

Chapter 1

INTRODUCTION

Chapter 1 presents examples of organizations that have recognized the importance of projects as an engine of their growth or a survival mechanism during economic turbulence. Various efforts of these organizations in response to the need for project management, therefore, were initiated.

In this chapter, there are six case studies: five critical incidents and one issue-based case. The cases generally discuss a number of concepts (e.g., organizational structures), that can be found in Chapters 1 (Introduction) and 2 (Project Life Cycle and Organization) of *A Guide to the Project Management Body of Knowledge* (the *PMBOK® Guide*).

1. AaronSide Goes to Teams
2. Cocable Inc.
3. A RobustArm Global Industries' SledgeHammer
4. Another Trojan Horse
5. Call a Truck
6. The Project Hand-off Method

These cases demonstrate different situations where companies made the transition from non-project-oriented organizations to project-oriented ones. To capture the transition efforts from multiple views and settings, we offer cases from different industries: “AaronSide Goes to Teams” is in the metal machining industry; “Cocable Inc.” is in cable manufacturing business; “A RobustArm Global Industries' SledgeHammer” provides building materials; “Another Trojan Horse”

is in the nuclear industry; “Call a Truck” offers shipping and transportation services; and “The Project Hand-off Method” is from the field of medical equipment manufacturing.

CHAPTER SUMMARY

Name of Case	Area Supported By Case	Case Type	Author of Case
AaronSide Goes to Teams	Project Management Organization (Functional vs. Matrix Structure)	Critical Incident	Dragan Z. Milosevic, Peerasit Patanakul, and Sabin Srivannaboorn
Cocable Inc.	Project Management Organization (Training by Doing)	Critical Incident	Jovana Riddle
A RobustArm Global Industries’ Sledgehammer	Project Management Organization (Standardized Project Management)	Critical Incident	Dragan Z. Milosevic, Peerasit Patanakul, and Sabin Srivannaboorn
Another Trojan Horse	Project Management Organization (Training)	Issue-based Case	Stevan Jovanovic
Call a Truck	Project Management Organization (Matrix Structure)	Critical Incident	Dragan Z. Milosevic, Peerasit Patanakul, and Sabin Srivannaboorn
The Project Hand-off Method	Project Management Process	Critical Incident	Dragan Z. Milosevic, Russ J. Martinelli, and James M. Waddell

AaronSide Goes to Teams

**Dragan Z. Milosevic, Peerasit Patanakul,
and Sabin Srivannaboon**

It took AaronSide, Inc. almost 80 years to grow from a small mom-and-pop business to a company that held the largest market share internationally. What made this feat special was that a single family owned the company since its inception. It is suffice to say that this success made owners, management, and all employees more than proud.

A WALL IS BETWEEN US

Operating in the metal machining industry, AaronSide's organization was perfected over time through experience and many saw this as a competitive advantage. Basically, it was an efficient, functional organization where marketing, engineering, and manufacturing with a strong quality group played a major role. The engineering department achieved the fastest 16-month lead time for a new product development project when compared with competitors. Fundamentally, product development was an operation that worked like a well-oiled machine. It started with marketing, which did market research and then threw the specification of what customers desired "over the wall" to the engineering department, which released final drawings to manufacturing, which made the quality product. The approach was called the relay race. Its secret was an efficient, functional department. Typically, if you worked in a specific department, say marketing, you would never talk to a guy from a different engineering. If you did, you might be reprimanded. Indeed, departments talk to each other, not individuals that belong to different departments. How do departments converse? Usually, only heads of departments are authorized to speak on behalf of their staff.

TO SURVIVE, CHANGE IS REQUIRED

The more intense globalization of business brought more international competition. The two largest rivals in the industry from Europe, subsidiaries of the large multinational organizations, largely expanded their operations in the U.S. market.

