

# ARTIFICIAL INTELLIGENCE IN BUSINESS CASE STUDY

Leveraging AI in a Global Manufacturing Business

## Specification

- Industry: Industrial Manufacturing
- Company Size: >55,000
- Department: Artificial Intelligence Department
- Location: Global
- Ionology Solution: 2 day, customized course, “Building an AI-enabled Business.”
- Outcome: Making AI Central to Innovation
- Impact: Marked Increase in AI Innovation Projects





## THE SITUATION

### Technology doesn't Transform a Business; People do...Leveraging Technology

Being a global market leader, the heavy machinery manufacturer in this case study is constrained by departmental politics, policies, silos, regulation and fabrication challenges.

These challenges prevent it from creating new business models, products and services that are only made possible by Machine Learning.

The materials department were reluctant to move away from aluminium as their preferred material, to composite materials. They claim there's no global study directly comparing both, even though the advantages to composites are obvious. The transition would require a complete transformation of engineering, design, legal, and compliance practices. The business wants to transform... just not that much!

- A very capable AI and Data Science division was created to modernise the business
- The company data was siloed and required extensive preparation, but no more than typically found in large enterprises
- The business owners claimed they want to 'transform' leveraging AI, but when asked what that means, they all give different answers
- AI projects were sporadic and ad hoc and relied on self-educated business innovators
- The innovation, design and business unit heads, had yet to receive formal training on the business capabilities of AI.



## THE PROBLEM

### New Business Models are Needed to Enhance Operational Efficiencies

There are two opportunities to create competitive advantage and build new business revenue streams.

1. Move from the use of aluminium to composite materials.

The problem was that there was no accepted science peer-reviewed comparison of the materials in real-world use.

This review would give legal cover for moving from the tried and tested aluminium to a lighter weight composite.

There was, therefore, a reluctance to move materials despite the obvious benefits of doing so.

2. Parts used in the machines sold by the manufacturer required maintenance. For safety reasons, many were swapped out long before they reached their natural end of life. This was expensive for the machine owner and an ecologically unsound practice as the used parts were simply discarded.

## CHALLENGES

- If the business wanted to move part of its manufacturing away from aluminium to composite materials it needed to create a meticulous, peer-reviewed materials science review.
- The current servicing model of the business was financed on the routine swapping of mechanical parts by highly trained engineers. Much of the swapping was considered 'preventative maintenance' (PM). That is, the swapping out of parts before they break.
- Machine Learning could predict the likely failure of parts and could replace PM. It would result in reduced parts acquisitions and enhance the maintenance model. Additionally, it would also open a new second-hand market for parts.





## THE INSIGHT

### Utilise AI Advocates to First Initiate Change, the Rest will Follow.....

- Businesses that have studied digital transformation, have defined it to be the complete repositioning of their business in the digital economy. They have prepared their staff for wholesale change and are much more likely to leverage the business potential of AI than businesses that have overplayed 'digital/technology.'
- The use of Machine Learning pushes the business into areas of research, development and engineering that it is not comfortable with.
- Machine Learning has the ability to radically improve the customer experience in maintenance. This could offer huge competitive advantage, however, the business needed to change radically and quickly.

## START WITH THE FEW, NOT THE MANY

No one stands up in the boardroom and says "I object to change". In reality, this is what happens when they leave the boardroom and return to their desk.

Don't try and change those that are not willing to embrace the new opportunities presented by AI. Seek first a coalition of the willing and demonstrate the success before moving onto the new project.

Seek to create short, interesting communications that gives kudos to those that participated in the change rather than the technology or the outcome.

