

# Les Data Compagnies

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#DIGITALSNCF

LA DONNÉE, NOUVELLE ÉTAPE  
DE LA TRANSFORMATION

Data-driven company



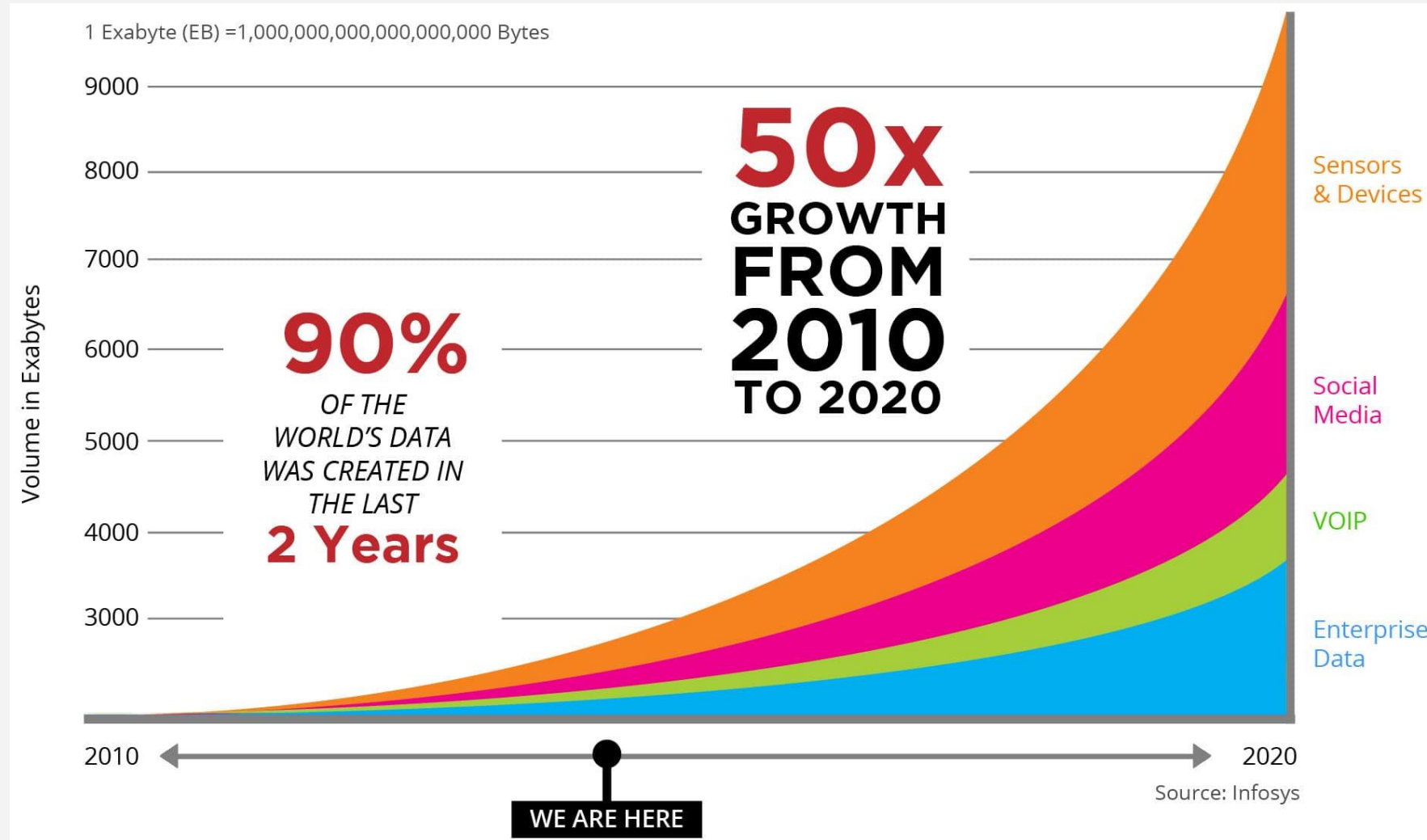
Est-ce un effet  
de mode ou une  
nécessité dans le cadre  
de leur transformation  
numérique ?

