



## The Three Stages of the Data Driven Strategy

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### Abstract

Any company can become Data Driven. From now on, the difficulty is no longer technical. It is strategic. Indeed, a plethora of sophisticated and successful tools support companies on this path. On the other hand, in spite of the quantity of books and research on the subject, there is still a lack of a simple and precise roadmap to guide and drive the digital strategy in the long term.

This roadmap is the synthesis of the multiple research on the subject and tries to draw the best from the practices of innovative companies.

Our roadmap consists of three steps. First, Unification of data sources, then Process optimisation and finally Metamorphosis. Unification - Optimisation - Metamorphosis

The roadmap shows how learning algorithms should be oriented to transform the business in small incremental steps that together produce powerful change.

It also specifies how the data must be assembled together in order to harness the full power of the algorithms. This roadmap is the synthesis of the multiple research on the subject and tries to draw the best from the practices of innovative companies.

**Keywords:** Digital Transformation; Digital Strategy; Data Driven; Artificial Intelligence; Machine Learning, Algorithms; Big Data; Client - Data - Product Loop; Predictive Technology; Data Lake; Open Source; Single Source of Truth; Unification; Optimisation; Metamorphosis

### Introduction

The Digital Transformation of companies is receiving a lot of attention. Nevertheless, the essential points are often drowned in a host of technical details.

In this article, we give a synthetic roadmap with three steps. This roadmap provides a clear vision and indicates the strategy for building a Data Driven business.

This roadmap also makes it possible to benchmark against competitors and to position oneself for the companies that have started the Digital Transformation project.

The outline of the article is as follows. We detail each stage of the Data Driven Business Transformation as well as how they are linked together.

From the 1<sup>st</sup> to the 3<sup>rd</sup> stage, what are the milestones that constitute them?

What are the tasks to be carried out?

How each stage leverages the digital technologies of Big Data, then Machine Learning and finally Servicification.

This provides an opportunity to specify in which perspective to orient the data? and finally, how to initiate the snowball effect that links Customer - Data - Product?

First of all, let's start by setting the framework and defining the terms

### What is digital transformation?

Digital Transformation is the radical modification of organisations by digital technologies.

Let's look at the terms for a moment. First of all "Transformation", here we are not talking about zero-paper digitisation which is a process that has been underway for several decades by organisations. We are talking about Digital Transformation. This underlines the fact that one goes from one state to another.

We will come back to this in more detail in the part where we will deal with the 3<sup>rd</sup> stage of the Digital Transformation.

Keep this in mind, what we are concerned with here is a radical change in organisations or at least a significant evolution.

What is causing organisations to change are digital technologies.

There has to be a before and an after at the end of the Digital Transformation. This is not a half measure. It is a definitive change.

A few examples. The industry has revolutionised itself by embarking on the path of Digital Transformation.

Rolls-Royce bears witness to this. Data is turning the business model upside down [1].

What is changing in organisations?. First of all, we are changing the company's business lines. That is to say, the set of tasks required to assemble, produce, distribute and sell.

Now that the stage has been set, let's look at the stages leading up to the Transformation.

### The digital transformation roadmap

The Digital Transformation can be summed up in three key steps. Here's how they fit together.

The first stage concerns the organisation of company data. In this stage, Big Data technologies are leveraged to store, collect and manage massive data. It is a stage of initiation of the Data-Driven culture.

The 2<sup>nd</sup> stage begins the analysis of data collected in the previous stage. This stage makes intensive use of predictive technologies from Machine Learning. It is a stage in which the data culture within the company is intensified.

The 3<sup>rd</sup> stage revolutionises the business model of the company. The predictive capabilities acquired in the previous stage open up opportunities that were previously unattainable. The change in the company is radical.

Now, let's go into more depth for each of the stages we have just mentioned. We will detail them one by one. Let's start with the 1<sup>st</sup> stage of the Digital Transformation

### The first stage of the digital transformation: Unification

The Digital Transformation begins at this stage. At this stage, all data sources are brought together in a single place called Data Lake. This is the data warehouse of the Big Data.

The data management systems built around Open Source Hadoop technology make it possible to absorb any type of computer file. They are stored in this Data Lake, retaining their original format and disparity.

All data, all formats are concerned. Texts, images, figures, sounds, videos, X-rays, scans, etc.

All company departments are involved: manufacturing, accounting, HR, sales, marketing, etc.

This includes data on products, processes, customers, suppliers and employees.

The purpose of this Data Lake is to become the company's data repository. It is the Single Point of Truth of the Big Data. This is why this stage is called "Unification of Data Sources".

In the following phases of the roadmap, the Machine Learning will draw its data from here to feed itself.

Afterwards, not all the data from the Data Lake will necessarily be used at the same time. Nevertheless, the self-learning algorithms that are deployed en masse in the second stage will all draw from here.

The establishment of this Data Lake does not necessarily constitute a cost for the company. If done well, this stage can be a source of savings for the company. Notably in the form of savings, salaries, traditional database licenses, which have become useless for the most part.

In addition, the unification of sources makes it possible to highlight redundancies. For example, the Canada Imperial Bank of Commerce has built up a Single Source [2].

Several hundred disparate and often redundant sources were brought together in a Big Data architecture.

Thus, the bank unified its data sources, automated their manual consolidation and abandoned its old systems.

Operational expenses (salaries and technology costs) were drastically reduced.

