Everything I Needed to Know About Project Management I Learned in a Cockpit

BY RAY W. STRATTON

In a national survey, nearly 2,000 project managers reported that only 47 percent of their projects met their goals and only one-third said their projects are often completed on time and on budget. If pilots flew aircraft like we run projects, no one would ever fly. Yet every day millions of people fly for work or pleasure and flights arrive on time almost 80 percent of the time, delayed mainly by weather. Airline travel is also the safest form of long-distance travel with a fatal accident rate of .022 per 100,000 hours flown. (If you flew every day of your life, you have less than a 1 percent chance of being in a fatal accident.) We have been flying for just over 100 years, but project management has been around since the building of the pyramids and the Great Wall. As both a pilot and former project manager, I believe some hard-won lessons from thousands of pilots can be applied to project management as well.

Lesson #1: Before spending an hour or more planning a flight, smart pilots make a rough estimate of the trip's distance, fuel requirements, the aircraft's range, and passenger and baggage load to determine its feasibility. If a pilot jumps into detail planning first, he or she can become emotionally committed to a flight that might not be easily completed. **Project Managers:** Do a project feasibility study. Once you begin detail planning, you might be emotionally committed to try to do the impossible.

Lesson #2: Good pilots ask their passengers (their stakeholders) what they want most: the shortest flight, the smoothest flight, or the most scenic flight. It is almost impossible to do all three in the same trip. **Project Managers:** You must know the stakeholders' key expectation. Only one expectation—cost, schedule, or performance (quality)—can be key.

Lesson #3: Pilots know that operating an aircraft beyond its designed gross weight is unwise. You may be able to fill all the seats, fill the tanks, and fill the cargo area, but the plane might be too heavy to leave the ground. Trade-offs are usually needed. **Project Managers:** Manage your constraints consistent with the key expectation. Adjust the other expectations and keep the key constraint fixed.

Lesson #4: Pilots learn that there are many ways to get from A to B. The safest route may not be the most direct route. They evaluate multiple routes for wind, turbulence, safety factors, aircraft capability, and passenger interests and select the best one. Picking the best route requires compromise. **Project Managers:** During planning, evaluate different sequences of project activities and select the best. Consider the stakeholders' expectation and likelihood of success. The first activity sequence is not likely the best.

Lesson #5: Detailed flight planning might prove a flight is impossible, and pilots know the results of a flight feasibility estimate might be wrong. They should prepare their passengers to hear, "The flight can't be done safely, and we are not leaving." Passengers do not have the knowledge to make go/no-go decisions. (The next time your airline cancels your flight, remember it's better to be on the ground wishing you were in the air than in the air wishing you were on the ground.) **Project Managers:** If you can't get a project plan to work out, it won't work itself out later. Let your scheduling and resource tools tell you what you can and can't do. Prepare your stakeholders to hear, "No, it can't be done." They are counting on you to make decisions in their best interest.

Photo Credit: U.S. Air Force

Lesson #6: Takeoff is one of the most critical phases of flight. Good pilots monitor all gauges and the aircraft performance early and frequently during takeoff. If the acceleration or anything else is not normal, the takeoff is aborted. The source of the problem is determined and fixed, or the flight is canceled. **Project Managers:** Frequently monitor the beginning phase of your project. Once a week is not too often. Check staffing levels, communication, cooperation, progress, and productivity. If your project does not start off well, stop, fix the problem, and start over. You are unlikely to recover from a bad start.

Lesson #7: Throughout the flight, pilots check their progress over the ground against their flight plan. Is their path over the ground correct? Is the flight at its checkpoint on time? How long have they been flying and how much fuel has been used? Pilots continuously evaluate the fuel and time required to complete the flight. **Project Managers:** Know your real accomplishments to date. Just knowing the funds and time spent is of little value. Use earned value management to know if the work completed is appropriate for the expenditures. Update your planned completion date and budget if needed.

Lesson #8: Flight planning uses weather forecasts, which are just assumptions from weather forecasters. Assumptions can be wrong, and they create risk. During a long flight, pilots obtain updates to the forecast and current weather conditions. If the current conditions are not as they were originally forecast, it's likely other assumptions about the weather are wrong, too. **Project Managers:** Continue to review the assumptions that were made during planning. If these assumptions prove to be wrong, update the assumptions based upon the current project environment.

Lesson #9: Regardless of weather forecasts, the weather outside the cockpit window is fact. It is what it is and must be dealt with regardless of what was forecast. There is no value in telling the forecasters they were wrong. **Project Managers:** What you see is what you get. Past assumptions and promises about resources, vendor delivery dates, and subsystem performance are history; deal with the present situation.

