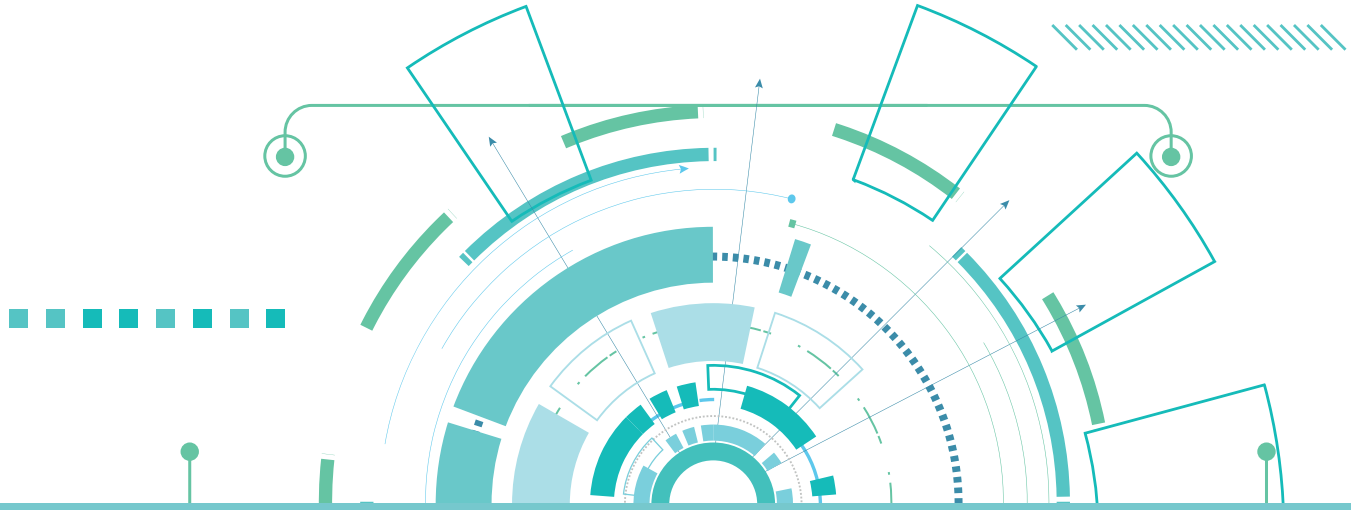


AI Readiness Assessment

Is your business AI ready?

This White Paper will help you understand if you are investing in the right AI enablers and how to get the most value out of your AI activities

Introduction

A 2020 Gartner Survey showed that over 50% of technology Executives intend to deploy AI before the end of the following year[1].

This is primarily due to improvements in algorithms, availability of cheap cloud resources and ever-increasing amounts of data available. However, to date most organisations are not capitalising on the benefits of these technologies.

Some companies place a large emphasis on being digitally nimble, and they are able to quickly iterate their products based on how customers interact with their services. This makes them obvious adopters of AI as they are already collecting various data points and can integrate an AI solution at scale with more ease.

For example, large tech giants such as Spotify[2], Netflix[3] and Amazon[4] already utilise recommendation engines and machine learning capabilities to help customers find what they are looking for more easily. This allows them to offer wider product catalogues whilst simultaneously offering good customer experiences.

However, **7 out of 10 companies surveyed report minimal or no impact from the contributions of AI.**

According to a study at MIT Sloan, among the 90% of companies that have made investments in AI, **less than 40% report obtaining any business gains directly from AI in the past three years[5].**

This leaves many organisations unclear on how to best approach AI.

The result is that many CEOs have seen no impact from their intended initiatives[6]. This whitepaper provides CEOs and other executives with guidelines on how to avoid common pitfalls and minimise the risk of their AI initiatives.

Leveraging our 40+ years of combined experience as consultants, entrepreneurs and machine learning leaders, the aim of this whitepaper is to provide you with a clear and succinct framework to:

1. Assess whether you have the foundations in place to make AI a success.
2. Maximize the value of your AI investments.

WHY AI MATTERS

We are in an age obsessed with instantaneous gratification. As consumers we want the businesses we transact with to know us better than we know ourselves. On top of this, a continually competitive landscape within data-driven organisations means there's a constant search for cost-cutting and efficiency.

This provides businesses with two key challenges[7]:

1. **Improving what they do**: Developing tools and strategies that enable a faster pace of learning and interaction to provide a superior value proposition.
2. **Improving how[8] they do it**: Developing tools and strategies that create efficiencies across the whole operation in order to drive a competitive cost advantage.