This is when problems for AaronSide began to mushroom. AaronSide found it difficult to compete with the Europeans, who had access to resources and new management of their rich parents. As a result, AaronSide slipped to a close third in market share, behind the European rivals. Freefall continued and by 1990, AaronSide was the distant third. Several management teams were replaced during this period, new manufacturing equipment was installed, the company was seriously reengineered, and different management was used to catch up with the leaders without significant results. So, AaronSide became ripe for a sale.

After talking with four suitors from the United States and Europe over the last several years, owners concluded that the best offer for purchase of AaronSide was one from Titan Corp, a Swedish company. So, after almost 90 years of being family-owned, AaronSide became a wholly owned subsidiary of a large multinational firm.

To facilitate the integration of AaronSide into Titan Corp's network of companies, the management team of AaronSide was retained. The first initiative of the new owner was to direct AaronSide to commission a pilot project management team (in manufacturing companies usually referred to as concurrent engineering teams), cross-functional in nature, and made up of the permanent members from marketing, engineering, and manufacturing, and auxiliary members from finance and field repair. The team was chartered to develop a new mining vehicle in eight months, twice faster than usual and as fast as the world leader. The new team was empowered to make all major decisions. The idea was to accomplish success with this team, and then use it as a paradigm along with the lessons learned from its operation to establish a company-wide project management system.

Eight months later the project was not finished, and needed eight more months to reach its conclusion. The Swedish parent asked for an immediate investigation. The investigation showed that the team did not make any major decisions. Instead vice-presidents (VPs) who were heads of the departments directed the members of their team to make no decisions, but to bring all necessary information to them and they, the VPs, would make the decision. Having discovered this, the management of Titan Corp decided to fire the CEO and all VPs.

Discussion items

1. What are the pros and cons of the relay race approach and the cross-functional team approach to product development projects? Which approach is better?
2. Who gets more power and who gets less power by shifting product development projects from the relay race to the cross-functional team approach?
3. Does the shift from the relay race to the cross-functional team approach require a significant cultural change? Explain why or why not.
4. Why do you think the VPs took the approach of not letting a pilot team make major decisions although the team was empowered to do so?
5. Was the firing of the CEO and all VPs justified? Why or why not?

JANE AND OBANGA

It was 6:30 on a Wednesday morning, and Jane Campbell was on her way to work. The traffic was heavy like any other day, which usually made Jane frustrated. Today, however, Jane was calm and didn't seem to mind the long drive. Why? The commute would give her time to think about what her next move at Cocable Inc. should be. Jane had some very important decisions to make in the next few weeks that would greatly impact her life.

Jane's boss, Larry Fitzgerald, recently came to her with a new project proposal. Since her current assignment was wrapping up, she had to make a choice: Should she stay with Cocable, and accept the uninteresting product development coordinator role she was offered, or should she look for a new job with a different company?

As she always did when facing a tough decision, she started to identify the pros and cons of each option. If she took a new job she would likely have to move, work longer hours, and experience a huge learning curve. Most importantly, the new job would mean less time with her precious daughter, Obanga. Obanga was now two years old and had been through a lot in her short life. Jane and her ex-husband, Obanga's dad, met in Kenya where Jane used to live. Shortly after getting married they moved to England, where Obanga was born. Their divorce came soon after Obanga's birth, just before Jane and Obanga moved to America. To provide Obanga with a better life, Jane went to Oregon Graduate Institute (OGI), to get a master's degree in Engineering Management. From there she was hired by Cocable. Thus, in her two short years of life Obanga had dealt with the loss of her father, a huge move, and the transition of having her stay-at-home mom become a full-time employee. Taking a new job, thus, could really impact the little girl negatively.

Jane's other choice was to stay at Cocable and accept the product development coordinator role, for a project that would likely last for at least eight to nine months. This new role would not be very challenging and, more importantly, would not increase her moderate salary. As she finally arrived at the office, Jane knew she had to make a decision soon, one that she couldn't regret.

