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The ValuJet Plane Crash

In May of 1996, the commercial Airline ValuJet had one of their plane's crash, resulting in the deaths of everyone on board, over one hundred people. Luckily, the first responder to the accident, Walton Little, was nearby, and had a knack for accurately describing situations. Little described the type of plane, and exactly what happened, allowing for the ValuJet airline as well as accident experts to figure out what had happened as quickly as possible. The cause of the crash was a fire on board, causing the systems within the plane to fail and the plane to fall out of the sky. The article that describes this story goes into a lot of detail regarding all of the different causes for the plane crash, and depicts every possible place that could have led to the fire on board the ValuJet 529.

ValuJet was a very low quality and cheap airline that existed in the 90s. The company spent a lot of time cutting corners as often as possible, all in the name of maximizing profits. This did not bode well for them, however, as the crash of ValuJet 529 caused their company to be recommended for termination. The article describes three types of accidents that happen to airplanes, the first of which - and the most common - is procedural error. These are simple accidents that have simple solutions to prevent them, such as training pilots to not fly into thunderstorms, or take off with ice on their wings. All levels of the airline company must follow these rules to prevent as many procedural errors as possible, and practitioners must work to compile as comprehensive as possible of a list of rules to be followed. The second type of

accident to commonly happen is engineered errors. These are errors that are built into the system, and they should have been caught by the expert designers of the system, but were not. Nobody who is running the system that was built by the designers have any way of knowing that these errors are something that can happen. The more engineering put into building a system, the less of these errors there are. Such errors can only be prevented by carefulness of the designers. The last type of accident is a system accident. This is the type of accident that the ValuJet 529 flight accident falls under. These are accidents that could not have been predicted, and arise out of the natural chaos of the system itself.

Miscommunication of the employees of the ValuJet led to over 100 oxygen tanks being put in unlabeled cardboard boxes the cargo hold. This made the plane extremely flammable, and actions the ValuJet company, lacking carefulness, led to a higher chance of a system accident happening. The fire detection systems in the cargo hold had been disconnected. Nobody knows if it was on accident or done on purpose to save on electricity, but this led to a fire in the cargo hold not being noticeable until it began causing issues. This sort of system accident could not have been predicted, and resulted from the lack of carefulness that was bred into the employees of ValuJet. Chaotic systems like that of a massive organization of people are affected by many different aspects, that can range anywhere from the weather on a given day to how a particular employee is feeling on a given day.

Communication is immensely important when dealing with a software development team, and will lead to being able to develop an efficient and useful software application. Our team has weekly meetings in which we explain what we did during the week and explicitly list what we are going to do in the upcoming week. This is to minimize system errors that might

arise from lack of communication, most notably between the frontend and backend teams. It is harder to draw the line between engineering and system errors when it comes to software development, as the team is much smaller than the set of all airline employees that work for a company. However, if there is a call that is expected by the frontend that does not exist in the backend, the system might be put into service with a horrifying bug that was caused by miscommunication.

Additionally, it is important to emphasize clarity and coherence when it comes to software development. This comes in the form of having explicit documentation that clearly states what the application can and cannot do and does not leave anything ambiguous, while at the same time not making everything seem too complicated. Having too ambiguous or too complicated design documentation might lead to a user or someone else on the development team misunderstanding the purpose of a given element in the design. There is a proper in between that can always be achieved that will optimize workflow and understanding of the product. This also can come in the form of having clear and clean code. If code is hard to read, it can be misinterpreted as doing something else. At the same time, if code is unnecessarily complicated, it might lead to slowdown in systems that could be much faster.

The 1996 ValuJet 529 plane crash is a catastrophic event that can be viewed as something to be learned from. It is an example of miscommunication and lacking the proper carefulness that leads to quality of product. Something as awful as this should never have to happen again, and most likely the exact same mistake will never happen again. It is important to extrapolate from events like this to the types of errors that can happen, and get an insight into what could happen,

so as to minimize as much error as possible. Without this sort of error correction, we will end up repeating accidents that have happened in the past.