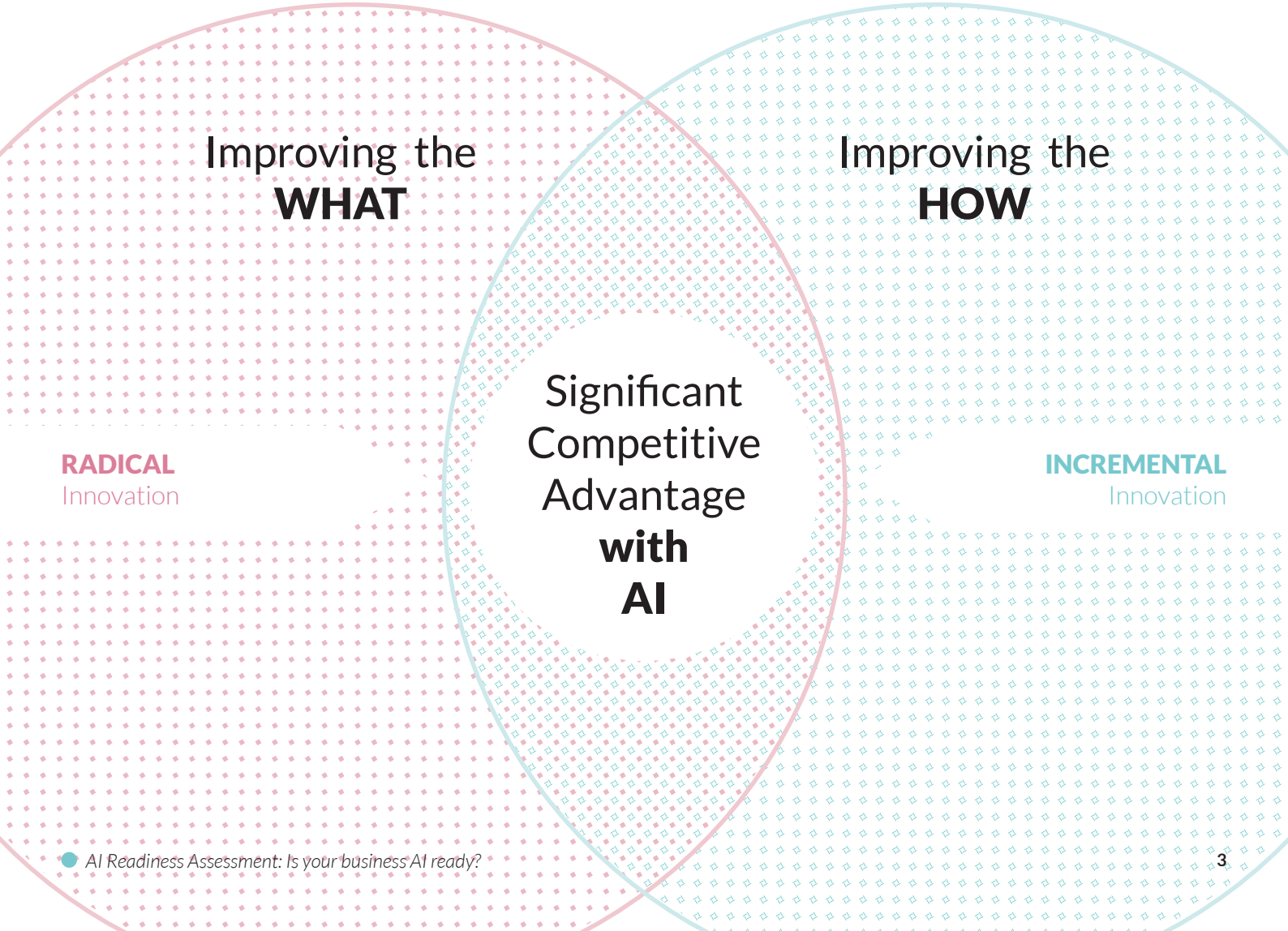
Improving the "how" enables you to identify cost reductions and maximize operational efficiency, whilst improving the "what" focuses on adding more value to existing customers and identifying areas of improvement.

This means that the first challenge requires agile responses to change given unpredictable demand. Whereas with the second challenge you should look for optimization, high level of structure and strong plan capacity.

A lot of this is only achievable at scale through Artificial Intelligence. According to McKinsey, Netflix found that in 2017 customers on average gave up 90 seconds after searching for a movie. By improving search results, Netflix avoided cancelled subscriptions that would have reduced its revenue by $1B annually.

This is a brilliant example of how disruptive data can be, especially when big data combines with big ideas[9]. Netflix transformed from shipping DVDs by mail, to being an industry leader in home entertainment.

Similarly, Amazon achieved impressive results from its $775 million acquisition of Kiva, a robotics company that automates picking and packing[10]. Their "click to ship" cycle time fell by 80% when moving from human picking to automated picking. At the same time inventory capacity increased by 50% and operating costs fell an estimated 20%. Furthermore, at Google, the use of AI has allowed them to cut their data center cooling costs by 40%[11]. Airbus was able to reduce their lead time by 20% adopting intelligent maintenance algorithms in their plants[12].



