“AI WILL ONLY REPLACE THOSE WHO DON‘T USE IT”: AN OPINION ON TECHNOLOGY ADOPTION

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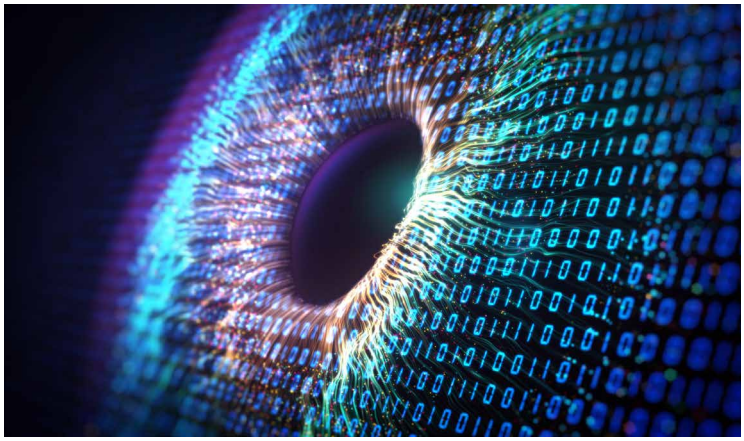
These are really *AIxciting* times. We are seeing things change right in front of our eyes. By the time this article is published, a seemingly new development might have already been overtaken by another groundbreaking innovation. Take, for example, Google searches in Germany back in March 2025: a search query used to return a long list of results ranked by a Google score, and you had to sift through them to find the answer you were looking for. Fast forward to April 2025, and your eyes likely won't make it past the AI-generated summary answering your query. The long list of links that follow often goes unseen. This new feature was a direct response by the world's biggest search engine to the AI-powered search pioneered by Perplexity.ai, which risked denting its supremacy.

So AI can read our written words and do something with them. But how about listening or seeing: are we at a point where AI is giving software eyes and ears? The answer to this question had better be yes—otherwise, I wouldn't want to be anywhere near self-driving vehicles or voice assistants in charge of tasks to alleviate daily life. Obviously, that is the case. If you take your smartphone right now, point your camera at a random location, click the shutter and ask the AI of your choice to provide information about the captured image—scarily enough—the information it will provide will most likely exceed anything you'd be able to describe yourself.

By the end of last year, AI transitioned from being just a scientific field to a powerful tool for advancing science, as reflected



by Nobel Prizes awarded for breakthroughs in deep learning and protein design. The key question thus becomes: *How can we use these advances to benefit our industry, stakeholders, customers, employees, and society?*

A BOLD STATEMENT AND A CHASM TO JUMP OVER

I believe AI should handle simple, repetitive, and time-consuming tasks, freeing us from the more tedious aspects of work. This will improve the quality of remaining tasks and enable employees to upskill. Many fear that "AI is coming to take our jobs", but this concern is misleading. As AI integrates into daily life, human–AI collaboration will naturally transform our view of the workforce. However, to be clear: the gap between AI users and non-users will grow, so now is the time to choose where you stand. AI won't replace humans, but those who can use it will have a competitive edge over those who can't. So, the heretical question I want to pose here is: why should this not apply to companies as well?

Let's look at this in more detail: American organisational theorist Geoffrey Moore spoke of a chasm in a community's acceptance of disruptive innovation. Projecting this onto our port and container terminal industry, which of the following categories do you see yourself in?

1. **Enthusiasts/Visionaries:** early adopters looking to get ahead of the herd by taking a chance on a promising—sometimes unproven—technology.
2. **Pragmatists:** typically those stuck with a problem. Some may be willing to take a leap of faith technology-wise, if this could solve their specific use case.
3. **Conservatives:** those who adopt new technology only after it has been proven—mostly out of fear of getting left behind.
4. **Sceptics:** those who follow last, once the technology is widely spread, and only if they get a good deal out of it with a low cost of ownership.