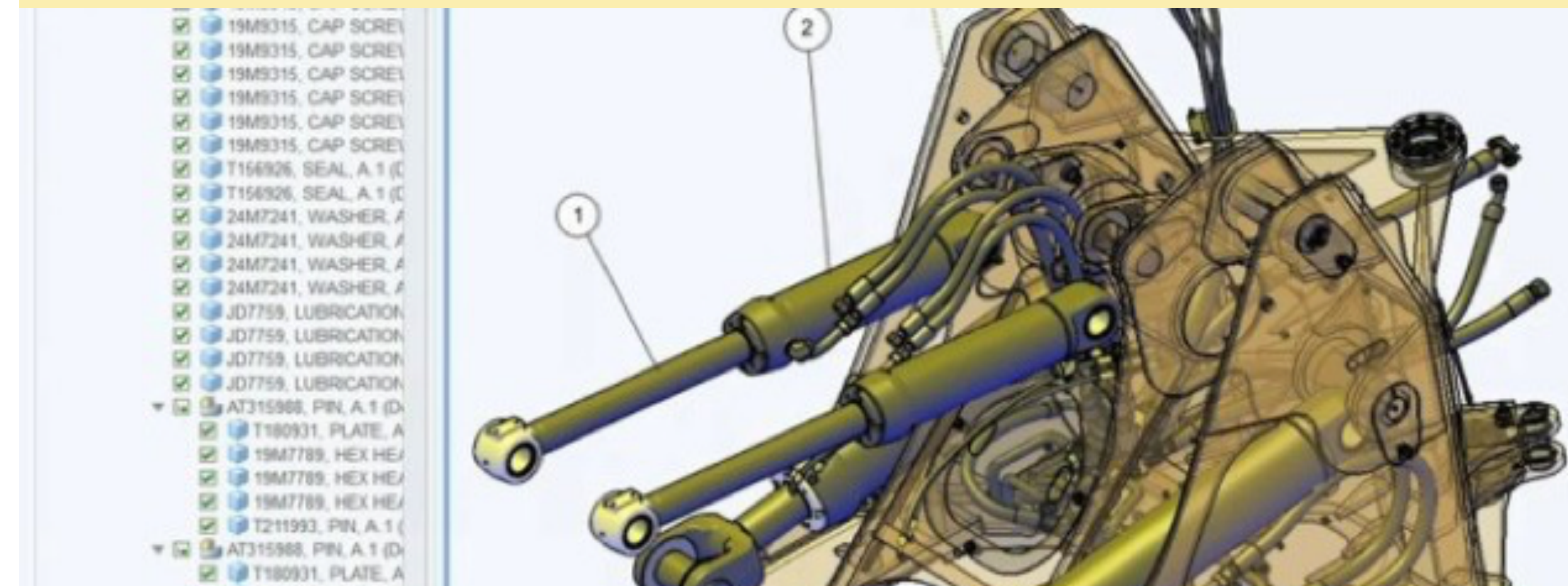
## THE SOLUTION

### Start Small and Manage the Change...

- Create a semi-supervised ML solution that takes unstructured data and compares materials. Then build an interface that will allow for the query of key properties of aluminium compared to composite materials, with particular attention to areas that are most scrutinised by industry regulators
- Build a coalition of those willing to change using the tool
- Demonstrate the speed at which accurate, unbiased and comprehensible insights can be attained
- Create a very visual simulation of the business case for changing the maintenance business model from 'preventative maintenance' to 'predictive maintenance' and how it will greatly increase competitive advantage and open a new world of second-hand parts that have a validated life story.

## THE OUTCOME

- In this case study, the success was as much down to the communications as it was to the technology
- People, when brought on a journey of change were much more accepting when they could see simulations and understood the personal impact
- Once educated on the business potential of AI most leaders were much more accessible and open to assisting.





## IONOLOGY ASSISTANCE

### Ionology Executive Education and Advisory Services

Ionology started with a comprehensive education program for the senior leaders and decisions makers. We helped them understand the business potential of AI without getting technical. By the end of the program, they had all made Machine Learning models and built applications using them.

There's a tendency with AI projects to be either too ambitious, too technically focused or they are designed to solve a problem that is not important. Through our advisory services we also helped with the deep diagnosis, established the right level of communications with key stakeholders that needed convincing and consulted on the creation of the ML models, platforms and user experience.

## PRACTICAL STEPS

- Educate business owners and decision-makers using non-technical experiments that relate to their business problems
- Do it in a classroom - shared learning environment
- Seek a collective of willing participants
- Find a problem to solve that will have a strong human story to tell at the end and is in-line with the strategic imperative.