These are not marginal impacts but impacts that create a significant competitive advantage. Therefore, not keeping up with AI can quickly become a strategic risk.

The above examples highlight the correlation between implementation of artificial intelligence and gaining significant competitive advantage in the marketplace. It also reiterates the importance of keeping up before you fall behind. In 2019, 45% of polled companies perceived some risk from falling behind with AI, up from an already substantial 37% in 2017[13].

We have seen similar impacts in our own workplace. Machine learning has enabled us to improve pricing profit margins; improve product availability; and cut vehicle routing delivery costs.

AI doesn't just provide opportunities to deliver existing services better, it also creates completely new user experiences.

From the growth of the smart speaker (146.9 million smart speaker units were sold globally in 2019[14]), to customer-centric apps like TikTok (launched globally in 2018, it had 800 million monthly active users in 2020[15]), AI has been able to create new markets that continue to grow exponentially.

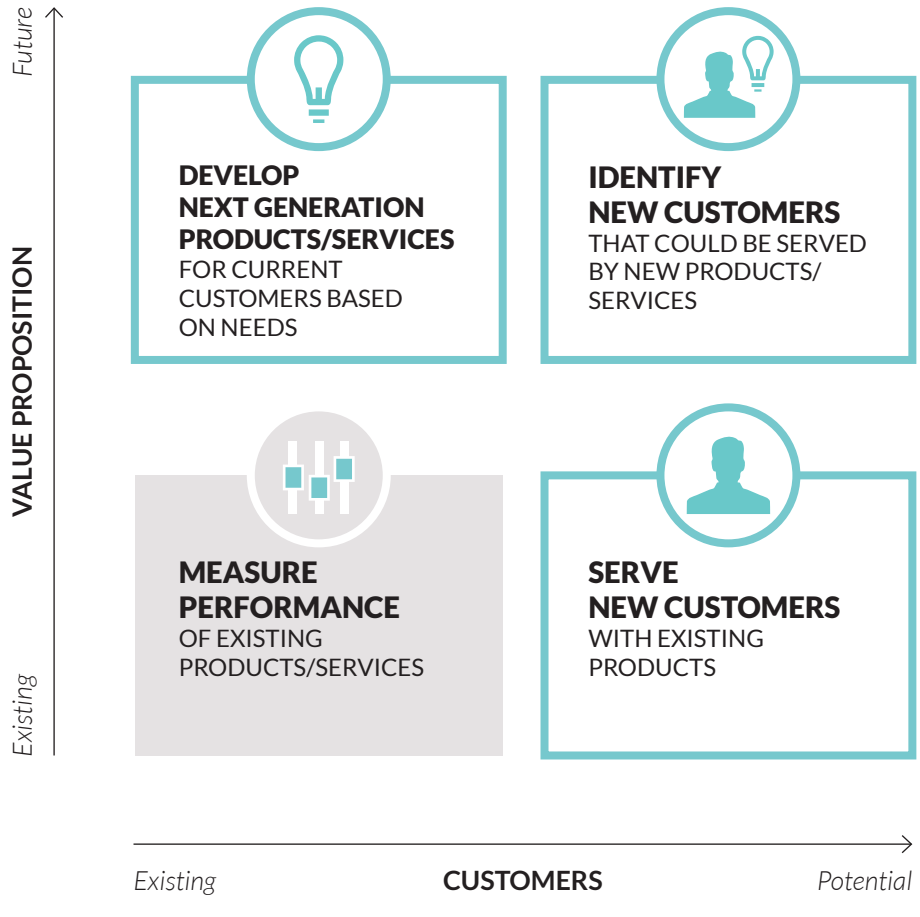
The creation of new markets is already a reality in the B2B sector as well. Siemens has launched Healthineers Digital Ecosystem Platform on top of its medical devices[16]. It allows medical centers to benchmark and monitor their performances but also supports physicians in diagnostic activities thanks to AI-powered algorithms. The company can now leverage insights coming from 6500 institutions, 3200 connected systems and more than 10 million patient records to fine tune its offering[17].

Today, more and more companies are adopting an AI-first approach.

MACHINE LEARNING HAS ENABLED US TO IMPROVE PRICING PROFIT MARGINS; IMPROVE PRODUCT AVAILABILITY; AND CUT VEHICLE ROUTING DELIVERY COSTS

Back in 2017, Microsoft moved from a "mobile first, cloud first" mantra to "everything AI"[18] and entirely refocused the organisation. They consolidated their initiatives and acquisition targets, with the aim to leverage AI across their entire product portfolio (from LinkedIn to Xbox).

It seems these investments are paying off. In 2020, the largest tech companies in the US (biggest users of AI) made up over one fifth of America's stock market[19]. Similarly, in September 2020, Ocado momentarily overtook Tesco as the most valuable retailer in the UK despite only having a 1.7% market share compared to Tesco's 27%[20]. This is due to Ocado spending the last 7 years investing in advanced technology capabilities with a strong focus on robotics and machine learning.