# AGENDA

1. Omniprésence des données
2. Évolution et impacts
3. Data Companies



# 1 – OMNIPRÉSENCE DES DONNÉES - DATA DÉLUGE



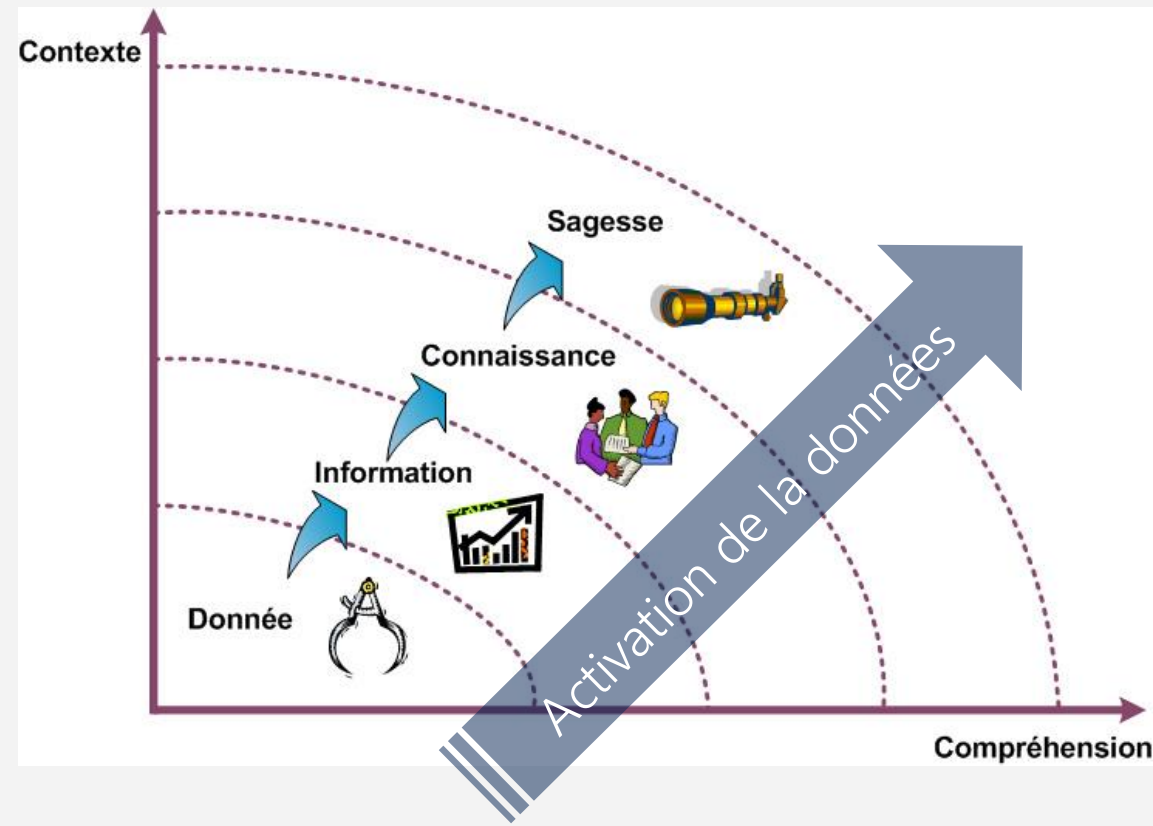
→ Progrès technologiques et les disruptions business

# 1 – OMNIPRÉSENCE DES DONNÉES - DONNÉE, INFORMATION ET CONNAISSANCE

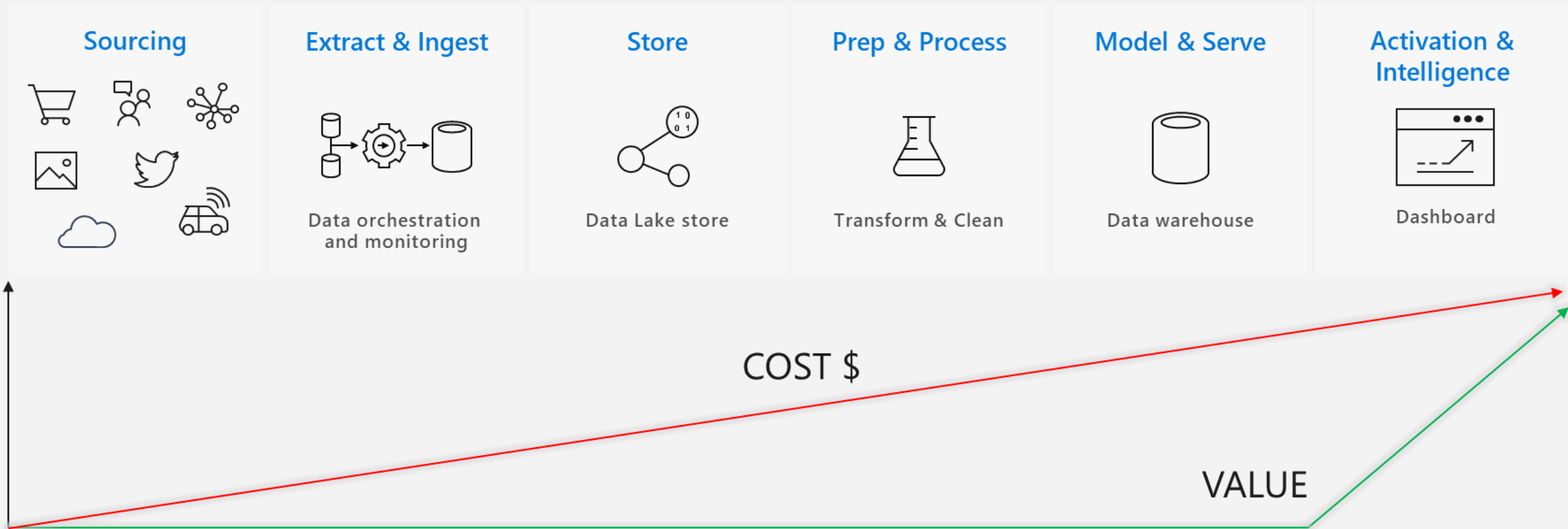
Exemple : 10

- La température est de 10°C à Paris aujourd'hui
- Je suis à Paris aujourd'hui donc je m'habille chaudement