BACKGROUND

Cocable is a company based in Chicago, which makes interconnecting cables for industry gear. Their annual sales are around \$78 million and the company currently employs 720 people. Jane's role thus far at Cocable has been in operations and product development. The new project she has been offered would require Jane to coordinate product development for gear, similar to her current assignment. Therefore, the learning curve would be nonexistent, and would likely not be challenging or exciting for Jane.

The product that needs to be developed is brand new and would require the formation of a 25-person team. Jane's role in this 25-person team would be to coordinate product development. The members assigned to the team thus far are from all product development functions and various groups. Most of them have spent their entire careers working on similar products and have not been challenged or motivated in their jobs in a very long time.

In an attempt to encourage Cocable employees, the company decided to hire an external consulting team to train employees on project management, the area that had never been formally known in the organization. The aim was to help facilitate the product development process at least on a temporary basis.

Jane and this 25-person team were requested to attend this training before they would start on the new project.

TRAINING

The newly formed team would have to undergo a two-day training session, which would be divided into two 5-hour modules. According to historical attendance of training sessions, it could be expected that 22 of the 25 people on the team would be present for each session. The main purpose of this training would be to get all the team members on the same page, and to encourage learning best practices and project management knowledge. Most importantly, this would be a first step in building a cohesive team while providing all members with vivacious and interesting in-classroom training. The team building would also allow the leaders of the group to stand out. The five most prominent leaders would be asked to make up the "Cascade team" that would help design and deploy the project management manual that would be used later in the company.

TRAINING BY DOING

It would take Cocable two weeks to organize and coordinate the required training session. Upon the conclusion of the training, the Cascade team would focus on designing a manual, using the project management training they just received.

To test whether the manual was feasible, Jane's new project would be the first to use its draft. If it was effective, then the manual would be deployed

to all projects within the company. During the first three months of the project, the team would have to consult the manual and apply its guidelines to each task. By using the manual for each task the team would learn the ins and outs of the project and the application of project management. This typical practice, which is very common in project management, is referred to as “training by doing.”

After the three-month anniversary the team would be up for their “three-month review,” during which the application of the designed manual would be analyzed. The review would be in a workshop format and attended by the 25 employees/trainees and the supervising consultant. The purpose of the three-month review is to identify any mistakes the employees make while applying the manual to their tasks. For example, each employee would present a real-world example of how they used the manual in everyday tasks and potential mistakes in application would be identified by the team.

PRE-IMPLEMENTATION

The pre-implementation phase is the period of time between the three- and six-month anniversaries of the project’s start. During this time, the trainees continue to apply all the rules in the manual. The “six-month review” is a workshop-style format attended by the supervising consultant and the 25 trainees. Again, each employee is asked to present a real-world issue they have encountered and any potential mistakes/deviations from the manual implementation are identified by the larger group. This workshop would also conclude the pre-implementation phase of the project.

CUT-OFF

The company would then transition from following the old handbook for all its tasks to using different project management rules presented in the new manual. The application of the old handbook would be abandoned and each step would be transitioned to operating in a new way. The transition date is also known as a cut-off date, the point at which a company chooses to transition to a new way of doing things.

This would be the first time in company history that a standard manual was introduced and applied to projects regardless of their size. Things seemed to be changing at Cocable, and Jane felt that she might want to stick around for a while.

Discussion item

1. What are the advantages and disadvantages of introducing project management to new product development the way they did in the Cocable case?

A RobustArm Global Industries' Sledgehammer

**Dragan Z. Milosevic, Peerasit Patanakul,
and Sabin Srivannaboon**

READY, STEADY, NOW . . .

“We have a corporate mandate to start the management of our projects by means of Standardized Project Management (SPM) processes by the end of the year. Considering that most frequently projects are done in the Engineering department, its head, Blaine Peters, will be in charge,” said Tim Robison, the general manager of the RobustArm Global Industries (RGI) plant in Duckville, Oregon, to close the meeting of the management leadership team. And the SPM race began.