WHY AI INVESTMENTS OFTEN FALL SHORT

However, making an AI project a success is not simple to say the least.

AI success requires both a strong technical foundation and a cultural shift. When Qlik asked key decision makers that were using their reporting software, what they do when their gut tells them one thing and data tells them something else, 70% replied that they would follow their gut.
The Data Science community is inundated with stories of being hired by an organisation and expected to 'save the business,' despite the organisation in question not being remotely ready to take full advantage of Artificial Intelligence.

So, what are the reasons that some organisations fail to make their AI projects deliver?

We have identified a list of 6 best practices that are the result of our own experiences as well as academic studies[21, 22].

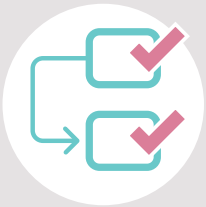
1. HAVE A CLEAR VISION FOR DATA AND AI IN YOUR ORGANISATION
Ensure that the use cases you have for data and AI are aligned with your corporate strategy[23]. Are you focused on operational efficiency and cutting costs? Or are you aiming to grow revenue or build better products faster?

Make sure that the challenges you give your data scientists are actually solvable with AI.

Additionally, you want to make sure that you design your strategy with AI and not for AI (or one with AI as an afterthought).

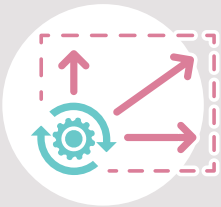
SIX BEST PRACTICES

1 **HAVE A CLEAR VISION FOR DATA AND AI**

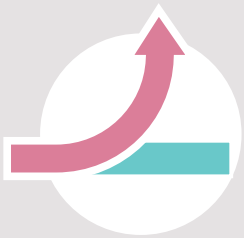


2 **START WITH A SIMPLE USE CASE**

3 **EXPERIMENT & LEARN NEW APPROACHES**



4 **PLAN A LARGE-SCALE PRODUCTION USE OF AI**



5 **ENSURE YOU CREATE VALUABLE CHANGE**

6 **CONSTANTLY MEASURE YOUR SOLUTIONS**

2. START WITH A SIMPLE USE CASE WHERE THE DATA IS AVAILABLE AND YOU DON'T NEED EXPENSIVE TECHNOLOGY

As with many new technologies, it is important to build momentum and confidence in the organisation first. This often means starting with simpler projects that are close to the way the organisation already operates.

It's also important to start with projects where you already have the data, therefore you can be successful without a major investment in technology or people.

3. DON'T FOCUS ON EFFICIENCY GAINS WHILE YOU ARE STILL EXPERIMENTING

AI projects are often quite different to traditional software implementation projects. This means that you will need to learn new approaches, techniques and technologies. Also, because AI works best when it's linked directly to the business strategy, it is often not possible to just copy and paste what has worked in another company.

This means you'll need to spend some time experimenting how to make AI deliver in your given setting. Pushing for efficiencies too early can cut this learning cycle short and prevent you from fully understanding how AI can deliver for you.

4. HAVE A PLAN ON HOW TO MOVE FROM A PILOT TO A LARGE-SCALE PRODUCTION USE OF AI

Running a pilot or Minimum Viable Product (MVP) can be done fairly cheap with a small team. Once you decide to roll out AI to the whole organisation, however, you need to be prepared to invest significantly into new skills and technologies.

You'll need to build an approach around data governance, and find a way to monitor your AI solutions in production. This will likely require new skills that you might not currently have in your organisation and you should have a plan on how to develop these.

Additionally, as you grow the number of AI applications, it becomes important to have a solid AI platform and Machine Learning Ops practices to ensure that you can easily develop, deploy and operate AI applications at scale.

5. ENSURE YOU DON'T JUST DEVELOP SOLUTIONS, BUT THAT YOU CREATE CHANGE

The Data Science community is inundated with stories of being hired by an organisation and expected to 'save the business,' despite the organisation in question not being remotely ready to take full advantage of Artificial Intelligence

Data and AI have no value by themselves. They only create value when they change the way that customers or colleagues interact with your organisation.
A machine learning project shouldn't stop when the technical problems are solved, but when they have changed outcomes. This often requires an investment into business change initiatives alongside the technical work to make this a reality.

Organisations have to be ready to set up new processes, roles and responsibilities. All stakeholders involved in the implementation of AI initiatives should be prepped ahead of time.

6. CONSTANTLY MEASURE HOW WELL YOUR SOLUTIONS ARE DOING

The data scientists' work doesn't end when their solution is ready to be rolled out, feedback loops are essential if you want to see continuous improvement.

They allow your team to learn as the project is in progress and continue making small tweaks that will make it more effective. Feedback loops also enable you to take lessons from that specific project to improve the next one going forward.