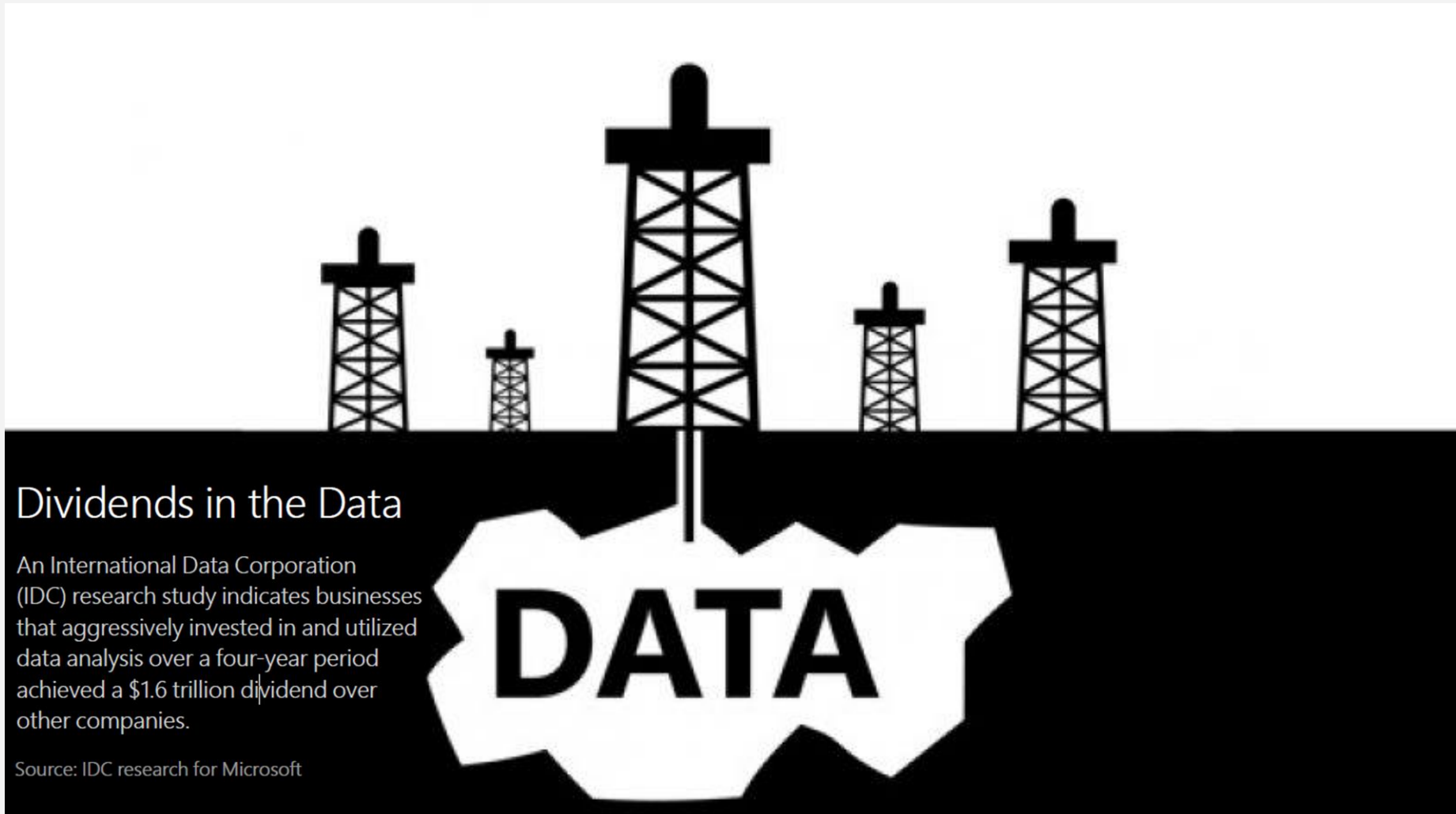
Donnée  
Information  
Connaissance, Sagesse



# 2 - ÉVOLUTION ET IMPACTS - COÛT DES DONNÉES



## 2 - ÉVOLUTION ET IMPACTS - VALEUR DES DONNÉES



**Dividends in the Data**

An International Data Corporation (IDC) research study indicates businesses that aggressively invested in and utilized data analysis over a four-year period achieved a \$1.6 trillion dividend over other companies.

