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Signed: _____

PART 1

1.1 ORCA

In the 2012 US Presidential election, Mitt Romney had his team develop an operational management system that would provide real time tracking of voter turnout in key states (Goatham, 2012). The intended purpose was to manage the logistics of their “get out the vote” push (a distinct phase in a political campaign where campaign supporters vote) as the Election Day progressed. The system was fed real time data from volunteers at the polling stations through a web-based mobile app so that it could be gathered and read by campaign headquarters. The alternative to this system would be to carry out a series of phone calls or track news sites in order to identify low turnouts within certain precincts.

The system was designed as a web application intended to be accessed on a mobile device. The system would show the names and addresses of each voter for a precinct and signal when they voted.

Volunteers experienced problems on Election Day. The system crashed sporadically throughout the day when volunteers attempted to log in. This created a surge in traffic, the campaign’s Internet Service Provider (ISP), terminated the network connection in belief that it was denial of service attack (Gallagher, 2012).

The system used HTTPS but the developers had forgotten to redirect users who were attempting to use the HTTP address. Users who typed the address with “www.” were unable to reach the system, causing volunteers to think it was down. To login, the user had to enter their username and password along with a PIN. Colorado campaign officials reported that hundreds of volunteers were unable to log in and the reset password tool was not working. At 6 p.m. they admitted they issued the wrong PINs and reissued new PINs, which also didn’t work (Kranish, 2012). Volunteers who contacted technical support were given a busy tone or a “try again later” message.

This system can be compared directly to the oppositions system, “Narwhal”. Narwhal had minimal complications on Election Day and attributed its success to its testing process. Obama’s campaign team held dress rehearsals for their system before its full use (Goatham, 2012). The ORCA system had not received extensive beta testing and the campaign team didn’t know how it would interact with the data infrastructure in their headquarters (Falcone, 2012). Another failure was that nobody notified their ISP to expect an increase in traffic. The development team were too dependent on the automated testing results rather than stress testing the system in its full operational environment. There was also a lack of risk management as the system deflected from the intended business goal. The failure to address these issues can drastically raise stress levels of the system at critical points in time and divert important resources away from core business functions, and will eventually lead to embarrassing end-goal failures.

1.2 QUANTAS

Jetsmart was a parts management system, with software issues since 2004, it was said that the software was too difficult to use and unnecessarily increased the workload of the users. The worker's union at the time advised the mechanics to not assist with the implementation of the program.

Qantas Engineering's executive general manager acknowledged problems with the system saying, *"During the development phase some issues arose with the system, training and the management of change."* (Krigsman, 2008)

We can see from this that there were problems with the system's simplicity and people found it hard to learn, this showed that certain parts of the system were not implemented from a usability viewpoint.

Qantas's Chief Financial officer said *"We wouldn't ask the engineers what their views on our software systems were. We'll put in what we think is the appropriate for us."* (Ryder, 2008)

From this quote, it's clear there was a strange attitude towards the engineers who would be using the system. The chief financial officer purposely decided to build the system in the way he thought best, not what would be best for the users. P

Poor management doomed Jetsmart from the start. By not taking the input of the engineers involved, the users wouldn't feel confident working with software that was designed by people who were not qualified to determine the needs of the software. These engineers would be responsible for the lives of passengers, so software that was not made with their expertise would be dangerous to use. Anyone who read the comments of the Chief Financial officer would feel fear towards the success of Jetsmart as it is clear management does not being understand basic IT issues.

Back in 1995 this was the description of Qantas' IT infrastructure, *"The carrier's 50-year-old IT shop is presently wrestling with the management of 700-odd applications, many of which are written in older programming languages such as COBOL and FORTRAN, and serviced by an aging group of programmers."* (Krigsman, 2008)

We can see here that before development of the Jetsmart system Qantas already had a complex and difficult IT infrastructure. Outdated technology was holding the company back and costing it money. When Jetsmart came in as an attempt to modernize the infrastructure it was already at risk due to the poor planning of the systems that came before it.

To fix the issues in the software development cycle there should have been more user input. The engineers who would have been using the system were taking out of the design process. This lead to fear within the worker's union who refused to help with the implementation of a system that they didn't deem helpful. If the engineers had been involved with the implementation of the system, instead of being ignored by management, the system could have been designed correctly. Meaning that the stakeholders wouldn't have been so afraid to continue supporting the program as it wouldn't have been rejected by the people who were meant to use it.

1.3 AVON PROMISE

Avon is one of the world's most established direct sales companies and relies strongly on their sales representatives. Avon planned to launch what was dubbed the "Promise" project, which was a new sales order management system allowing Avon to reduce costs. The system utilized a new back-end ERP system with a new tablet based e-commerce front end that was expected to streamline the ordering process enabling the company to potentially save approx. \$40m a year (Henry, 2014). The program was piloted in Canada where sales representatives experienced many issues with the front-end, leading to a drastic decrease in productivity and the Promise project being abandoned in 2013.

