

Intelligent Failures



Elon Musk, the billionaire entrepreneur who brought us PayPal, SpaceX, and Tesla, recently had a spectacular failure (see graph below). His plan was to do something no one had done before: re-use a portion of a launch vehicle by coaxing it to land on platform at sea. After the fiery crash, he tweeted, “Close, but no cigar.”

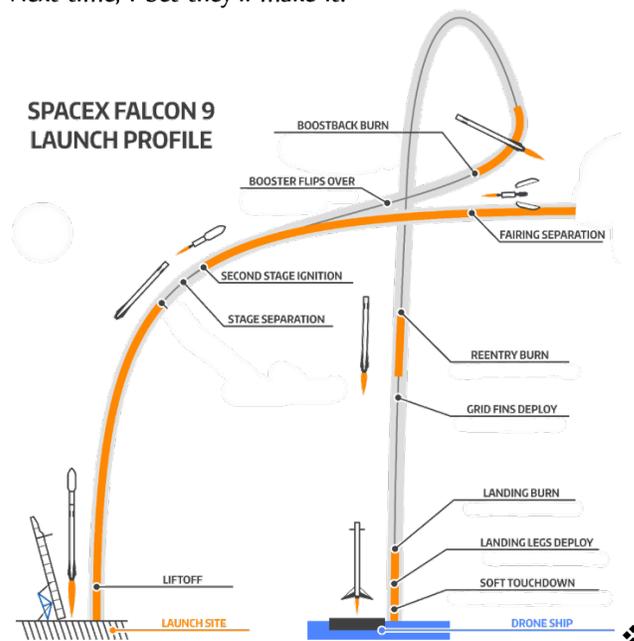
And that is that, one might think. But the second half of his tweet was this, “The future looks bright, though”. What a statement to make after such a colossal, public failure! Is this just goofy optimism or is there something more?

I vote for “more” myself – partially because this fellow seems to have the Midas touch and partially because I see the roots of “intelligent failure” in what he is doing. Let’s take a look:

- **This was a thoughtfully planned action.** No one at SpaceX was just there to “give it a go”. The top people in rocket science did their best to land that vehicle back on Earth so that it could be reused.
- **The outcome was uncertain.** Too often we try to innovate by labelling things that are ‘unusual’ or ‘optimistic’ as ‘innovation’. We are only stretching ourselves by a little bit; staying close to home in order to save face or not fail too obviously. SpaceX was reaching for a new, uncertain, frontier in space flight.
- **The experiment was of modest scale.** Elon Musk, his scientists and engineers, did not bet the farm on this venture. The mission, to replenish the International Space Station, went off without a hitch. As a bonus, they were trying to land the 14-story tall booster rocket back on the planet in order to use it again. Failure was an option.
- **It took place in a domain where there could be effective learning.** The rocket was monitored through every step and, within hours, video of the vehicle was on youtube.com for all the world to see. The robotic ship/landing pad was far out to sea, so no employees or bystanders were going to get hurt if there was a crash-landing.
- **It was consistent with the mission of SpaceX.** Not only does SpaceX want to be commercially viable, but also environmentally responsible. Dropping gigantic rocket boosters into the ocean may be how things are done by NASA, but Musk sees a better, and cheaper, way.

- **It had pre-determined cut-off points.** If the rocket had strayed or gone out of control, engineers had ways of shutting the system down to avoid any injury to the payload, shipping, or people.
- **It was executed by people who had relevant skills.** SpaceX didn’t invite Elon Musk to guide the rocket booster back to the automated spaceport ship. The top engineers in the field were in charge and nearly landed the rocket in one piece. Sadly, just before touchdown, the ‘hypersonic grid fins’ lost their hydraulic fluid. The rocket’s approach was too fast and it crashed into the ship, disintegrating as it fell into the Atlantic Ocean.

So, it seems Mr. Musk’s optimistic tweet was justified. SpaceX engaged in an “intelligent failure”. Next time, I bet they’ll make it!



Dr. Peter Gillies is a freelance organizational development consultant and owner of GMD. He employs psychological concepts to understand and enhance organizational effectiveness. Dr. Gillies is a resident of the Netherlands and actively teaches and consults across Europe.