Source: IDC research for Microsoft

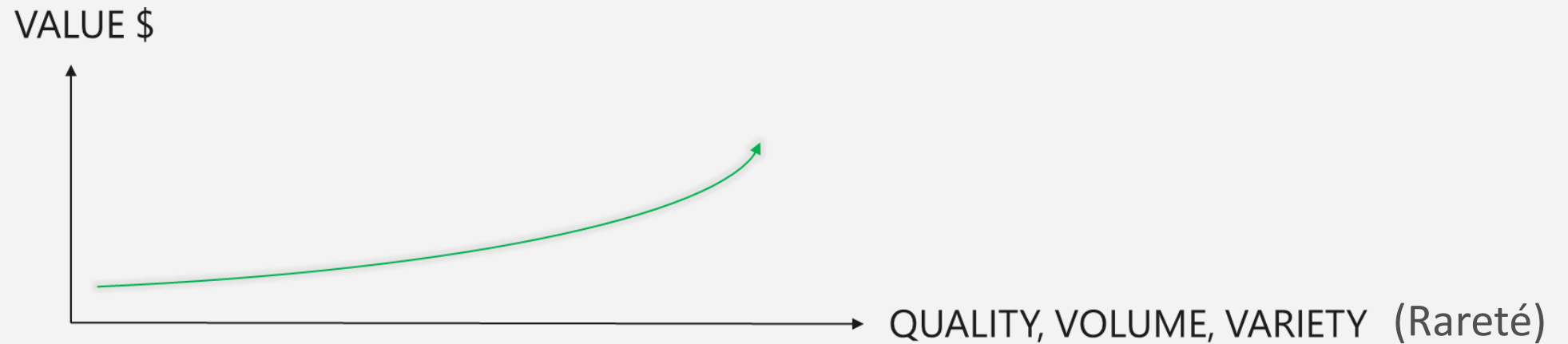
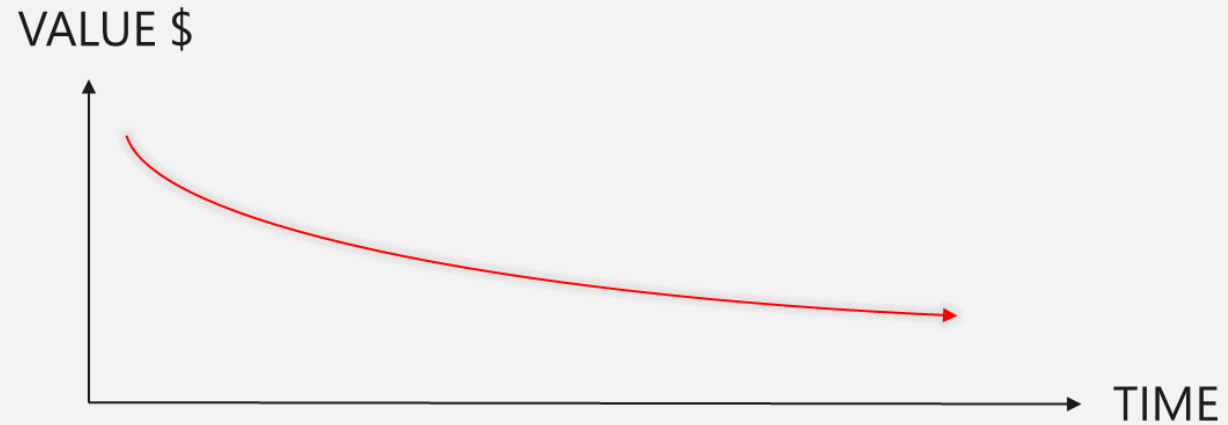


*En 2015 Facebook : 250 Mrd \$, Air Canada : 34 M \$*

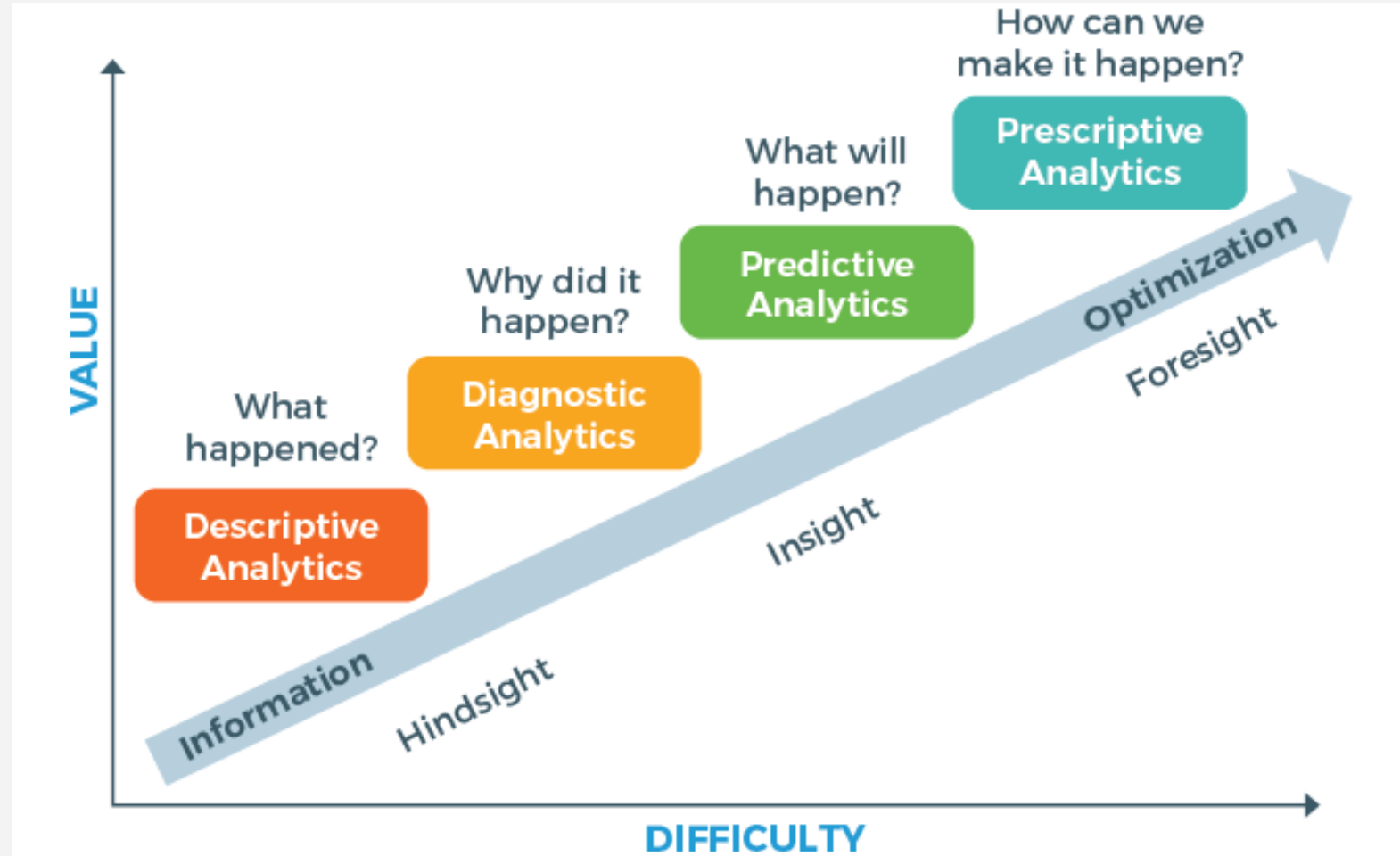
*Ce ne sont plus les actifs physiques qui régissent la valeur d'une entreprise mais de plus en plus sont patrimoine numérique*