Many front-end issues were reported such as login issues, not accepting orders, not saving orders or reserving orders. Issues of usability were also reported (Henschen, 2013). Lack of testing before launch and an inadequate design of the front-end components of the system is what caused the project's failure. The complex system took more steps to perform tasks than was needed.

Production began in 2009, in May 2013 the system was piloted in Canada. Many sales representatives work part-time and some only earn between \$50-\$100 a month. For many of the staff, the system was so difficult to use it wasn't worth their time for the little money they receive. When representatives reported issues, they were told the system was working, leading this one independent executive sales representative to state that it made sales representatives "*feel that Avon is trying to portray the representatives as too stupid to use the technology*". She reported that she had lost over 1/3 of her sales force and speculated that Avon may have lost 16,000 sales representatives across the country (Henschen, 2013).

In an 8-K filing with the SEC in December 2013, Avon stated that the piloted launch caused "*significant business disruption in that market, and did not show a clear return on investment*". They decided to halt further roll-out of the service model transformation system "*in light of the potential risk of further disruption*" and reported an approximate write-off of \$125 million (Ross, 2013). Avon has been suffering in recent years with global sales decreasing each year and in 2016 completed the sale of its American branch (BBC, 2016).

While Avon claimed their app worked, reports from sales representatives showed it didn't (Beldon, 2013). Had Avon taken responsibility for the failure of the system they may not have lost sales representatives. It is clear sufficient testing and maintenance wasn't performed on the system before it was launched and representatives who used the system should have received more training. Rushing a system into use can clearly have a detrimental affect on a business.

PART 2

The products outlined above have many similarities. A clear similarity between all products was the intention to be used by a large user base. The ORCA system was to be used by thousands of Americans. Promise's system was to be used by 6 million representatives globally. Jetsmart's system was to be used by engineers in Australia's largest airline Qantas.

In Orca and Jetsmart, lack of communication between external factors before launch hindered the effectiveness of the software. ORCA developers failed to inform their ISP about the surge in traffic. Qantas's management purposefully did not communicate with the engineers who were to use the software, designing for only what they deemed necessary. In both projects this severe lack of communication caused large scale failures, making the systems unusable.

A lack of testing can be seen as clear factors in the failure of ORCA and Promise projects. Both systems showed front-end issues, logging in being reported as an issue users met with both products. Stress testing the ORCA system and user testing the Promise system would have led to a higher chance of success of both systems.

ORCA and Promise suffered from poor technical support. When users attempted to contact ORCA they were met with a busy tone and were sent out incorrect pins for log in. Promise's users were told the system was working correctly and that there was nothing to fix. Lack of a good technical support system for these systems resulted in the frustration of users and therefore, they discontinued the use of the system.

There were also dissimilarities in each project that led to system failures. ORCA stands apart from the other two projects in that its planned usage was just for one day, meaning once the product was launched solutions to issues needed to be instantaneous so as to not delay the functionality of the system. This product's success or failure relied on it functioning on just one day, this was a huge factor in the project's failure, as testing is important.

One dissimilarity that Jetsmart had was their developers and technology. Qantas developers had a library of outdated technology dating back fifty years, using outdated languages and ageing programmers who wouldn't be used to newer development processes.

Avon's management stands out from the other projects' in their attitude to complaints about the system. Avon took the stance that the system was working correctly despite complaints of user-end issues. This attitude was strongly opposed by sales representatives as the management were implying the employees lacked the ability to use what was meant to be a user-friendly system.

ORCA would have been able to prevent launch day issues if they had used Test-driven development (TDD). By looking for failures before they wrote more code they would have been able to catch the problems early and not tacked on new features atop broken ones.

User-centered design (UCD) in Promise would have helped to understand user needs. The primary elements of this process are visibility, accessibility, legibility and language. The first two of these elements were ignored. With users unable to log into the product and all items being in list format, the accessibility was low as simple tasks took more time and often included extra steps. Visibility was poor as the program was mainly laid out in list format making it hard to judge what you could do from each page.

Behaviour-driven development (BDD) takes TDD and adapts it to work with both business interests and technical insight. This means that the engineers who were didn't have any input with production would of been able to access tools which would have let them help with the development of "Jetsmart".

When developing, software taking the cheaper and quicker route with development may cut down on costs. With the product being deployed quicker, companies can start selling earlier and have increased profit from the product quicker. When this is done, there is a risk of there being mistakes in the program. The additional cost of fixing the mistakes, mixed with refunds and possibly even legal fees, could far exceed the costs of a longer development process.

There is a difficulty in striking a balance between robust and inadequate processes as some factors may arise from unforeseen circumstance. For example, the ORCA developers issuing incorrect PINs. Also, some development teams may be new to different processes therefore a learning curve must be compensated for.

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