THE *DATA-TO-IMPACT* FRAMEWORK

Having spent a significant proportion of our careers helping organisations with their digital transformation, the first step was often to assess what capabilities already existed within the organisation. AI technologies and solutions add an important ingredient to the digital transformation journey, and can be applied to a wide range of capabilities in varying domains. This can result in an over-extensive assessment process, which in turn steers the focus away from the potential benefits & strategic considerations.

THREE CORE PRINCIPLES OF OUR FRAMEWORK

ACCESSIBILITY

Our assessment questionnaires are succinct and easy to complete

DATA FLOWS

We believe in a robust data chain from which AI can extract value for the organization

SOLID FOUNDATIONS

Having solid inputs allows the organization to extract value from the very beginning

During our research we found that many of the existing AI maturity frameworks were either really long and complicated; hard to answer ("What percentage of your services use machine learning?"); or did not provide tangible suggestions on what to do next. Therefore, we decided to develop our own Data to Impact Framework (D2I).

The framework builds on three core principles:

Accessibility
Assessment questionnaires should be succinct and easy to complete. The premise should be to collate multiple options on a topic rather than asking too many questions.

This is similar to the approach of the Net Promoter Score - the more people that complete the assessment, the more validated your findings will be.

Data flows
In order to leverage artificial intelligence fully, it's best if data can flow from one department to the next and the associated metrics are aligned.

We call this the "data chain", the more robust this is, the more value AI can extract for your organisation.

Solid foundations
We believe that success with AI projects first depends on having solid foundations in place. These foundations (or inputs as we call them) allow you to start extracting value from your project at the very beginning.

The framework has been divided into these 3 core areas as it helps assess where in the 'AI maturity journey' an organisation is, and also what blockers might be present to inhibit their journey.

In order to help assess the organisation across these three core principles, **we break the questions down into inputs and outputs, of which each of these themes is then broken down into a number of more detailed topics.**

INPUTS OF THE *DATA-TO-IMPACT* FRAMEWORK

We call the foundations that allow an organisation to get AI-ready "inputs". These are the things that you'll need to invest in to make sure that AI delivers value for you. Without these inputs, making AI a success in your organisation is much harder; however, simply just having these inputs does not guarantee success.

STRATEGY

It's imperative that data & AI are at the core of your business strategy and objectives. Every decision should be factoring this in from inception to promote an 'AI first' mindset.

You need to have complete clarity regarding the different aspects of your value chain and their relationship with AI and its capabilities.
In some areas you will be able to rely on commodity solutions that you can buy in whereas in other areas AI might provide you with a competitive advantage and you will want to have detailed control over its implementation.

A good example of this would be a media organisation that's building a new form of voice recognition technology. The speech-to-text parts of the solution are likely to be a commodity (e.g. a multiple accent offering), whereas the recognition of requests by the user is imperative to the products unique selling point (USP).

SKILLS AND CULTURE

Getting data and AI strategy correct requires having the right people involved in the right conversations.

Within most organisations that focus on data-driven initiatives it's usually a prerequisite that all employees have a certain level of knowledge in the field. Organisations that are data literate often require everyone to have a minimum understanding of data and data-based decision making. Just as importantly these organisations have clear ownership over the domain of data and AI. There is generally a senior leader (often on the board level) responsible for driving the continuous use and best practices in the use of data and AI .

It's important that senior leaders champion a data-focused culture and encourage teams to consider data over general opinions when making key decisions.

Skill is not enough, a culture that places a strong emphasis on experimentation and the validation of hypotheses through data is just as important.

PROCESS

It's not enough to have a strategy that takes advantage of AI.

Organizational processes must often be adapted to be able to take advantage of the iterative approach required to make AI a success.
This often means making decision making faster and focusing on monitoring rather than approval. Financial approval and budgeting processes often have to be adapted to support a more agile way of working.

In addition organizational processes are often a good source of data and tell you what is really happening. Being able to extract that data in reasonable time and consistently across the organisation is key to improving operational efficiency in these areas.

TECHNOLOGY AND TOOLS

Data and AI maturity is a big technical challenge.

AI literate organisations make collecting, storing and accessing data extremely easy and have the systems and platforms in place that allow data scientists to quickly and easily develop and deploy AI applications at scale. These organisations are also really good at experimentation. They can run multiple tests in parallel without losing the ability to disambiguate the effects of the different trials.

GOVERNANCE

Data is the foundation of AI; therefore it needs to be collected and stored in a uniform manner to extract the most value.

A solid governance structure needs to be in place to provide consistent definitions and good quality data.
Additionally, this ensures compliance with regulation and helps minimize potential breaches.
Usually there will be a designated person or team that is responsible for data and data governance which allows for a standardized approach across the business.

