# New Shiny Toys and a Broken LED

PENNANT'S THOUGHT LEADERSHIP ARTICLES

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# New Shiny Toys and a Broken LED

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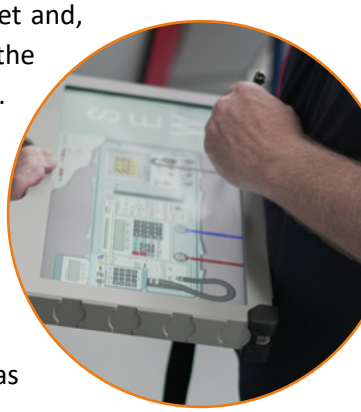

These contracts are certainly worth celebrating; they're announced in the news, in the budget and, obviously in the triumphant internal bulletins of the companies who win the contracts to create the "new shiny toy". So, I can understand why design and build is at the forefront of people's minds … to an extent … but I must ask, **how often is the support solution designed, celebrated or even spoken of!?** Don't get me wrong, I'm not precious about the field I work in, but design and manufacture of the new toy always seem to be considered more glamourous, prestigious and more important than the design and build of its support solution. The trouble with this view is that the contract will always end up costing a LOT more through-life, if support isn't considered early enough to be developed effectively. After all, if the support solution isn't right, it's likely to be far more detrimental to the toy's mission readiness and ability to carry out the function it was designed and built for in the first place.

The concept of "planning for success" (which feels a little bit like designing for support, no?!) has always seemed logical and, I guess, natural to me; why would you not?! I'm a little ashamed to admit this, but, even when I look back at my thought processes during childhood, I still vividly remember choosing the Lego block I had in most abundance for the most important part of my design (in case one broke, of course). Way back in the '90s when the Subaquatic Lego Wars were in full swing, I designed and built my own submarine. I named her "the D.A.S"; Defence Attack Sub (I know, stupid name – no idea what I was thinking!). Primarily, she was built to give me torpedo launching capability; not only to build resilience in my naval fleet, but also to give me the edge to effectively defend my underwater colony. As Commander, I needed her to always be mission ready. I wasn't about to sit by and let my Aqua Dome Kingdom be destroyed or fall into enemy hands; and I most CERTAINLY wouldn't have been a happy camper if it fell because, for instance, I didn't have a spare grey corner block with which to fix my torpedo hatch (obviously, that never happened – I had loads of those because I'd designed for support …). But seriously, imagine if "HMS D.A.S" was a real toy the Royal Navy had to play with … and imagine if it was imperative for her to always be mission ready to defend her Kingdom in times of peril. I'm guessing the news bulletins would be somewhat less celebratory if she had to remain in the toybox due to incorrect spares, or poor maintenance, or because her documentation was incorrect … or because she was too expensive to support maybe …? **Let's face it, there's little point in having a new shiny toy if it can't be played with.**

Now I've grown up and I'm no longer Commander of the D.A.S, I'm still amazed why you wouldn't look to actively position yourself for long-term success when designing a product. Furthermore, my views are increasingly reinforced as I come across more examples demonstrating when the exact opposite has clearly happened! In fact, I've never witnessed such a perfect example of how NOT to design for support, until I purchased a new shiny toy about this time last year; an American style fridge-freezer in which to house beer. **I know it will be hard to believe, but I assure you the following account is entirely true…**

## A BROKEN LED

Beer must be cold. Fact. We were lacking space in which to chill said beer, so we embarked on the journey of searching for another fridge. The preferred appliance was selected from several designs because it was manufactured by a well-known company with a reportedly good reputation. The price was relatively comparable to similar models, and most importantly, because it would do what it needed to do. Namely, the design met the User Requirement (UR) cost effectively, with high confidence in its operational availability. The key customer UR was this: "contents of the fridge (beer) must be viewable from the outside by knocking on the glass to activate the internal LED"… Yes, I know; just what everybody looks for in a fridge. Me being me… I questioned the 'logic': "Why pay more for this design just so you can look at beer from the outside?! Why not spend less on another unit (and therefore more on beer!) and just open the door when you feel the need to have a look!?"… I should have known not to pull on that thread, because even as I spoke the final word of my sentence, I felt the imminent "walk-through of 'reasoning'" incoming. I was not wrong… and so my education began:

"Err, because then I'd have to open the door - the whole point is NOT having to…"

I admit, as my lesson continued, the 'uncontrollable urge' that I have in me to speak that magical three-letter word grew stronger…

"…the external visibility obviously isn't about practicality, it's about the "coolness vibe" and the "wow-factor...".

Silly me. His questionable 'logic' was now starting to get my goat, but after finding out the hard way last time, I knew that asking "why?", would just rock the boat… so I chose the path of least resistance after realising, "actually, I'm really not THAT fussed". I agreed that it would be a cool feature, we purchased the unit, and "the Customer" was a happy bunny. It wasn't cheap (around £1600) because, as I said, it was manufactured by a very well-known company (who will remain nameless, because this true account is an absolute corker!).

