What We've Got Here Is … Failure to Communicate

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The tagline from Cool Hand Luke *(1967)* [1] *has often been modified from its original. The Captain (Strother Martin) tells the recalcitrant chain gang prisoner Luke (Paul Newman): "What we've got here is ... failure to communicate," not "What we have here is a failure to communicate." We do not even quote the quote correctly. This article is a look at situations where communication among team members is a critical factor in the potential failure of a program or its success. This is not a deep technical article, but I believe it is thought-provoking. When humans communicate in written, verbal, and non-verbal forms, many times the receiver misses the intended meaning. The "failure to communicate" is the root cause for many program failures more times than we would admit or appreciate.*

Throughout my career, I have experienced a number of *program failures* (even the term failure is relative and subject to a wide range of meanings depending on the individuals participating in the discussion). These program failures can be directly related back to the basic tenet of this article: *failure to communicate*.

Everyone reading this more than likely has had a similar experience and could add to the following situations. This article is not written as an indictment against any one individual, organization, or program; it is written as a lighthearted look at how things that seem so simple can become major stumbling blocks because of our *failure to communicate*. But I do not want to just dwell on the failures, so a couple of good examples of how participants were able to communicate are also presented. Each of the situations is generalized by using groups as examples.

NASA Mars Probe [2]

One of the most dramatic failures of a project caused by failure to communicate was the NASA probe project in 1999. The probe, the Mars Climate Orbiter, was to orbit Mars to gather climatic data. The Orbiter, at a cost of about $125 million, traveled more than 400,000,000 miles to get to the planet. Upon arrival, the Orbiter entered an orbit 60 miles too low, and since it was not built to withstand the Mars atmosphere, was destroyed. The design calculations used to place the spacecraft into orbit were made in imperial measures in terms of *pounds force*. The software team, however, developed the *burn* control software using metric measurements and units in terms of *newtons*. While the error was less than 0.000015 percent, it was enough to be fatal to the mission. The communication error was only uncovered during the post-mortem of the failed mission. This was a major failure to communicate between teams of intelligent, experienced professionals who did not check even the most obvious items in the design and implementation of the probe. "What we've got here is … failure to communicate."

Radar Red Time

In one situation in which I was personally involved, three organizations – the contractor, customer, and operational user – were collaborating to build a large radar system. The new radar was located near the old radar it was replacing. The old radar would not be decommissioned until the new radar was successfully operationally tested. In order to do this, maintenance *red time* of the old radar had to be scheduled when the new radar would be tested; this is where the three organizations *failed to communicate*. Through many planning meetings for red time, each group had a different interpretation of what exactly red time was. The meetings were productive and provided for a detailed operational test schedule. However, each organization had a different interpretation of the red time that created the resultant operational test schedule. The failure to communicate between the organizations was discovered at the first operational test event when the contractor requested that the old radar be turned off.

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The contractor assumed that red time meant the old radar would be turned off so they could test the new radar without interference from radiation being transmitted from the old radar. The customer assumed that red time meant that the old radar, while not turned off, would be placed in a maintenance state where the transmission of radiation would be rerouted through the wave-guides, eliminating a large portion of the ambient radiation. The operational user's version of red time meant that only the transmission lines for the radar data would be disconnected, so a false target would not be transmitted. Well, the reaction from the operational user was, "Turn the radar off!? The radar has never been turned off, and we don't even know how to turn it off, and even worse, we don't know how to turn it back on!" "What we've got here is … failure to communicate."

At the heart of the situation was the klystron, the large tube that generated the radiation used to transmit the radar signal. Once turned on, it had not been turned off for years and there were no procedures to turn it off and back on again. In near real time, the three groups had to communicate with the klystron manufacturer to generate a procedure to minimize the energy and redirect the lower energy down the wave-guides. The new procedure did work, and the power down sequence was successfully repeated numerous times to support the operational testing of the new radar. *Failure to communicate* the concept of red time among the participating organizations could have lead directly to a major schedule impact on the program. It forced real-time communications between the participating organizations and manufacturer, resulting in the power

down procedure. If the power down procedure failed, it would also have caused a major impact to the program. The procedure worked and the major schedule impact was avoided. What we've got here is … communication!

