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# Discussion instructions

## Discussion Topic

Identify an instance of a failure with an information system, with a focus on the reasons for the failure.

## Instructions

* Identify a specific incident (not covered in your reading list) where the failure of an information system has had a significant impact.
* Your post could consider a range of impacts of the failure, including: the implications to customers, the economic cost, the reputational cost, or any other relevant impacts.

# Initial Discussion post on Walkers crisps

The company walkers suffered disruption to the production of crisps for weeks because of a faulty IT system upgrade (BBC, 2021). An automated warehouse would streamline distribution to customers and increase the warehouse capacity up to 29% (Mirror, 2021) but instead, the production ran at low capacity and the shortage in stores increased demand for other crisp producers (Business Live, 2021). Monetary losses for Walkers have not publicly been substantiated, but it can be assumed the considerable reduction of production has had a significant economic impact on the company.

For five-year-old Ava from Leicestershire, the shortage could result in a hospital stay, as the result of her disorders meant she eats two packets of Walker's baked sea-salt flavoured crisps twice a day; without which she would become lethargic and withdrawn (BBC, 2021). Her parents spent between two to three hours a day driving around stores to find said crisps to no avail.

Although what exactly went wrong with the system upgrade is not publicly known, one can only assume it is embarrassing for the IT staff responsible for the upgrade since there were obviously mistakes made.

Walkers’ crisp supplies disrupted after computer glitch. (2021). BBC News. [online] 29 Oct. Available at: https://www.bbc.co.uk/news/uk-england-leicestershire-59090278 [Accessed 11 Mar. 2022].

Pegden, T. and Hanlon, T. (2021). Walkers struggling to make enough crisps as shelves go bare after factory glitch.  Mirror. Available at: https://www.mirror.co.uk/money/walkers-struggling-make-enough-crisps-25317208 [Accessed 11 Mar. 2022].

Pegden, T. (2021). Walkers Crisps struggling to produce snacks. [online] Business Live. Available at: <https://www.business-live.co.uk/manufacturing/walkers-crisps-struggling-produce-snacks-21985677> [accessed 11 March 2022]

Walkers’ crisp shortage leaves Leicestershire family desperate. (2021). BBC News. 18 Nov. Available at: https://www.bbc.co.uk/news/uk-england-leicestershire-59323918 [Accessed 11 Mar. 2022].

## Response 1 to my post

*In as much as every system needs to grow with the demands of the customers and this can easily be achieved through upgrades, it is important to also note that we are better of with a slow and old system that delivers accuracy than a new system that is fast but makes errors. even worse, making errors unknown till the damage is too much to be handled.*

*For this reason, development cycles for newer systems should be carefully and thoroughly tested. ensuring that all dependencies and system requirements are properly met. The release process should not be rushed.*

Reference:

*Dumitraş, T. and Narasimhan, P. (n.d.). Why Do Upgrades Fail and What Can We Do about It? Toward Dependable, Online Upgrades in Enterprise System. [online] Available at: https://www.pdl.cmu.edu/PDL-FTP/ProblemDiagnosis/dumitras09whydoupgrade*

## Response 2 to my post

*Maja, as someone who particularly enjoys Walkers on occasion, I appreciate your post.  Like you, I have been unable to find a credible source detailing the precise problem Walkers faced with their system upgrade. The additional articles I read seem to indicate that the issue impacted the system responsible for the actual crisp production and packaging, since shops had noted a severe decrease in the number of products delivered and presumably contacted Walkers (Day, 2021; Pegden & Hanlon 2021; The Guardian, 2021).  This was likely a problem with the factory’s supervisory control and data acquisition – or SCADA – system, which incorporates the software and hardware required to execute industrial processes such as manufacturing (Process Solutions Inc., 2019).  SCADA systems are often highly complex, deal with myriad legacy system components, and each factory configuration is unique (Yardley, 2008). This means that SCADA systems have to be tailored – or in some cases, built from the ground up – for each application, which creates more potential for problems to arise (Yardley, 2008). Based on current trends with SCADA system upgrades, Walkers may have been upgrading their manufacturing system to “Industry 4.0” standards, incorporating internet-of-things (IoT) technology to increase automation, control, and analysis functions (Liagkou et al, 2021). These same technologies also power the life-sustaining systems across the globe, from insulin pumps to nuclear power stations – so improving the design, implementation, operation, and security of SCADA systems is vital to our existence as we know it (Yardley, 2008).*

