longer feasible within given constraints. Anna was hoping that the project life cycle and the formal gates would allow project managers and senior executive members who participated in these meetings to be accountable and evaluate any problems regarding the scope of the project or the identified software deliverables.

Integrated project delivery (IPD) was the first document to complete on this project. This document would align interests, objectives, and practices, for VW. IPD is designed for collaboration from the start of a project—by uniting the owner and project team in a common understanding conducive to quality delivery. Anna completed the following documents as well:

- Preliminary Technical Assessment

- Preliminary Legal Assessment

- Preliminary Risk Assessment

- Preliminary Financial Assessment

Within that, she identified stakeholders and documented many ways to engage them in this project. As a practicing project manager, next she would analyze risks. The completed deliverables would come in handy.

Table: III-A-3-1 Preliminary Risk Register

Risk	Quantification High, Medium, Low	Mitigation
Technical Assessment: Complex problem. Not sure if a solution is feasible.	High	Actively engage production experts from outside R&D. They are aware of various parameters that need to be detected: speed, engine operation, air pressure, and position of the steering wheel.
Legal Assessment: If used for EPA testing purposes, it can function as a defeat device.	Medium	Consult with a legal advisor as soon as the product is clearly feasible.
Financial Assessment: The budget is not being allocated clearly to this project.	Medium	Consult with senior management and obtain funding for project.
Communication: It is not clear how to communicate. Who should be aware? Who should not be aware of the project?	High	Stephen will provide a list of stakeholders who should be aware of this project. Anna was going to engage them in the project on a need-to-know basis.

These documents were scheduled for presentation at a stage-gate meeting called by Stephen as sponsor of the project. But this meeting was canceled by a senior executive. Instead, Stephen received informal feedback that he shared with Anna. He said, "All looks good and we should move forward with the project implementation immediately. Complete the planning documents and provide me with an estimated cost budget and schedule." Anna was surprised that the senior management did not issue a formal charter now that the business analysis phase of the project was over. The project life cycle was only going to be "B-D-E-F," she thought. The "C" charter phase was gone. The charter would have given Anna an opportunity to see the project objectives clearly and explicitly, and served as a reference of authority from senior management for the future of the project.

After six months, Anna completed a comprehensive project plan that Stephen reviewed and submitted to the steering committee for approval. He indicated that schedule, not budget, is the issue. VW needed to move quickly.

In every project, there is always a role for a technical director (TD) to manage the technical details of the project. At VW, Geoff Burton was the TD on this project. From the outset, he was concerned about the project goals and that it was not going to be a visible project. A techie at heart, he decided not to question the broader business goals of the project or the reasons for secrecy—and simply focus on the details.

Regardless, there were several occasions for conflict between Anna and Geoff. One recurring conflict on the goals of the project took place in early 2012 as the project was ending:

Geoff: "My team and I were having lunch together yesterday to celebrate a key milestone for this project, and the discussion once again arose if the embedded software program in the VW car was going to be used as a 'defeat device' for EPA emissions testing purposes."

Anna: "We had this discussion earlier. The business goals behind this project were resolved by Stephen and others more than a year ago. I don't foresee this as a problem and it shouldn't impact our satisfactory conclusion of the project."

Geoff: "I was taken by surprise yesterday. Neil, our software engineering marvel, seemed upset. He is a dedicated environmentalist. He drives a Toyota hybrid to work! He believes that the software will find its way into production and customers will not be aware of the impact when VW cars don't comply with clean air standards."

Anna: "We should simply assume that all parties and even the customer will be appropriately informed of this issue."

Geoff: "In the final documentation, we need to explain the technology and its potential impact on VW stakeholders."

Anna: "We don't want to do that yet. I don't want to scare anyone or jeopardize the successful completion of our project. It will all work out."

That night, Anna was reflecting on the entire project, the risks, and earlier discussions with Stephen and more recently with Geoff. The critical question was whether she communicated with her boss adequately. Were there options other than implementing a defeat device? Could Anna have done a better job evaluating the pros and cons of each option in order to make a decision?

Also, was she complicit in her role as project manager for masking some details of the project? Her conversation with Geoff was very uncomfortable, especially when it skirted the true use of the software. It kept her up at night worrying. She was wavering between two extremes. One was fully supporting Stephen and VW's goals of breaking into the American market and believing that it would all be fine in the end. And the second extreme was an obvious reflex response: It just did not feel right. Complicating her thinking was her cultural perspective on the issue. She recalled a discussion with Stephen that tweaking performance settings for stationary cars was legal in Europe and should not pose a problem in the American context.