

## LISW 2017

Vladimir Kim/ Microsoft

### How tomorrow may surprise us all / The impact of Digital Transformation

Tomorrow is *unlikely* to surprise us, since most of us have already concluded and accepted, perhaps with different degrees of enthusiasm, that digital technologies will continue increasingly reshaping how we run our businesses. The remaining questions are - when this digital transformation will materially impact *our* particular industries, how exactly this impact will manifest itself, and who will be the winners and *the losers* of that transformation?

For an outsider it's difficult to judge where shipping stands in this move towards digitally-enabled business models, but here is a benchmark. According to IDC estimates, in calendar 2016 \$1.4tn was spent on digital initiatives. Everyone can compare what proportion of that total one's own company's or even the shipping industry's collective spend on digital represented. And, most importantly, whether their current spend *and associated effort* are sufficient to reap full benefits of what digital technologies can offer. (In fact, there have been attempts at quantifying different industries' degree of digitisation. Thus the McKinsey Global Institute placed Transportation & Warehousing at about 25% of what the leaders like Telecoms industry are experiencing.)

One may reasonably ask whether shipping *should* spend any time and money on digital transformation... Here is another data point - the World Economic Forum estimates that in the next few years through digitisation the logistics industry can generate \$1.5tn of additional value for itself, plus another \$2.4tn of societal benefits. But it's not only the opportunity that one should consider, it's also the risk. There are numerous examples of how in many industries asset-rich incumbents are being dis-intermediated by innovative digital players – for example, AirBnB vs hotel chains, Lyft and Uber vs taxi companies, and the list continues. There is no doubt that physical assets will still be needed to execute key business functions, but the economic power and control of the value chain that used to come from controlling these physical assets may diminish. The inevitable major impact of Digital Transformation is probably not in question, and it's more a decision of whether one chooses to lead or to follow...

Assuming one wants to lead or be a *fast follower*... How would one think about Digital Transformation? The organising framework is important, because there are so many things that one could *potentially* do about Digital, that there is a need to categorise to be able to explain, evaluate, prioritise. At Microsoft we have found it useful to categorise our own efforts and our engagements with customers into four buckets:

1. Empower employees – this is about making your own employees more productive. Thus, many companies invest in providing employees with ubiquitous access to live business information to aid decision making.
2. Optimise operations – here one typically leverages data across a wide, dispersed set of endpoints in your business to draw insights and introduce improvements; a good example would be predictive maintenance.
3. Engage customers – which is about harnessing data to generate actionable intelligence about one's customers to provide *personalisation at scale*.
4. Transform products – this is about the use of digital to reinvent products, services, and entire business models.

What is common about these four approaches is that they all rely upon building systems of intelligence, which are digitally-enabled feedback loops that help to draw better insight out of data and convert it to intelligent action. Organisations are building in continuous feedback loops – sensors in product, after-market services, customer feedback from a variety of channels. And it isn't simply about technology...systems of intelligence represent a combination of technology, people and process that enables these feedback loops, and defines organisations' competitiveness and ability to change the landscape of industries in which they participate.

Having mapped out and categorised your possible digital initiatives, one will be able to determine the best order in which to execute them to make sure that you create a *comprehensive, holistic* programme, which also relates to your industry context, business priorities, and existing level of digital maturity.

But where does one start? Probably, the easiest is to look around at what other people are doing in your and similar industries:

1. Rolls-Royce Civil Aerospace (jet engine makers)/ digitising TotalCare service. This example will probably fall into the category of Optimising Operations, but it also spills into Engaging Customers. Modern jet engines are supremely complex and expensive. To operate them efficiently and safely one needs to monitor thousands of data points on a continuous basis. And this is exactly what Rolls-Royce is doing nowadays, by creating a communication link from planes in the air to its operating centre, building a system that can ingest and process millions of signals per second, analysing performance, predicting the need for maintenance, providing constant feedback to Rolls-Royce *and* the airline. For example, Rolls-Royce tracks fuel consumption, but it links it not only to what is happening inside the engine, but also looks at other factors, eg whether the plane has deviated from the planned course which will lead to greater fuel consumption. This information is fed back to the airline and pilots, who can take corrective actions. And so Rolls-Royce makes its own life easier in terms of looking after engines, but also provides further value-added service to its customers, thus cementing its relationship with them.

Similar initiatives are being pursued in the shipping industry. There are challenges to do with the comms bandwidth at sea and the lack of relevant digital sensors on older ships, but this is no different from what was happening with the airplanes, so the lessons of how to introduce these new processes and what and when to expect with regards to business benefits may be very relevant.