Contract Negotiations

In another example, we have the customer and contractor negotiating the functionality included in the contractor's proposal. During the negotiations, it was mentioned by the customer that they only had two-thirds of the proposed price in their budget. The contractor was requested to reduce their bid to match the customer's budget and to eliminate the functionality needed to hit the target reduced-proposal price. The proposal team developed the new proposal with reduced functionality to meet the customer's budget and provided the updated information to the negotiating team.

Somehow, some way, the reduced functionality was not accurately communicated to the customer. "What we've got here is … failure to communicate."

It came to light at the first customer contractor system specification review when the software technical lead presented the reduced functionality list. The reaction from the customer was not anticipated. Where were the missing functions? The ones that were eliminated to reduce the bid were the functions they were asking about and the wheels started to fall off. Under the contract, the contractor had to develop the functionality directed by the customer, whether in the specification or not, and the contractor would have to recoup the costs through the country's court system. Eventually, the program resulted in delivery of the system with the full functionality, which the customer assumed they were going to get for the reduced price that matched their budget. The extra functionality, however, required the contractor to fund the additional work. In the end, the court sided with the contractor, and the customer ended up paying for the full functionality by reimbursing the contractor for the additional funding. While eventually remedied, the initial *failure to communicate* made the entire program a contentious affair between customer and contractor.

Communication Systems vs. Communications

These three situations indicate the importance of eliminating the *failure to communicate* among program team members. It is not that we do not have adequate communication systems to communicate with, we have an overabundance of communication and collaborative systems: telephones, cell phones, walkie-talkies, blueberries, blackberries, e-mail, v-mail, fax, eRooms, Docushare, meeting rooms, Sametime (Lotus instant messaging and Web conferencing), and a multitude of other communication and collaboration systems. This is not the problem. The problem is the clear transmission of ideas and concepts between program team members that is at the heart of the problem. "What we've got here is … failure to communicate."

As the reader, you probably have examples of programs where the communication among team members was very good and the project turned out to be a success. To see the impact of good communication leading to successful projects, I like to look to the television show *The Apprentice*. The projects on the show are contrived to be completed in a short period of time to fit the presentation of the project in a one-hour time slot. It is interesting to see that almost 100 percent of the time the team that had good communication with their customer-judge, focus groups, and/or among the team members had the successful project.

> *"It was an overwhelming victory for the project manager who communicated with his potential customers. What we've got here is … communication!"*

The Apprentice – Mural [3]

In one project, two teams had to develop an advertising mural for a new electronic game. The murals were to be done in Harlem. One team was led by a project manager who came from a neighborhood similar to Harlem and she *knew* what would be a good advertising mural. Since she *knew* what the *customers* would like, she knew how to create the mural to attract customers to buy the electronic game. The other team was led by a project manager who came from an upper-edge society and was kind of a geek; he immediately set out to get feedback from a customer focus group in the neighborhood where the mural would be placed. He wanted to find out what was important to them as far as electronic games were concerned. He not only talked with the kids who would use the games, but with the parents who would ultimately purchase the games. Well, guess which team won the project? Which mural did a better job in selling the product? Was it the know-it-all from the 'hood, or was it the geek who communicated with the people in the neighborhood focus group? It was an overwhelming victory for the project manager who communicated with his potential customers. What we've got here is … communication!

The Apprentice – Solstice [4]

A second *The Apprentice* project that demonstrated the importance of communication was the development of a sales brochure to describe the new Pontiac Solstice Roadster. One team was led by and consisted of all men who naturally knew exactly what it would take to sell the new two-seat, convertible roadster. The other team was led by a woman, who, by her own admission, was not much into cars. The male-led team took the approach of making the car a macho-type of machine that would attract good-looking women to the car's male driver, while the female-led team spoke with the General Motors representatives about how they wanted the car to be portrayed. Well, you do not have to be a wizard to guess who won this project management contest. The female-led team won because the project manager captured what the executives communicated they wanted in the sales brochure. Even more importantly was that the Pontiac executives, who were also the judges of the two brochures, decided to use the brochure designed by the female-led team as the actual Solstice brochure in Pontiac showrooms across the nation. While the projects are somewhat contrived to support the premise behind the show, they do demonstrate that the ability to communicate is critical to the success of the project – any project involving a team of people attempting to accomplish a task.