BACKGROUND

RGI company was a global multi-million-dollar business that served the planet with the most cost-effective building materials. The company had several branches, and the one in Duckville was one of the biggest plants which employed 220 people, and had annual sales of around \$2 million. The company strategy led the plant to cater their products to Western United States and China.

What made RGI a distinct company was the three-pronged corporate culture: *improve continually, standardize processes, and pursue change*. In the early 1990s RGI won the Baldrige award for quality, and embarked on a never-ending race for continuous improvement. All employees relentlessly searched for the next production method to enhance or to remove a bottleneck. Most importantly, the Baldrige award changed their worker mindsets forever, making them feel like owners of processes, rather than just regular employees.

One of the major aims of this corporate culture facet was standardization of processes. The new corporate mandate of pursuing SPM has the purpose of bettering ways of running projects, and raising efficiency and reducing costs in order to eventually provide greater value to the customer. At RGI, they even standardized one facet of meetings: To convene any meeting, you had to send a standardized agenda ahead of time.

“Nothing is permanent except change” was the motto at RGI. This was not a “one-major-change-initiative-at-a-time” type. Actually, this was a whitewater type of change where a multiple of change initiatives were unfolding at the same time. So, while they were preparing to launch the SPM initiative, there was a serious effort related to the six sigma initiative, targeting the improvement of production facilities, and several teams used the best of their knowledge to upgrade processes in production, HR, IT, R&D, engineering, etc.

GETTING TO WORK

As soon as Blaine left the conference room, he began to run the SPM race. He did so by following the corporate guidelines for the major change. According to the guidelines, he established the project and named the change initiative: *SPM Implementation Project Sledgehammer*, and assumed the job of Project Manager. Blaine then chose his project team members, from the Engineering department, who needed to be properly trained in project management first before proceeding to the next step. It took him a week to find the right project management trainer, and another two weeks to arrange the three-day project management training. So far, project affairs went smoothly and were expected to continue that way. In three weeks, the team would need to produce an SPM manual, which had 10 standard items with a template for each one, including:

- Scope statement
- Work Breakdown Structure (WBS)
- Responsibility matrix
- Schedule
- Cost estimate
- Quality plan
- Risk plan I (P-I matrix)
- Risk plan II (Risk response plan)
- Progress report
- Closure

To finish the Sledgehammer with flying colors, the project team would need to organize separate training, designed specifically for the use of the SPM manual, for all members of RGI’s Duckville plant. When this was done, the project team would announce the cut-off date by which all new projects had to be managed with the SPM manual. It sounded that simple.

Discussion items

1. How important is the SPM process to the company? Explain your answer.
2. What are the pros and cons of the approach that RGI used to develop the SPM process?

Another Trojan Horse

Stevan Jovanovic

MEET THE TROJANS

John Lackey can't hear the noise of the hundreds of people cheering in congratulations for him. His thoughts have drowned out the noise. He just received a reward for Best Project Management of a Utility Plant in the United States. The plant is Trojan Nuclear Plant, which was officially shut down in 1996. The year is now 2000.

John is about to give a speech in front of hundreds of people. He is expected to give the typical acceptance speech and thank everyone for their hard work and thank the award committee for their recognition. This is not, however, the usual utility plant management story. John is consumed with thoughts of how a common speech could possibly convince the world that a nuclear plant, having produced zero power in four years, deserves an award praising its project management. The story of a project that involves decommissioning of a nuclear plant cannot be short. This project is also very unique with equally unique circumstances.

The whole project plays out in his mind. His thoughts start from the very beginning . . .

THE SIMPLE TASK

The task sounded simple enough, to shut down a nuclear plant, decommission it, and make the plant, or at least its location, safe for the future. The plant was near a major metropolitan area, which made the first line of reasoning simple; get the dangerous stuff away from the dense population and reduce risk for human harm. Trojan was a large plant—it was the largest and most powerful nuclear plant of its day. It was built on a huge site that supported tons in equipment. Although most people seldom consider decommissioning, as part of managing a power plant, it is actually a necessary part of the plant lifecycle.