OUTPUTS OF THE *DATA-TO-IMPACT* FRAMEWORK

Once the inputs are in place, you should be able to see changes in your 'AI readiness' in three key areas. These are measurable outputs that tell you that your inputs are really delivering for you.

VOLUME AND VELOCITY

An AI-ready organisation should collect a lot of data and it should flow through the organisation quickly. **The exact volume and velocity vary, but in general they should provide enough data at a pace that allows for all major decisions to be data informed**, even when these decisions are automated or augmented through the use of machine learning.

FLUIDITY

An AI-ready organisation is able to efficiently collate data from different areas of the business across multiple locations. They tend to have an in-depth knowledge of their supply chain and how efforts in one business area affects others.

Data often generates value based on the connections between data points: this means that the value of data is not linear but increases exponentially with volume. **AI ready organisations take advantage of this by understanding their data value chain in detail.**

ACCESSIBILITY AND IMPACT

In the end, data and AI are only valuable if they have an impact - i.e. if they change at least some outcomes of decisions. **AI-ready organisations have changed how they make decisions based on having clean, readily available data.**

They are focused on validating hypotheses and have the tools and culture in place to change direction if/when the data shows that they are no longer following the best course of action.

OUR FRAMEWORK IN A NUTSHELL

INPUTS

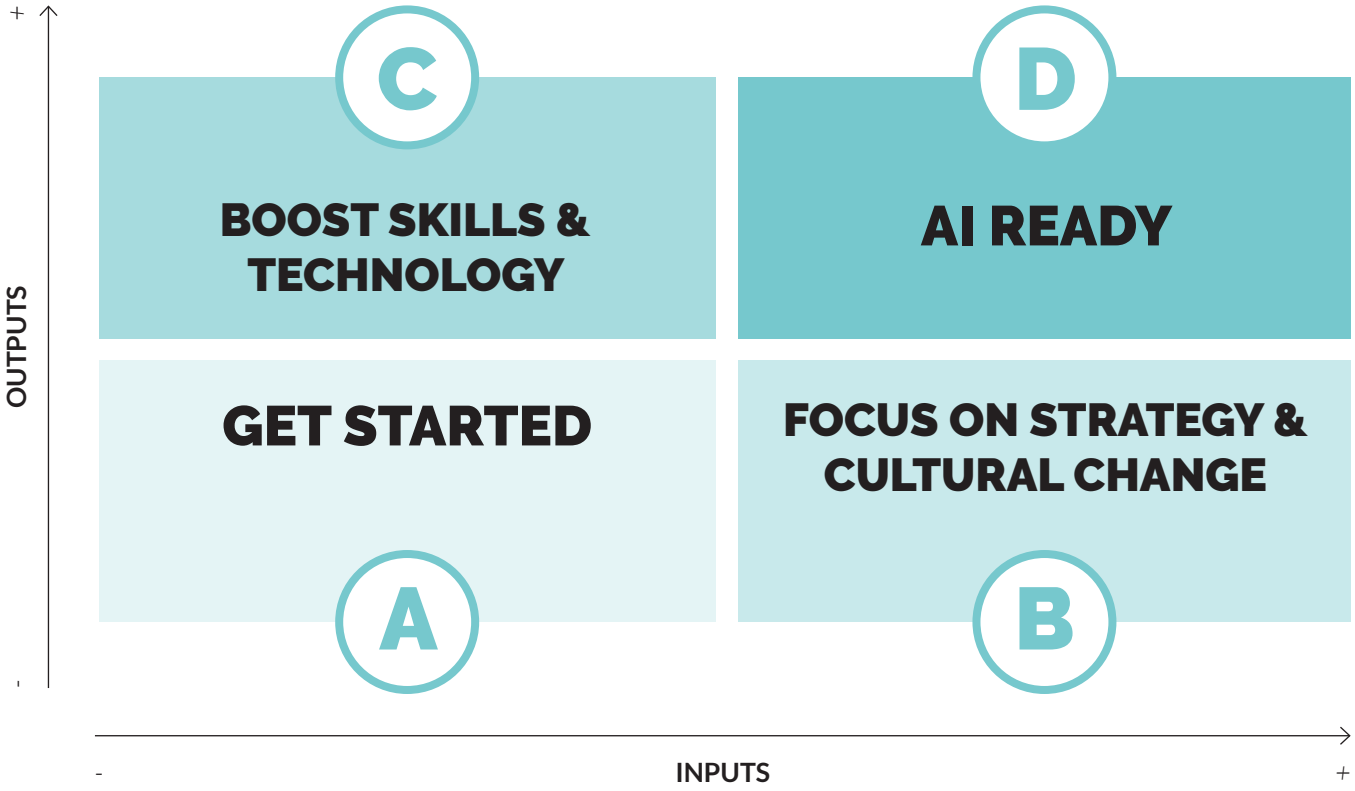
STRATEGY | SKILLS AND CULTURE | PROCESS | TECHNOLOGY AND TOOLS | GOVERNANCE

OUTPUTS

VOLUME AND VELOCITY | FLUIDITY | ACCESSIBILITY AND IMPACT

STAGES OF AI READINESS

Based on this model, we see four different stages of AI readiness.