About 4 months in, the "Customer", upon trying to view the contents of said appliance, realised the internal LED had stopped working; as the unit was still in warranty, I contacted the OEM who sent an engineer out to repair it. Happy days… well, not so much, but on the plus side, it did give me the best laugh I've had in a while…

**FIRST VISIT:**

- **When the engineer arrived, he took a look and consulted the technical manual to determine the failed component and its part number. He located the correct LED and said he would order it and return as soon as it was delivered. The part arrived and the engineer returned for a second visit …**

**SECOND VISIT:**

- **After trying to remove the failed LED, the engineer had to call the design team, who advised that a special tool should have been detailed in the manual as being needed. After a bit of "back and forth", it was agreed that the tool was definitely not listed as being needed; so, the designers gave the engineer the part number for the tool, he ordered it and returned for a third time.**

**THIRD VISIT:**

- **After trying to remove the failed LED with the special tool the engineer now had, he had to call the design team AGAIN (who too, were baffled); the engineer was transferred to the senior design team who dug out the drawings and wiring diagrams and pinged them over to him. Me being me … at this point, I asked to have a look to satisfy my curiosity … The documents indicated that the LED wiring was built into the molded plastic bodywork of the fridge … which, by the powers of deduction, suggested the LED couldn't be replaced without essentially, ripping the thing apart. I asked the engineer "surely you don't need to replace the whole interior to replace the LED?". The engineer, now on the phone again asking that same question to the designers, responded with a facial expression of "errr … yeah, that's what it looks like …".**

**Then it got better. Immediately after this non-verbal interaction, the senior designers delivered their verdict.**

**FAILED LED - "SUPPORT SOLUTION":**

- **It was confirmed that, yes, it was indeed correct that the entire interior of the fridge would need to be replaced for the LED to be changed; and THEN (wait for it …), they confirmed that the entire appliance was now to be written off and disposed of as Beyond Economical Repair (BER)! They advised the engineer to contact the warranty team to arrange a collection and replacement of the entire 4-month-old, £1600 fridge-freezer!**

Well … "beside myself" doesn't even come close to the state I was in at this point; I burst into what can only be described as uncontrollable, maniacal laugher. Suffice to say, the engineer laughed as well; but when he'd left, the hilarity I felt subsided and morphed into a strange irritation (you know the kind when you realise you forgot to cut a sharp label from the inside of you shirt – the scratching is just so unnecessary considering you could have prevented it!). I wasn't irritated with the engineer, but with the OEM. As a company, they certainly appear to have the capital to conduct comprehensive Product Support Analysis (PSA) to help inform their design decisions; and, as one of the big players in the world of electrical products, one might even assume that PSA helped them get to that position! In today's world of "cheap, mass production" (and barring the obvious environmental "throw-away" aspect to the following consideration), I could maybe understand if PSA deemed it more economical to mass produce the unit with a single-piece inner liner, rather than manufacture removeable, modular panels to accommodate replacement of the LED. Considering the scale of production and the probability of LED failure, I could maybe understand the OEM taking a calculated risk on the level of repair, if that's what happened here … But evidence suggests that is not what happened; the OEM designed the unit with the single-piece interior but then explicitly stated that the LED could be replaced!

So … just to summarise this "absolute beauty" of an experience (there is no better phrase I can think of): not only had the OEM told their OWN engineer to buy a component that can't viably be replaced, using a tool they didn't say was needed … but because supportability (clearly) wasn't considered as part of the initial design and build, the OEM's support solution was to scrap an expensive 4 month old fridge-freezer all because a 10cm LED stopped working!!! The OEM appears to have more money than sense … or … maybe they just focus on the design and manufacture of the new shiny toy with the assumption that **"ahhhh, support always just happens" …**

**Wrong.**

Well, not wrong, "support" will always happen, because it must; I'm sure there would be some very unhappy campers and unfavorable news stories if toys broke and nothing was done about it! That said, when the support solution that "just happened" is needed, it will almost certainly be unnecessarily inefficient, expensive, and will only serve to increase

downtime; needless to say, this could be rather inconvenient if it impedes operational readiness at a critical time. The toy would have to be put back in the toybox, the beer would not be visible from outside, and the world would come crashing down. Bad times all round.

Don't get me wrong, I'm not in any way, shape or form under the illusion that viewing beer is at all comparable to the importance and complexity of Defence support, just simply trying to demonstrate how the right support solution can make all the difference. You can change the scenery but not the situation; the premise is essentially the same but just on a (very) different scale. Effective support solutions do not "just happen"; they need to be carefully designed and implemented, even more so in the Defence industry. The headlines wouldn't be very complimentary if a hatch failed on the "real-life" HMS D.A.S during an operation when she needed to launch a torpedo; especially, if it transpired the failure was due to an inexpensive component that can be bought from any old hardware store. But … imagine, if after receiving the spare the OEM said could be changed, ship staff then didn't have the right tool to fit it (because it wasn't listed in the manual) and, upon querying the documentation, the maintainer was then told "actually, don't even try to fit it because that part wasn't designed to be changed in the first place"! It, quite literally, could mean the difference between life or death for those putting their lives on the line for us.

**Design FOR Support.**

**Design THE Support.**

**DELIVER the Support.**

**SUPPORT the DESIGN.**

Next time when you're designing a fridge or a toy for Defence, do yourself a favour and get your fellow ILS engineers involved at the get go – that way, the LED could be replaced if economical to do so. After all, you're designing the product anyway, we might be good cannon fodder to keep the bad headlines at bay if things do go wrong, and we're, generally, friendly people who just like to feel involved! Not only will your team be all-the-more cheerful with us on board, but we will be happy because we will get to help make a difference when it really matters! Ultimately though, aside from smiles all-round, you will **save yourself considerable money in the long run ... and that's extra money you can use on new shiny toys next time you need to refill the toybox.**

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