As one would expect, most of the equipment was used to handle extremely hazardous nuclear material. Nuclear material stays dangerous for very long periods of time, for thousands of years. The varying degrees of danger involved for

the different parts of the huge plant ranged from slightly dangerous to extremely poisonous. Every inch of the 600-acre complex had to be thoroughly examined and a plan had to be made to deal with each and every inch. All of the equipment was hazardous and had to be handled with extreme caution. The project would take years.

TRAINING

Decommissioning of a nuclear reactor is unique in that every single detail of the project must be planned out and reviewed long before any work can begin. Error was unacceptable, especially for a project such as this that would be scrutinized not only by the authorities, but by the general public as well. Nuclear power has always been a hot topic, generating extreme public opinion. The Trojan Nuclear Plant, even during its operating life, was always a source of controversy for people on both sides of the nuclear power debate. Every aspect of its operation, especially bad news, became fodder for the media. Any negative news immediately became front page material. John and his company definitely did not want their name associated with negative “nuclear news.” The only way to ensure that this did not happen was to be as prepared as possible.

Naturally, the first step was getting up to date on the latest in project management techniques. For this they chose the four-day training course by Scope Management (statement, WBS, process, changes), Cost Management (estimates, earned value, cost baselines), Time Management (jogging line, TAD, milestone charts), and Risk Management (risk events, PI Matrix, Monte Carlo analysis). The course was structured per the *PMBOK Guide*. Now armed with tools and concepts needed for the work ahead, they felt prepared for any size project.

LEARNING

One of the biggest challenges for this company was the change in mindset from an operating company to a project management company. An operating company does use basic project management techniques but spends much of its time and energy executing operations. Naturally, however, a project management company spends all of its energy on project management. Although the transition from an operating company to a project management company may not sound challenging, there can be difficulty when a person has spent their entire career focusing on project execution. The tendency for that type of person might be to revert to old ways. On a project this complex, however, skimping on project management could be disastrous.

The first step in decommissioning the plant was to break down the project into smaller projects. These “smaller” projects were by no means easy, but were more adaptable for applying and refining their recently acquired project management skills. They were essentially used as learning blocks and every “smaller”

project management project was carefully reviewed and each lesson learned was clearly outlined.

One of the projects was the removal of the central reactor. This involved transferring the entire reactor hundreds of miles from the plant location. Such a project had never been attempted before, which means no historical information upon which to rely. The entire decommissioning project had many “firsts” and of them all the reactor removal was by far the biggest and most complicated.

The reactor, a concrete and steel maze, was the size of a basketball court and weighed many, many tons. The safest way to remove the reactor was in one piece. The reactor was not originally designed and built, however, with the intent of being picked up and carried around in one piece. It was a system of structures, pipes, and mechanical equipment. Damaging and breaking open any part of the reactor system would have allowed poisonous material to leak out. This was the worst possible scenario and could not be allowed to happen. The project was the pinnacle of the team’s project management use. They managed to safely lift the reactor, transfer it to a ship, move it up river (including going through four dam locks), transfer it to a land vehicle, and “truck it” to its final destination. They managed every detail of the move. To the great relief of everyone, the move was a success. The team and the company had made their mark in the pages of project management history.

Discussion item

1. What do you learn from this case?

Call a Truck

**Dragan Z. Milosevic, Peerasit Patanakul,
and Sabin Srivannaboon**

CAT, Inc. was a powerful company. They provided their customers with the goods to transport, the food to eat, the gas to drive, and a place to sleep overnight. In fact, they provided everything that a driver would need on the road. What kind of company was that? CAT, Inc. was a broker between companies that transport the freight and the owners of the freight. And they were the premier broker of the market.

In the 1980s, the technology wasn't very complicated or advanced. "Computer" was a fairly new term that was just recently becoming known to this business. Most requests and information were handled by fax or telephone. CAT, Inc. was one of the many companies that used this technology.