A GET STARTED

Organisations at this stage should increase their investment in technology and skills. This is the time to adopt prescriptive processes and tools for data management and governance. These are the required foundations that will help the organization embrace AI opportunities. During this time, the organization should initiate AI pilot projects to explore opportunities and start making decision makers familiar with the technology.

However, the goal to reach a data-driven culture is still far away. AI pilot projects help form a bridge between technical and non-technical areas of a business.

In order to move to the "AI Ready" stage the organisation also needs to invest in the digitalization of processes along the entire value chain. This will provide the necessary data and systems that AI projects can later help build on.

Finally, it is important to bring people from all levels on this journey by providing them with relevant training and a clear picture of how AI can help the organisation achieve its ambitions.

B FOCUS ON STRATEGY & CULTURAL CHANGE

Organisations at this stage have already invested into IT assets and skills but have not yet managed to reap the full benefits of these investments. This is the time to work on cultural change and run programs and projects aimed at creating a clear picture of how AI will help the organisation.

While organisations at this stage have skills and IT assets to enable the adoption of AI solutions across the value chain, an AI-centric way of thinking has not yet been embedded in the day-to-day actions. This is the time for the leadership to show that data and AI are important to the organisation by emphasising metrics and by investing time and money into running AI pilot projects.

Not only will these projects provide valuable experience about the end-to-end AI lifecycle, but they also provide stories to explain what AI can do for the organisation. Implementing enterprise-wide data dashboards can also be helpful at this stage as it shows that data matters and aligns the organisation and its key metrics.

C BOOST SKILLS & TECHNOLOGY

Organisations at this stage of readiness need to invest heavily in technology and skills whilst defining a long-term vision about the role of AI in their business strategy.

At this stage, your employees use data to support decision making and the information is shared fluently between functions and business divisions. However, this is currently done without proper structure or the right tools in place.

In this scenario it is important to increase the investment into data platforms and move data from being a localised approach to a structured enterprise capability. By developing a clear strategy, you can put in place a holistic architecture that puts more emphasis on data and consolidates multiple systems into a smaller subset.

D AI READY

Organisations at this stage are ready to reap the full benefits of AI. You have the right technologies and people in place, combined with a clear strategy of how AI can help your organisation. Your culture is data-driven, and data moves across your organisation seamlessly.

This is the time to move from a few pilot projects towards implementing AI solutions at scale across the whole value chain. Based on your strategy, you should identify AI application areas across your business units that help drive an AI culture locally. At this stage you move from preparing for adoption to evangelizing the broad use of the technology, and it's important to realise that these efforts never stop.

This is also the time where you should start to think about how you will manage your lifecycle of AI initiatives going forward and how to decide what projects are worth pursuing.

OUR AI READINESS STAGES: TAKEAWAYS

GET STARTED	FOCUS ON STRATEGY & CULTURAL CHANGE	BOOST SKILLS & TECHNOLOGY	AI READY
A	B	C	D
INCREASE YOUR INVESTMENT IN TECHNOLOGY AND SKILLS	**WORK** ON CULTURAL CHANGE	**INCREASE** THE INVESTMENT INTO DATA PLATFORMS	**MOVE** FROM A FEW PILOT PROJECTS TOWARDS IMPLEMENTING AI SOLUTIONS AT SCALE ACROSS THE WHOLE VALUE CHAIN
ADOPT PRESCRIPTIVE PROCESSES AND TOOLS FOR DATA MANAGEMENT AND GOVERNANCE	**RUN** PROGRAMS AND PROJECTS AIMED AT CREATING A CLEAR PICTURE OF HOW AI WILL HELP THE ORGANISATION	**MOVE** DATA FROM BEING A LOCALISED APPROACH TO A STRUCTURED ENTERPRISE CAPABILITY	**IDENTIFY** AI APPLICATION AREAS ACROSS YOUR BUSINESS UNITS
INITIATE AI PILOT PROJECTS TO EXPLORE OPPORTUNITIES AND START MAKING DECISION MAKERS FAMILIAR WITH THE TECHNOLOGY	**SHOW** THAT DATA AND AI ARE IMPORTANT TO THE ORGANISATION		**START TO THINK** ABOUT HOW YOU WILL MANAGE YOUR LIFECYCLE OF AI INITIATIVES

Authors

Gabriel Straub

Has built and run data science teams for organisations such as Tesco, the BBC and Ocado Technology. He has also worked as an advisor to multiple startups and VCs. He is a guest lecturer at London Business School and an Honorary Senior Research Associate at University College London. Gabriel holds an MA in Math's from Cambridge and an MBA from London Business School.