2. Boeing and its use of digital twins. Digital twins are a very potent illustration of the power of Digital. Most are familiar with the concept - it's about creating a virtual model of a physical object, in the business context it's typically some operating asset, and this digital twin allows to track, model, predict the behaviour of the original asset. Boeing started by using digital twins to optimise its production processes. One may recall the setback that the company had with launching Dreamliner – it was a highly innovative product which required Boeing to significantly modify its production processes to be able to manufacture that plane at scale. And that reconfiguration of production did not work well for them, causing multi-year delays in delivering aircraft to customers and multi-billion-dollar budget overruns. Hence, for the subsequent development programmes Boeing adopted the concept of digital twins, whereby they could design, fine-tune and subsequently evolve production processes using virtual models of the physical items they were working with. Furthermore, using the digital twin concept Boeing can record everything that goes into a particular aircraft as it gets assembled and operated, record everything that this aircraft has experienced, which then becomes a treasure trove of data when it comes to maintenance and performance management. For example, using Blockchain technology Boeing can ascertain the provenance of every component that has been installed on an aircraft, and so if something goes wrong it's possible to correlate the performance of a particular component to the operating regime of the aircraft, establish where the part has come from, and, if there was any manufacturing defect in it, alert all other aircraft owners who received parts from the same batch, and so on. With expensive operating assets, which are also often inaccessible, aircraft and ships being perfect examples, digital twins offer unique opportunities to optimise performance management throughout the asset lifecycle.

What are the lessons from this example? Firstly, that it all starts with data. Companies need to start capturing the rich data that exists in their enterprises to make sophisticated digital solutions possible. Secondly, sharing of data often makes data more valuable. In this example,

without sharing data with its suppliers, customers, partners, Boeing would not have been able to realise the full benefits of the digital twin concept.

3. **Maersk.** Maersk is very ambitious in its digital aspirations with the plan to progressively move towards Connected, Digitised and Autonomous vessels. And it's not only about the ships, Maersk and partners are working on unlocking the potential of better information exchange among the industry participants to serve the end-customers better and optimise operations for all involved. Across their Transport & Logistics division Maersk are working on digitising all their assets, creating one-stop-shop online solutions for their customers, developing new digital products, and shaping the digital marketplace for transportation & logistics. That last bit may be emphasised. By influencing the marketplace, offering its own applications (which is something else that Maersk want to do) the company attempts to effectively establish "standards", which is quite strategic, because then Maersk indirectly controls everything that happens in its market. Equally, by participating in those digital marketplaces Maersk protects itself from potential digital disruptors, who are attempting to control the flow of information between end customers and operators, thus dis-intermediating the traditional players and attempting to grab a dominant portion of the profit in the value chain without heavy capital investment in operating assets.

Instead of further examples of how digitisation changes industries, I would like to highlight a couple of common themes, which might be important to keep in mind if one decides to embark on a Digital Transformation journey:

- Firstly, data is key to anything digital, therefore probably the most important message from this note is that **sorting out one's data estate is job #1**. That's where all digital initiatives start, but that's also where they can get bogged down. Few companies' existing IT infrastructure can provide the necessary capacity, flexibility, speed that modern data management requires. It may be necessary to consider moving towards Cloud technologies.
- Secondly, technology is the driving force behind Digital Transformation, but companies will also need to land the change with their people. As someone said: "Connecting strategy to *action* is about connecting strategy to *people*". **Approach Digital Transformation as a major change programme** and don't forget that 70% of all transformations fail because of poor leadership. True Digital Transformations succeed where companies make sustained effort and guide the change from the top. For example, the three companies mentioned above have all created dedicated groups to drive digitisation, led by highly empowered executives.
- Thirdly, in most traditional industries Digital Transformation is landing very unevenly – there are some enlightened "digital leaders" (companies like Rolls Royce and Maersk), but there are many established players who are yet to start significantly moving in the digital direction, plus typically a long tale of smaller companies, who struggle to find resources to invest in this transformation. But what is important to remember is that the **nature of digital technologies, with low marginal costs and network effects, favours early movers** and creates hyperscale advantages. If a company has created a digital platform of some kind, then adding a few more users or processing a few more transactions has marginal cost approaching zero; hence, a successful platform starts growing exponentially and the chances for laggards to catch up are very limited. Hence, should not delay their Digital Transformation moves.
- At the same time, one should remember that traditional players in industries like shipping have a unique opportunity to **leverage their combination of owning physical operating assets and having access to key information**. Through this, they can create truly lasting competitive advantage in the digital age.

We wish you every success in doing so! 😊