References

*Day, A. (2021). Shortage of Walkers crisps as empty shelves blamed on computer glitches at factory. [online] iNews, Associate Newspapers Limited. Available at: https://inews.co.uk/news/walkers-crisps-shortage-computer-glitch-supply-issues-empty-shelves-1276407 [Accessed 19 Mar. 2022].*

*Liagkou, V. et al. (2021). Challenges and Opportunities in Industry 4.0 for Mechatronics, Artificial Intelligence and Cybernetics. [online] Electronics 10(16):2001. 10.3390/electronics10162001. Available at: https://www.researchgate.net/publication/354017179\_Challenges\_and\_Opportunities\_in\_Industry\_40\_for\_Mechatronics\_Artificial\_Intelligence\_and\_Cybernetics. [Accessed 19 March 2022].*

*Pegden, T. and Hanlon, T. (2021). Walkers struggling to make enough crisps as shelves go bare after factory glitch. [online] Mirror. Available at: https://www.mirror.co.uk/money/walkers-struggling-make-enough-crisps-25317208. [Accessed 19 March 2022].*

*Process Solutions, Inc. (2019). What is SCADA and how its used in Manufacturing. [online] Available at: https://processsolutions.com/understanding-scada-and-what-it-can-do-for-you/ [Accessed 19 Mar. 2022].*

*The Guardian. (2021). Walkers crisps shortage could last until end of month after IT glitch. [online] Available at: https://www.theguardian.com/business/2021/nov/07/walkers-crisps-shortage-could-last-until-end-of-month-after-it-glitch. [Accessed 19 March 2022].*

*Yardley, T. (2008) SCADA: issues, vulnerabilities, and future directions. [online] ;Login: December 2008. Available at:* [*https://www.usenix.org/system/files/login/articles/258-yardley.pdf*](https://www.usenix.org/system/files/login/articles/258-yardley.pdf)*.*

*Response 3 to my post*

*Hi Maja,*

*Thank you for your post and research.*

*Based on your response, it is evident that you understood and appreciated how upgrading IT systems correctly is of the utmost importance to support the intended use of information systems in a business, and how and why it should be performed and monitored appropriately for real-life applications, such as to aid warehouses’ operations.*

*Nevertheless, prior to describing the case study on Walkers, you could have provided further context to outline the process involved in upgrading similar IT systems, the monitoring thereafter, etc., and what could go wrong at which stage of the process in the context of software used by such large-scale companies in that industry. Furthermore, you could have leveraged peer-reviewed sources, including journal articles, to corroborate the information you included in your post. Moreover, adding various types of references, including books on this and other similar case studies, would be useful to account for different readers and preferences adopted in their learning.*

*Overall, you used up-to-date web sources well to support statements defining the impact of the system failure you described, as well as providing a very interesting case of a five-year-old child who relied on the availability of such crisps to avoid a hospital stay. Thanks for your contribution.*

*I hope this review is helpful for you.*

# Initial post on MCAS system by Charles

*Boeing developed the Manoeuvring Characteristics Augmentation System (MCAS) in the Boeing 737, Max, to prevent stalling of the aircraft. Two accidents with a fatality of 346 were reportedly linked to the software resulting in the grounding of the aircraft by several airlines. According to evidence collected from some pilots, the software continuously controlled the aircraft when it detected stalling. The initial design made it difficult for the pilots to override the software’s decision where human intervention would have potentially resulted in a decision that is different from the machine recommended.*

*According to John McDermid (2020),*

*“The system was also hard to override. In both cases, the flight crews were unable to override the MCAS, although other crews had successfully managed to do so in similar situation, and this contributed to the two accidents.”*

*The software has since been updated to prevent similar accidents from occurring. The updates give more control to the pilots giving them the ease to disagree with the software’s recommendations. Some additional training has also been introduced for pilots to be able to handle situations that may arise from the software’s recommendations. While there are still some trust-related issues, some airlines have restarted flying the aircraft.*