## 2 - ÉVOLUTION ET IMPACTS - VALEUR DES DONNÉES



## 2 - ÉVOLUTION ET IMPACTS - VALEUR DES DONNÉES

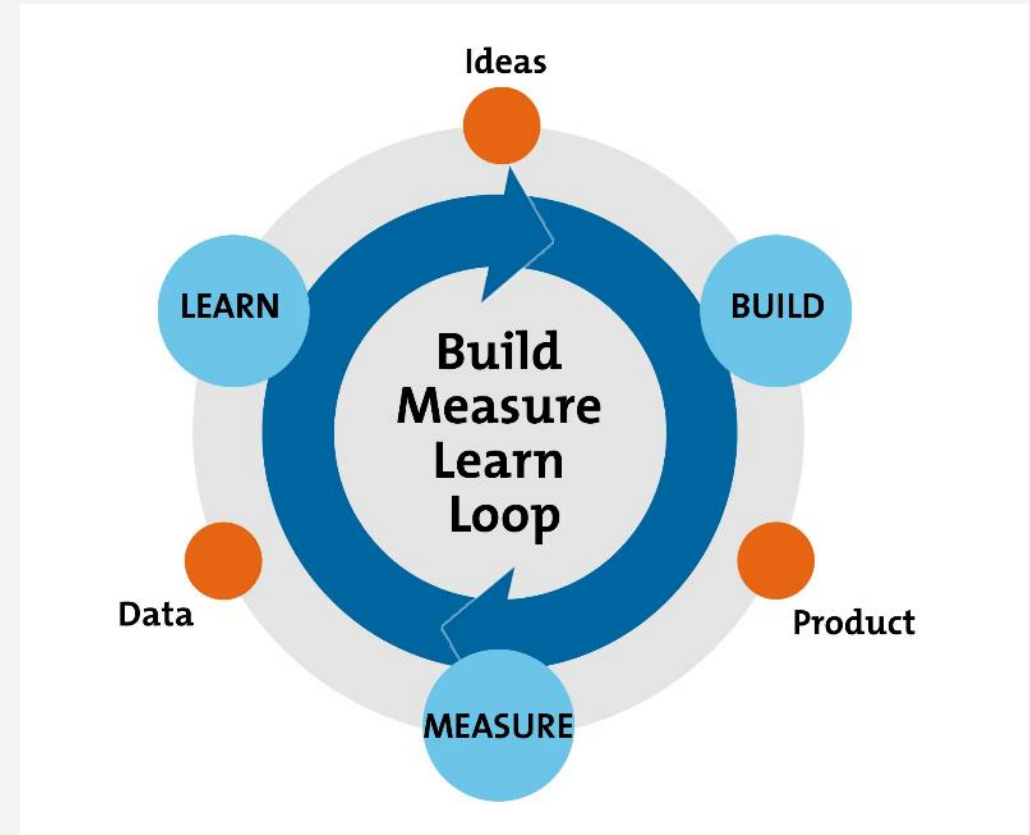


## 2 - ÉVOLUTION ET IMPACTS - INNOVATION

*Data-Driven-Innovation (DDI)*



**thermomix**

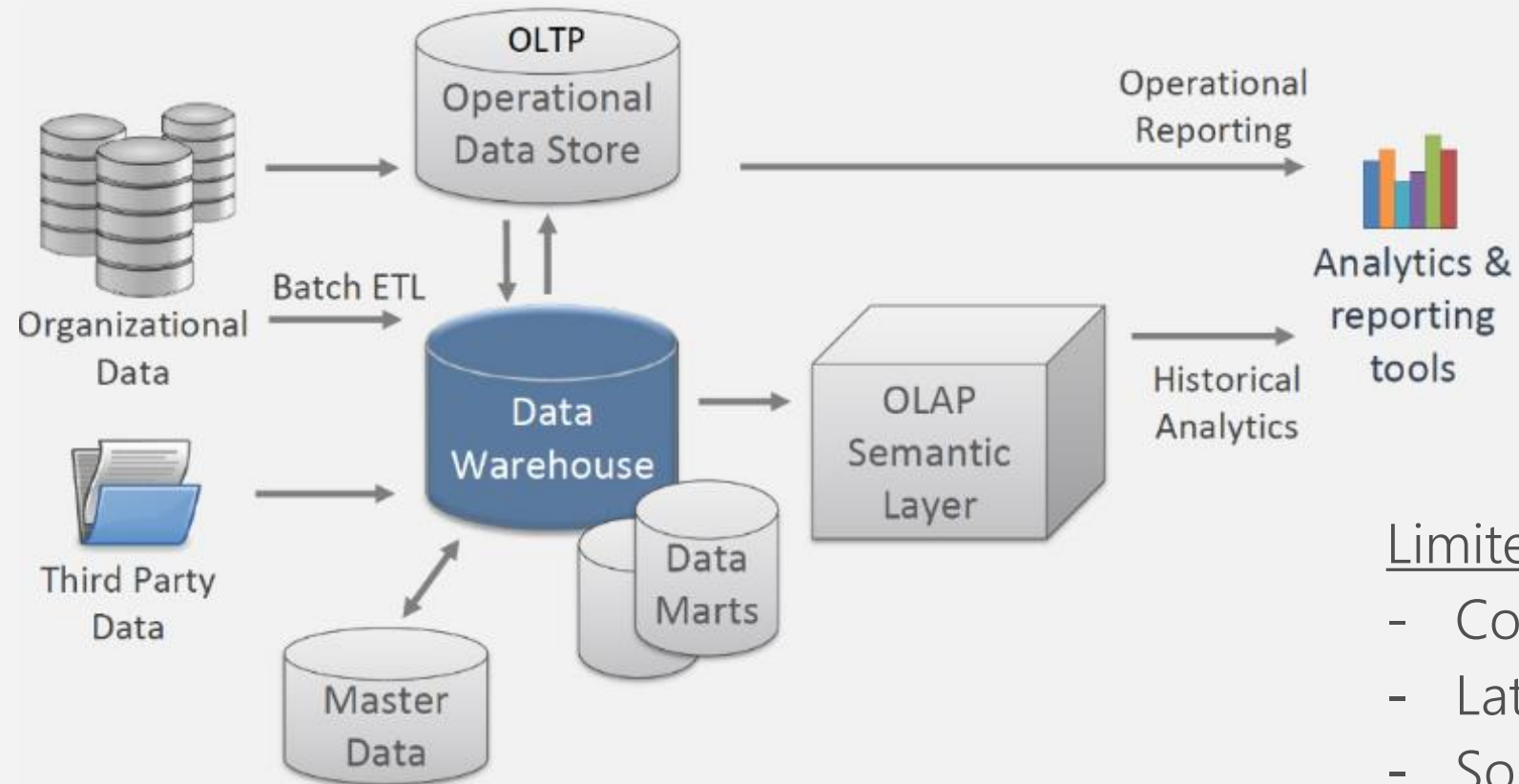


# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE (1/5)

ORGANISATION

CULTURE



Limites:

- Coûts
- Latence, schémas stricts
- Sous ensemble
- Données Structurées
- Batch

# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE (2/5)

ORGANISATION

CULTURE

Data Warehouse	vs.	Data Lake
structured, processed	<b>Data</b>	structured / semi-structured / unstructured, raw
schema-on-write	<b>Processing</b>	schema-on-read
expensive for large data volumes	<b>Storage</b>	designed for low-cost storage
less agile, fixed configuration	<b>Agility</b>	highly agile, configure and reconfigure as needed
mature	<b>Security</b>	maturing
business professionals	<b>Users</b>	data scientists et al.
SQL	<b>Types of Queries</b>	Multiple types: programmatic access, machine learning, SQL, graph analysis, deep learning, etc.
mature	<b>Tool Integration</b>	maturing



# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

## TECHNOLOGIE (3/5)

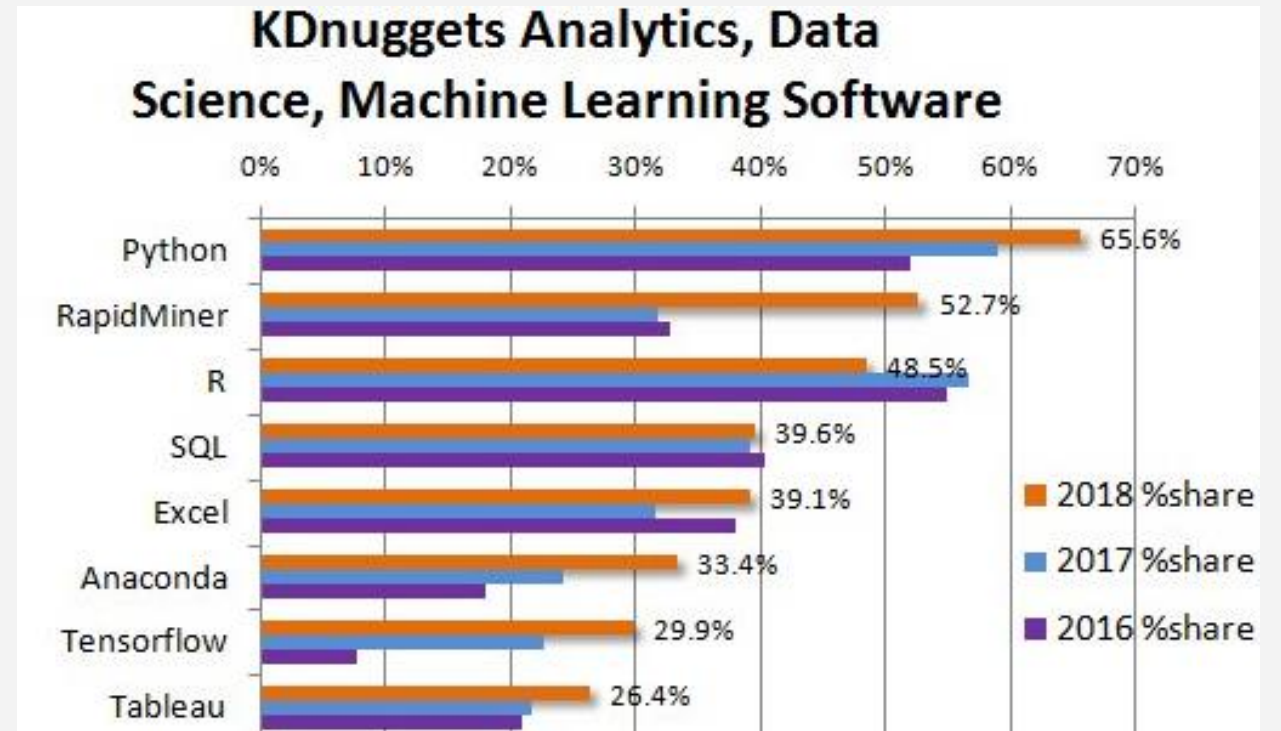
## ORGANISATION

## CULTURE

- Big Data Framework : Hadoop, Spark
- No-SQL
- ETL vs ELT
- Self-Service
- Mobilité
- API Economy
- Cloud Computing