THE NEW CEO

CAT, Inc. just got a new CEO, James Carter. James was voted and selected by the majority of managers who were former drivers. To the surprise of the majority of the employees, the new CEO was not a former driver. He was a businessman who viewed CAT, Inc. as a dinosaur, an about-to-be-obsolete business that used fax and telephone.

The new CEO had a new vision. The vision was to be in touch with customers by a new means that radically changed the way people communicated. The means was known as a computer. This required massive investments. Luckily, CAT, Inc. was in a position that could afford the changes. So, to make his vision possible, he launched a number of operative and strategic changes.

Among the operative changes, James ordered a stop to many fax-based communications between his people and customers and changed them to be fully computer-based. In that manner, CAT, Inc. became the first company in its industrial history that was able to provide everything a driver would need on the road, ordered by request through a computer system. However, because not many people had computers at the time, the company also maintained a fair use of the traditional means of fax and telephone, but limited them to minimal usages.

The information through the traditional methods was kept in the digital format, nevertheless.

In addition to the operative changes, strategic changes were many and in-depth. One example was the new infrastructure. CAT, Inc. built the infrastructure that supported the new system and better facilitated customer requests. Despite a number of positive changes, consequences were inevitable. And one consequence went to the technology development group, where the old faces were all laid off. In place of them, the company hired a new software group from a technology company's technology group. Immediately after that, a training program with a new content that supported the computer system was established.

In addition, a call center was set. Project groups arranged around their customers were also formed for the first time. The projects related to new products and services that were performed in the call center were led in the matrix way by project management. In other words, cross-function teams were initiated to respond to the customer needs. But, there was no standard procedure yet for managing projects.

There were so many things that the company would need to do in the next several years. But now, CAT, Inc. was a new company inside-out.

Discussion items

1. What were other operative and strategic actions, not mentioned in the case, which might have been executed to accomplish James' vision?
2. How do the changes affect the strategy of CAT, Inc.?
3. What role did project management play?

The Project Hand-off Method

**Dragan Z. Milosevic, Russ J. Martinelli,
and James M. Waddell**

Hospi-Tek is a medical equipment manufacturing company who has historically used a project hand-off approach to develop its products. They are currently under intense time-to-market pressure from their primary competitor, forcing senior management to reevaluate this approach.

A HAND-OFF METHOD

Under the project hand-off method, the Hospi-Tek product development effort began with the architectural team who developed an architectural concept and derived the high-level requirements of the medical device from the work of the product marketing team. The architectural concept and specifications were then handed-off to the hardware engineering team, who assumed ownership of the project. The engineering team developed the hardware requirements, engineering specifications, and the product design, which were then handed-off to the manufacturing team, who assumed ownership of the project. The manufacturing team developed the manufacturing processes, retooled the factor, and produced the physical product. The product and project ownership were then handed-off to downstream engineering teams, such as the software development team. The software team developed the software stack, then handed-off the combined hardware/software product, as well as project ownership, to the validations and test team. Finally, the validations and test team performed product- and component-level testing to ensure the product achieved the functional, quality, usability, and reliability requirements.

Management of the project was accomplished through a project management-only model, with multiple project managers in control of the project as it progressed through the development life cycle. Thus, a project manager with the functional expertise specific to the phase of development the product was currently in assumed ownership of the project.

JUDGEMENT

The hand-off method of development is common in smaller, less mature, and technically focused companies in which true project management value is usually not well understood and the engineering functions reign king. Unfortunately, this method is not scalable, and as a company begins to succeed and grow, product and process complexity requires the management team to look at alternative methods to structure and manage its product development efforts. This was the case with Hospi-Tek.

Discussion items

1. Why, by implementing the hand-off method, are there multiple project managers in control of the project as it progresses through the development life cycle?
2. Do you agree with the judgment that the hand-off method is popular in companies where true project management value is usually not well understood? Why or why not?
3. What are the pros and cons of the hand-off method?