This made it possible to self-finance this first project.

Let us now detail the 2<sup>nd</sup> stage.

### The second stage of the digital transformation: Optimisation

The 2<sup>nd</sup> stage streamlines and optimises company processes. At this stage, you can do better with the same or better with fewer resources. The most important thing is to immerse the entire organisation in the Data-Driven culture.

The predictive models of the Machine Learning are mobilised to make predictions that support the traditional activities of the company.

The oil company Total is equipping its sales forces with a voice recognition tool that automatically sorts and organises the information that comes from the sales representatives' visits to their customers in the field. The information then feeds into a knowledge base made available to the entire company.

Machine Learning's algorithms ingest the data from the first stage in order to predict everything that can be predicted in the life of the company and the progress of its business.

Burberry tracks down imitations of its products and counterfeits through the analysis of image streams on the internet [3].

The start-up Heuritech anticipates fashion trends for its customers by ingesting hundreds of millions of images every day [4].

Nestlé suggests to its customers an adapted and personalised diet thanks to the analysis of their feeding data [5].

The algorithms of the Machine Learning are set in motion in all phases of the product's life. From the automatic detection of non-conforming products on production lines to the optimisation of logistics flows for a personalised delivery taking into account the customer's situation (weather, road traffic, etc.).

Of course, the analysis of the customer's data is not to be outdone. Product usage data is mobilised as well as behavioural, commitment and transactional data. These data answer the questions "how", "how much", "when" and "where". This context applies to both B2B and B2C.

Finally, they are supplemented with third party, external data, in order to obtain an enriched context of all the uses of all the customers.

This cross-referencing between company data and third-party data considerably amplifies the analyses of the Machine Learning algorithms.

It is all of this data (“how”, “how much”, “when” and “where”) that is brought to the knowledge of the algorithms.

The ultimate goal is to personalise the product in a very advanced way in order to best serve the customer.

To this end, Customer, Product and Data must be considered together. This inseparable trio of Digital Transformation forms a loop in which each influences the other.

We no longer analyse the Customer, then the Product and finally the Data. From now on, the analysis of each component is joint.

It is the Client - Data - Product loop.

This loop produces a powerful multiplicative effect:

- The starting point is the Customer. It is the objective of the Data-Driven company.
- The customer’s product usage data is continuously screened by the Learning Machine.
- In return, the product is modified to make it more personalised and produce more commitment and more data...

On the other hand, it is by no means a question of building a super algorithm. This point is important. In the second stage, the whole company is flooded with a cloud of algorithms. Each of them is in charge of a single elementary question such as: “Is it a man or a woman?”, “how old is he?”, “is he going to cancel his subscription soon?”, “is he planning to return to a point of sale tomorrow?”, “how many items in his next shopping basket?”, “how far will he travel tomorrow?”, “is this a business or personal trip?”, etc....

For example, following this principle, Schibsted, the Scandinavian giant owner of a hundred or so e-commerce site brands, uses Machine Learning algorithms to predict the quantities, composition, amount and frequency of all shopping baskets.

<Schibsted blog, “price your car with data”, link>

From this loop gradually emerges a complete vision of the customer’s deepest wish when using the company’s product.

We are able to answer “who is he?” and “why is he using our product?”.

Let’s move on to the final stage of Digital Transformation

### The third stage of the digital transformation: Metamorphosis

At the 3<sup>rd</sup> stage of the Digital Transformation, the Data culture already permeates every job, function, task and decision in the company.

Let’s be absolutely clear. In the final stage, it is no longer a question of streamlining and optimising independent processes. It is no longer a question of deploying advanced analytical models (intelligent voice assistant for the sales force, identification of dissatisfied customers, etc.).

The deployment of these intelligent tools that support your company’s business and your employees is the subject of the second stage.

The purpose of the last stage will be to bring to your organisation this structured and coherent global vision of change.

At this stage of the Transformation several strategies are implemented. Among them, let’s detail the service strategy.

This strategy consists of providing high value-added advice. The industrial company also becomes a service provider. Barriers and categories explode. We move from industry to service through data. This is why this stage is summarised as “Metamorphosis”.

An example. John Deere [6], an industrial supplier of agricultural capital goods, markets tractors whose engines themselves modify their power according to the use made of them. This is the first point.

Then, this supplier uses all the data collected in the field (soil type, weather, season, agricultural data on the harvest and crop). Their analysis then enables a host of value-added services to be provided. Warranty and non-failure insurance for tractors, agronomic engineering advice to optimise the harvest, etc.

This is metamorphosis. We are leaving the original framework of the company, which “only” delivers finished products.

Following this precise pattern, General Electrics has completely reinvented itself [7].

Selling an industrial product, a manufactured good is no longer the final objective. What counts is the relationship we build with the customer who feeds the algorithms with usage data.

This 3<sup>rd</sup> stage is a stage of intensification where the Data-Driven culture symbolised by the Client - Data - Product loop is pushed to the limit [8].

### Conclusion

In this article, we set out the roadmap for Digital Transformation. This roadmap has 3 distinct stages. Unification - Optimisation - Metamorphosis.

This roadmap guides us from the first Data initiatives in the organisation to the final stage of the Digital Transformation.

Each stage includes a project to be carried out in order to transform the organisation and intensify the Data-Driven culture.

### Conflict of Interest

There is not any financial interest or conflict of interest exists.

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