

## Original Pixar version of the story spine

**Once upon a time...** It's the year 2000. David Beckham was a footballer; the Nokia 3310 was the best-selling mobile phone and people played Snake; Destiny's Child are in the charts and Coldplay release their first album.

**Every day...** neodymium was in the ground as ore, doing nothing.

**Until...** one day it is dug up, refined in a process involving dozens of chemical processes, mixed with iron and boron, heated in a vacuum induction furnace until melted, cooled to form ingots before being ground into tiny grains, then pressed in a mould while being exposed to a large magnetic field produced by an electromagnet. It's a violent process!

**Because of that...** it finds itself pushing and pulling the heads of a hard drive that reads and writes the data in a hard drive of a computer. It's a mindless task, but the magnet is proud as it's in a computer in a hospital, helping keep records of patients until they get better. It's hard work, running all the time, 24/7/365!

**Because of that...** the computer powers supply breaks down and is moved to a storeroom where it sits again, doing nothing. It wishes to be used again. It has experienced life and wants to be useful again. Time moves on as it is forgotten, moved about from room to room, gathering dust in layers.

**Because of that...** it's now 2015. Humans stop using hard drives with platters, moving to solid state drives instead, and all hope is lost. Magnet will never be useful again

**Until finally...** the hospital needs the space, and the computer is sent to HyProMag for recycling. It's a tense time as the computer is chewed up, separated, and the magnet is removed, ground and reformed to become a new shape, for a new purpose.

**And ever since then...** the neodymium magnet is part of car motor, with the responsibility of keeping a young family alive and moving in the right direction. It sees the world and finds a new purpose to be proud of.

**The moral of the story is...** parts and things go on to have other lives IF we play our part.

## Final version of story spine and script basis

**Once upon a time...** It's the 1960s, the automotive industry in the Midlands is flourishing. The Longbridge plant surrounded by components companies like Lucas employs thousands of workers and is being used for manufacturing many brands of car; British Leyland, Austin Morris, Rover, MG; even BMW owned the plant at one point. So many famous cars you may recognise.

**Every day...** Magnets made up the components; the sensors that detect whether the doors are closed, the alternator, or generator that charged your battery and powers your electrical systems, the starter motor. Huge magnets existed on the assembly line, holding large pieces in place as workers attached other parts around them. This saved costs as less people were needed to build the cars, and this was important as the cars were expensive to make and profits were slim.

**Until...** eventually, those financial pressures meant that the cars were not manufactured to the standard of competitors, and parts were not built to the quality expected.

**Because of that...** the components often failed before they should have done. It was often quicker, cheaper, and easier to replace the whole part, rather than just the piece of a component that failed. And it was never the fault of the magnet, but often a connector, or a piece of wire, or a spring.

**Because of that...** so many magnets were thrown away, sent to landfill; at best sent to the scrap yard with the rest of the car. But even then, who would buy a component that had failed. It still wasn't the fault of the magnet. They just sat there, wasting away.

**One day...** scientists had to find an efficient way to give these old magnets new lives in a sustainable way. After all, they still worked. It was easy to find magnets, but they were all shapes and sizes, some of them HUUUUUGE, and they didn't fit the new uses for them. They also found different types of magnets everywhere, even in old computers, made up of rare earth elements like neodymium. Challenge upon challenge!

**Until...** in 2018, a company called HyProMag, was founded by one of the professors at the University of Birmingham. Components were collected, broken apart and all the magnets were spared.

**Fortunately...** magnets could be reformed into a powder using hydrogen, the powder is mixed and formed into a new magnet, just as powerful as they once were. No longer were they left to waste away. A new way to recycle earth's precious elements transformed the lives of components forever.

**And ever since then...** those magnets that are recovered can be recycled and given new lives; used in the generators of off-shore wind farms, the safety detection systems of cars, the speaker in a baby monitor that alerts a parent when their child wakes. A twenty-first century life, born from the components of the past.

**The moral of the story is...** parts and things go on to have other lives IF we play our part.