- Analyse avancée, IA, Machine Learning

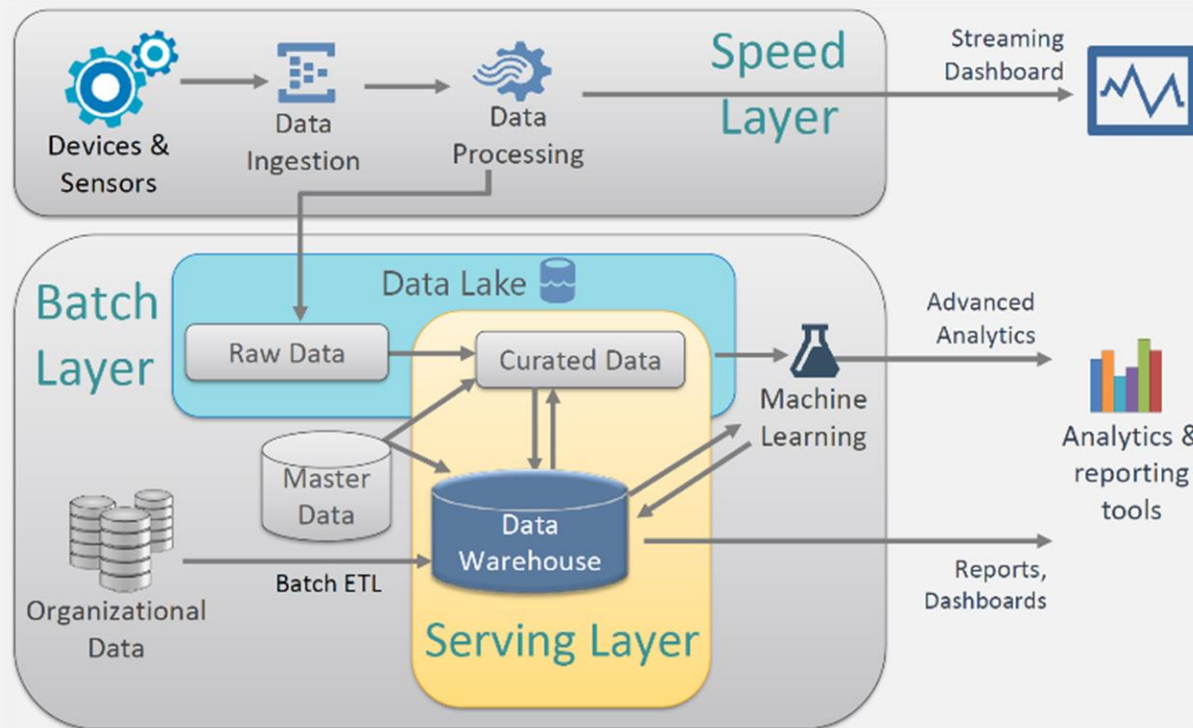


# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

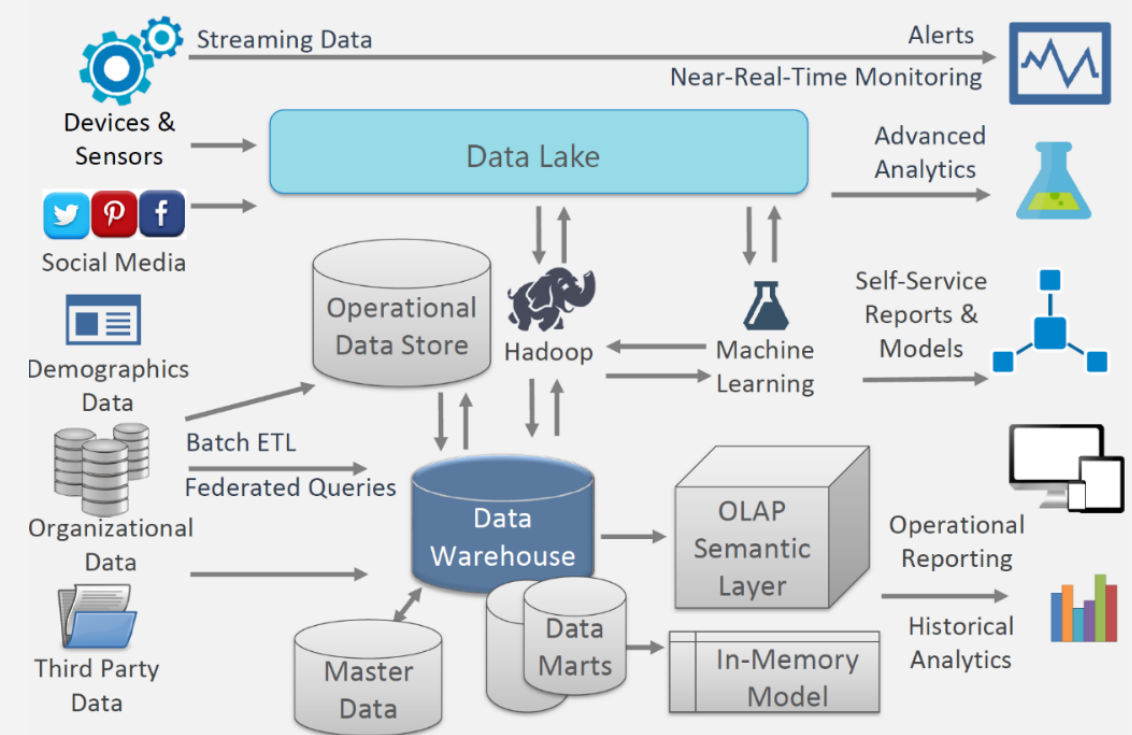
TECHNOLOGIE (4/5)

ORGANISATION