References

*McDermid, J (December 2, 2020) Boeing 737 Max: why was it grounded, what has been fixed and is it enough?*[*https://theconversation.com/boeing-737-max-why-was-it-grounded-what-has-been-fixed-and-is-it-enough-150688*](https://theconversation.com/boeing-737-max-why-was-it-grounded-what-has-been-fixed-and-is-it-enough-150688)*[Accessed 14 March 2022]*

*Gates, D  &  Baker, M (June 24, 2019)The inside story of MCAS: How Boeing’s 737 MAX system gained power and lost safeguards*[*https://www.seattletimes.com/seattle-news/times-watchdog/the-inside-story-of-mcas-how-boeings-737-max-system-gained-power-and-lost-safeguards/*](https://www.seattletimes.com/seattle-news/times-watchdog/the-inside-story-of-mcas-how-boeings-737-max-system-gained-power-and-lost-safeguards/)*[Accessed 14 March 2022]*

*Federation Aviation Administration (November 18, 2020) Summary of the FAA’s Review of the Boeing 737 MAX*[*https://www.faa.gov/foia/electronic\_reading\_room/boeing\_reading\_room/media/737\_RTS\_Summary.pdf*](https://www.faa.gov/foia/electronic_reading_room/boeing_reading_room/media/737_RTS_Summary.pdf)*[Accessed 15 March 2022]*

## My response

Hi Charles,

Thanks for this interesting discussion piece.

The MCAS system sensors did not cross-check the readings to confirm the reading. As Roberto mentioned, Boeing made the executive decision to not treat the 737 Max as a new aircraft to avoid money being spent on pilot training, the MCAS system was not known to pilots (Johnston and Harris, 2019). In the Lion Air crash, there was a 20-degree discrepancy between the sensors.

Four main reasons have been found to be behind the failure of the MCAS that caused the two crashes. I) poor documentation, ii) rushed release, iii) delayed software updates, and iv) humans out of the loop.

The pilots reported non-existent training on the aircraft, and no instruction in the manuals about the MCAS system, which led to the pilots of the Lion Air crash did not know of its existents. The black box shows the pilots frantically searching the manual and trying to unsuccessfully override the system 21 times. The rushed release meant corners were cut, with engineers reporting double the normal workload in a shorter time span. Updates to the system were delayed, by as much as about 4 months. (Johnston and Harris, 2019).

It has been argued that the fault is not bad software per se, but quickly applied patch within a larger system context. The lesson to take from the MCAS failure is that a complex system may not be forced to perform tasks it does not have the capacity for. Boeing took an existing system and altered it for monetary and time-bound reasons, trying to optimise the system by optimising parts of it, not the system itself ensuring all parts function properly together. (Johnston and Harris, 2019).

It is particularly important to allow a user of a fully automated system to override its functions. A system designed to perform specific tasks on limited data cannot improvise or understand it is not performing as intended. As research analyst Colin Barnded concluded regarding the MCAS system, there was a “failure of intended function, a plane shouldn’t fight the pilot and try fly into the ground” (Yoshida 2019).

References

Yoshida, J. 2019. Boeing 737 Max: Is automation to blame? EET Asia (March

19). Available from https://www.eetasia.com/news/article/Automation-and-

Boeings-B737-Max-Crash.

Johnston, P., Harris, R. (2019) The Boeing 737 MAX Saga: Lessons for Software Organizations *Safety and Automation* SQP VOL. 21, NO. 3/© 2019, ASQ

# Summary post on Walkers crips’ IT failure

The failure of an IT upgrade at Walkers crisps led to months of crips to being available on the shelf. Unsubtly it must have cost Walkers a significant amount in loss of sales, and a tarnished reputation.

# Summary Post on MCAS system

It is undoubled of importance for developer teams to avoid systems failure. Not only is it costly but also not a flattering looks on the company whose systems fails. In the case of Boeing, the monetary negative impact cost the company and their reputation was tarnished. The MCAS system raises the question of ethics in developing systems as the pilots could not override a faulty program, causing the death of passengers and pilots.