Unsurprisingly, the chasm for accepting AI as a disruptive innovation lies between the first two categories. *But is there a way to demystify what keeps entities on the conservative and sceptical side?*

To answer this, there needs to be a real reason to jump over the chasm. Identifying what you can obtain can be motivation enough. I've categorised these potential gains into six 'flavours' that might convert you from an "AIn't believer" to an "AI believer":

1. **Cost reductions/efficiency gains:** Are you losing money or wasting potential? Is your equipment largely idle or always broken when you need it most?
2. **Higher throughput and scalability:** Would you gain something from being able to stack higher, handle or cope with more volume per day?
3. **Quality and consistency:** Is your current high quality relying on the knowledge of a selected few? Can everybody in your company produce the same results consistently or pick up the baton when someone retires?
4. **Innovation/reputation:** Could innovative products or services help grow your market share through stronger word-of-mouth?
5. **Employee satisfaction:** Are you making life easier for your team? Genuine care goes a long way.
6. **Strategic future capabilities:** Are you preparing your company for long-term success?

SOFTWARE PROJECTS VS AI PROJECTS

Now, I've discussed reasons to jump over the AI chasm—but to back the right horse, you need to know more. A typical AI project should be, and in fact is, different from a traditional software project. Software projects are typically used to introduce tools that bring a benefit to a company, regardless of the technology used. Depending on the scope, timelines may vary (as does their standard deviation), but the goal, the procedure, the KPIs and their target values are known in advance. The goal of the software project is to achieve them.

When it comes to AI projects, their bandwidth is huge, and for each individual case, the procedure, the KPIs, and sometimes even the goals, may not be clear at the beginning. A short timeline coupled with a flexible, open mindset is the strength of AI projects **that often identify the software project you will want to embark on**. It starts with answering the first key question: Do you already have a use case in mind, or do you need to initiate an ideation process first? A suitable service provider can help you there.

It is really only after you have cleared this step that you should take care of well described key decisions like looking into, such as assessing the quality and the availability of your data, deciding whether prototyping should be made in-house or outsourced, or deciding which KPIs will measure the outcome to prove the solutions value. A common mistake is starting with these decisions, as it's a fast track to the end before the journey even gets going.

PRACTICAL EXAMPLES THAT ARE ALREADY HERE

I know for a fact that this journey has started for a wide range of applications, because I've been a part of it. There are plenty of AI solutions that have demonstrated measurable improvements oscillating between 20 per cent and 50 per cent—depending on the use case, metric, and scenario—to attain desired benefits.

There are solutions related to container handling equipment that increase throughput and reduce CAPEX/OPEX, such as decision-making tools that minimise empty travel, optimise the dynamics of EV charging, optimise their routing, and predict the best time for maintenance. There are solutions related to a terminal's yard management to keep unnecessary moves down, reducing travel distances and truck turnaround times, predicting container dwell time or container pick-ups. There are solutions for train planning and scheduling that increase the throughput that is handled by rail, such as optimising the load and discharge process or filling up all available slots on a train. This helps in reducing the need to transport containers via road, a benefit welcomed even by those who never come across this article.

These examples barely scratch the surface, and I am not even going into details regarding fields like data mining, object-oriented process mining, and optimisation and how these can be coupled with the technological advancements of large language models, image and voice recognition.

To conclude, this article aims to show how innovation can redefine our industry and the experiences of ports, terminal operators, shipping lines, and logistics providers. Actionable steps include investing in AI projects to gain or maintain a competitive edge, regularly assessing strategic goals to ensure alignment with market and technological trends, and cultivating a workplace culture that values innovation, collaboration, and employee well-being.

Companies that actively embrace these advancements will be best prepared for the future. Regardless of our perspective, we are part of an evolving ecosystem where humans, AI, and optimisation are set to redefine the way we work in container terminals. As we—and our hardware— continue to perceive the world and feed data, experience, knowledge and clever ideas into ever-more sophisticated models, the message is clear: the chasm will widen for those who are slower to adapt.

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Rafael Velásquez is Director Optimization and Integration at INFORM's Terminal & Distribution Center Logistics Division. He has worked in optimisation projects over the last 20 years within the Research and IT sector. Since joining INFORM in 2008, his focus has been on advancing optimisation solutions in the container terminal industry, in which time he has headed multiple notable international projects with customers such as GCT, DP World, and TraPac. He is a frequent specialist speaker at industrial and academic conferences promoting the real-world opportunities that Operations Research and AI open. Rafael holds a PhD in Mathematical Optimization from the Technical University of Kaiserslautern.

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