Francesca Saraceni

Has over 13 years' experience in organisational design for digital transformation, with a focus on data governance and data strategy. Francesca started her career working in the research industry at Politecnico di Milano. Since 2012 she has been a researcher at Osservatori.net, School of Management Politecnico di Milano. She has been thesis supervisor of Enterprise Information Systems' maturity models for both private and public sectors. She is the co-founder of several companies including doDigital srl and Intellico srl.

Lorenzo Tencati

Has over 13 years' experience as a serial entrepreneur, impact investor and strategy consultant. Over the years Lorenzo has co-founded and is still directly involved in several businesses, including Singular Group (a tech focused investment and strategy consultancy), Winterberg Group (a growth private equity firm) and LTH Group (a tech impact investing firm). Lorenzo is a member of the Young Presidents' Organisation (YPO), he holds an MBA from the London Business School and a Master's and Bachelor's degree in Industrial engineering from Politecnico di Milano. He is a frequent media contributor to outlets such as Inc. and CNBC as well as a speaker of choice at global conferences and a guest lecturer on entrepreneurship and venture capital at Politecnico di Milano and MIP.

Magda Woods

Has managed million-dollar investments in AI technologies transforming large scale newsrooms (with over 100 journalists) across public and private sectors (BBC, The Telegraph, Channel 4 and the New Statesman Media Group). She has also built her own AI first start-up, Waive. Magda holds an MSc. in Engineering from Warsaw University and MSc. in Computer Science from Dublin Institute of Technology. Most recently she graduated with an executive MBA from the City Business School (formerly known as Cass). She is also a member of a data science committee for the Royal Statistical Society in London and represents the industry in public debate about diversity as an ambassador for women in data, after being listed as Top 20 Women in Data in 2018.

References

1 Gartner, CIO Survey 2019: Implications for Product Marketers, 2019

2 Health A., 'How Spotify's Discover Weekly playlist knows exactly what you want to hear', Business Insider, 2015, **link**

3 Plummer L., 'This is how Netflix's top-secret recommendation system works', Wired, 2017, **link**

4 'Recommended for You': How Well Does Personalized Marketing Work?, Knowledge at Wharton, **link**

5 Ransbotham S., Khodabandeh S., Fehling R., Lafountain B., and Kiron D., 'Winning with AI – Pioneers Combine Strategy, Organizational Behavior, and Technology', MIT Sloan Management Review and BCG, 2019, **link**

6 Ransbotham S., Khodabandeh S., Fehling R., Lafountain B., and Kiron D., 'Winning with AI – Pioneers Combine Strategy, Organizational Behavior, and Technology', MIT Sloan Management Review and BCG, 2019, **link**

7 Haanæs K., Reeves M., Wurlod J., 'The 2% Company', BCG, 2018, **link**

8 MIT Sloan school of management "Organisational Design for Digital Transformation"

9 Taylor B., 'To See the Future of Competition Look at Netflix', Harvard Business Review, 2018, **link**

10 Columbus L., 'McKinsey's State of Machine Learning and AI, 2017', Forbes, 2017, **link**

11 DeepMind AI Reduces Goodle Data Centre Cooling Bill by 40%, DeepMind, 2016, **link**

12 Capgemini Research Institute, 'Scaling AI in Manufacturing Operations – A Practitioners' Perspective, Capgemini, 2020, **link**

13 Ransbotham S., Khodabandeh S., Fehling R., Lafountain B., and Kiron D., 'Winning with AI – Pioneers Combine Strategy, Organizational Behavior, and Technology', MIT Sloan Management Review and BCG, 2019, **link**

14 Perez S., 'Smart speaker sales reached new record of 146.9M in 2019, up 70% from 2018', TechCrunch, 2020, **link**

15 Sehl K., '20 Important TikTok Stats Marketers Need to Know in 2020', Hootsuite, 2020, **link**

16 Joglekar N., Parker G., and Srai J. S., 'Winning the race for survival: How advanced manufacturing technologies are driving business-model innovation', World Economic Forum, 2020, **link**

17 Teamplay digital health platform – The enabler of your digital transformation, Siemens, **link**, (accessed 20 February 2021)

18 Eide N., 'Microsoft shifts from 'mobile first, cloud first' to everything AI', CIODIVE, 2017, **link**

19 The Economist, 'Is tech getting more competitive? In could computing, at least, the contest is fierce', Economist, 2020, **link**

20 BBC, 'Ocado overtakes Tesco as most valuable UK retailer', BBC, 2020, **link**

21 Savva M. and Straub G., 'Making big data deliver', London Business School, 2018, **link**

22 Garnter, 'Build the AI Business Case', AI User Forum, 2018, **link**

23 Martin R. L., 'There Are Still Only Two Ways to Compete', Harvard Business Review, 2015, **link**