Lesson #10: Pilots have had accidents when they got distracted during key phases of a flight. In one case the cockpit crew was so focused on a burnt-out lamp that the plane descended into the ground. Airlines have a "sterile cockpit rule" during critical phases of flight: no casual discussions among the crew. Flying the plane is always job number one. "Aviate, Navigate, Communicate" is the pilot's rule to keep things in priority order. **Project Managers:** Running your project is always job number one. If, for example, annual workplace safety training is scheduled during a key project problem-solving meeting, the project meeting gets priority. Getting work done is always most important.

Lesson #11: Planes with two pilots on board have had accidents when each thought the other was doing the flying. In one case, a tandem seat plane descended slowly into the ocean after circling a sailboat. Each pilot thought the other was flying. Pilots are now taught to confirm who is doing the flying. Typically one pilot states, "You have the plane," and the second pilot responds, "I have the plane." **Project Managers:** When you delegate project responsibilities and tasks, release control and confirm new ownership.

Lesson #12: In 1982 Air Florida 90 crashed into the Potomac River and killed seventy-eight people. During takeoff, the first officer said, "That's not right." The pilot replied, "Yes, it is." The first officer cautioned the pilot again, but the pilot ignored his comment and proceeded with the takeoff. Once airborne, the first officer exclaimed, "We're going down," and the pilot said, "I know it." It wasn't until this last dialogue that the pilot took the first officer seriously. Today cockpit crews use a tool called

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Cockpit Resource Management (CRM) to ensure everyone is comfortable with the decisions and actions being taken. The pilot in command listens to alternative opinions and ideas before taking any critical action. Other crewmembers are charged to mention anything that concerns them. **Project Managers:** Charge everyone on your project team with keeping the *whole* project out of trouble. Respect and respond to all concerns.

Lesson #13: Excellent pilots think ten to thirty minutes—or more—ahead of the aircraft's position. Today's training teaches pilots to know what should happen next, how to know when it does, what to do when it happens, and what should happen after that. A pilot who is just keeping up with the aircraft's position is acting more like a passenger than a pilot. **Project Managers:** Know what is supposed to happen next on your project, how you will know it occurred, what you should do when it does, and what should happen after that. While it's important to know what was done last week, it's also important to think at least two to four weeks ahead.

Lesson #14: Good pilots always have an alternate plan and ask themselves, "Where could I land within ten minutes of takeoff, along the route, right now, or if the destination airport has poor weather?" Pilots constantly monitor a flight's progress. If trends show the flight might not be meeting its planned progress, or destination weather is becoming questionable, pilots begin thinking about executing their Plan B. **Project Managers:** Start to re-plan the project before the re-plan is needed. Always be operating to a plan.

Lesson #15: Pilots are required to follow the instructions issued to them by air traffic control, yet U.S. air regulations also state, "The pilot in command of an aircraft is…the final authority as to the operation of the aircraft" and "may deviate from any rule to the extent required to meet (any) emergency." If a pilot needs to climb or dive to avoid an approaching aircraft she can, no questions asked, and just report what she did. **Project Managers:** Assume all the authority you need to be successful. Surveys of senior management have shown their frustration that project managers do not assume more authority. If necessary, do what you need to do and be prepared to explain later.

Lesson #16: The airport at Catalina Island, California, has drop offs on three sides and a hump in the middle because it was built by leveling two mountaintops. While landing, the pilot of a small jet mistook the hump for the end of the runway and accelerated to abort the landing. Once he saw the remaining runway, he applied the breaks to complete the landing. He then realized there wasn't enough room to stop, so he again applied power to abort the landing. There wasn't enough room to accelerate to flying speed, and he crashed off the end of the runway. His first decision to abort the landing was correct in light of his doubts and would have resulted in becoming airborne for a second, more knowledgeable, landing attempt. **Project Managers:** When you make a decision, make it timely and stick with it, unless overwhelming evidence proves it to be wrong. Flip-flopping on decisions wastes resources, frustrates the team, and usually results in poor outcomes.

Lesson #17: Today's aircraft can literally fly themselves thanks to sophisticated autopilot systems, but there have been accidents when these systems did not perform as expected. The pilot typically sees the problem but is out of the loop because he or she let the autopilot control the plane up to that point in time. **Project Managers:** To paraphrase a recent NASA recommendation to pilots, "The more [project management] automation there is…the more the [project manager] should work to remain an active and integral part of the [project]." Project management software cannot run a project.

This wealth of piloting experience is a result of the NTSB investigating each accident and changing habits or systems as a result of these investigations. Unfortunately, there is no "NTSB" for projects, but both pilots and project managers address risk, communication, uncertainty, and a host of common challenges. If you run your project like pilots fly airplanes, you might find it ends as successfully as virtually every airline flight. ●

Note: A version of this article originally ran in Projects@Work *(www.projectsatwork.com). A one-page list of these lessons may be found at www.mgmt-technologies.com/pm_pilots.html.*

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