Apollo 13 – Recovery [5]

The original Apollo 13 problem was caused when the number two oxygen

tank in the service module exploded because of a short circuit in the oxygen tank that occurred during a routine *stirring* procedure. This problem was not the result of a *failure to communicate*. What I am using this dramatic mission failure example for is to demonstrate the success achieved with the ability of the NASA Apollo ground team to communicate effectively, not only between themselves to develop solutions, but also to communicate those solutions to the Apollo 13 crew. The initial explosion also caused the number one oxygen tank to fail and the fuel cells that supplied the command module with electricity to have problems. In the initial 90 minutes, it was brainstormed by the ground crew to use the Lunar Lander as a lifeboat for the crew. However, the Lunar Lander was designed to be used for 45 hours only, and the return mission around the moon would take 90 hours. There was plenty of oxygen with barely enough electrical power to make the return journey. The foreseeable problem was the eventual build up of carbon dioxide in the spacecrafts. There were enough lithium hydroxide canisters in the command module and Lunar Lander between them, but the command module square canisters were not compatible with the round openings in the Lunar Lander module control system. The Houston mission control team gave the brainstorming team the materials available only to the Apollo 13 crew. The brainstorming team had to come up with the solution to the Apollo 13 *square-peg-in-a-round-hole* problem. Once they came up with the solution, they had to communicate that solution to the crew to implement. Using plastic bags, tape, cardboard, and the square canisters themselves, the brainstorming team came up with the solution. They were able to communicate the solution to the crew in time for their implementation, and the rest is history. What we've got here is … communication.

Summary

Human-to-human communication is critical in managing programs. This is even recognized in the Capability Maturity Model® Integration where stakeholder involvement, reviews with higher levels of management, and other process areas (specific and generic practices) are based on *not failing to communicate*.

I hear you was one of the most popular phrases in the late '90s. It generally translated as one person understood what the other person meant to say. While the words truly mean that you physically heard the words spoken, a more appropriate response would have been *I understood you*. I leave you with just two famous quotes. The first is a small, simple example of a failure to communicate, and the second is an excellent example of precise communication.

In the movie *Apollo 13*, astronaut Jim Lovell (Tom Hanks) tells Mission Control: "Houston, we have a problem." The line has often been misquoted as "Houston, we've got a problem." The historical quote from Apollo 13's Commander Jim Lovell was: "Houston, we've *had* a problem." The actual historic exchange was the following (the times are in mission times in hours, minutes, and sections after launch) [5]:

- 55:55:20 – Swigert: "Okay, Houston, we've had a problem here."
- 55:55:28 – Lousma: "This is Houston. Say again please."
- 55:55:35 – Lovell: "Houston, we've had a problem. We've had a main B bus undervolt."

By now, it is readily apparent the importance of communication. So in conclusion, an example of precise communication is appropriate. Again, a bit contrived, but it makes the point. In the movie *The Fugitive* during the scene right after the train wreck where Dr. Richard Kimball (Harrison Ford) escapes, U.S. Marshal Samuel Gerard (Tommy Lee Jones) has to take over a just-formed, very large search team of local police who are extremely reluctant to be led by the Wyatt Earp-type marshal. He communicates precisely what he needs done. In one short, memorable speech he states his requirements:

> Listen up, ladies and gentleman. Our fugitive has been on the run for 90 minutes. Average foot speed over uneven ground, barring injury, is four miles an hour. That gives us a radius of six miles.
>
> What I want out of each and every one of you is a hard target search of every gas station, residence, warehouse, farmhouse, henhouse, outhouse, and dog house in that area. Checkpoints go up in 15 miles. Your fugitive's name is Dr. Richard Kimball. Go get him!" [6]

Any questions on how clear his communication was? In real estate, the most important thing is location, location, location. In program management it is communication, communication, communication.◆

References

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