CULTURE



Lambda Architecture



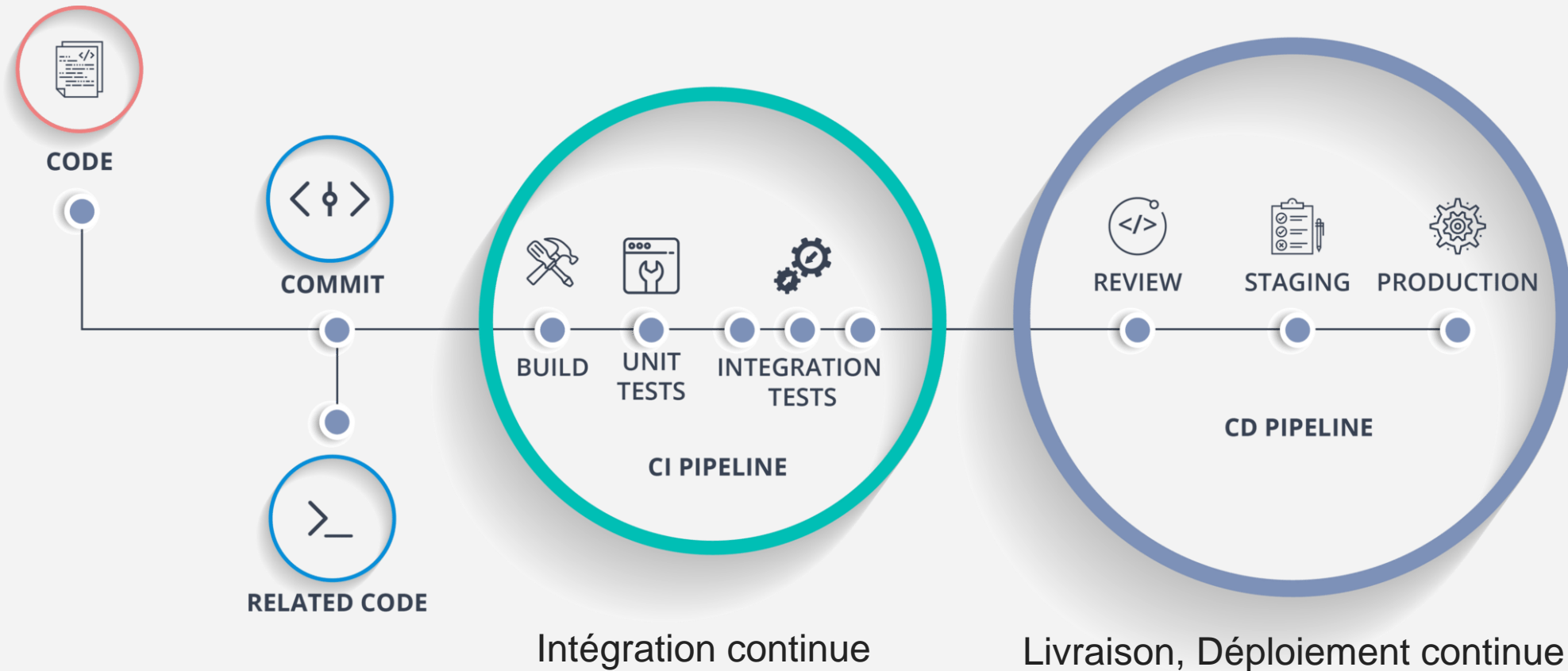
Pipeline d'enrichissement et d'analyse

# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE (5/5)

ORGANISATION

CULTURE



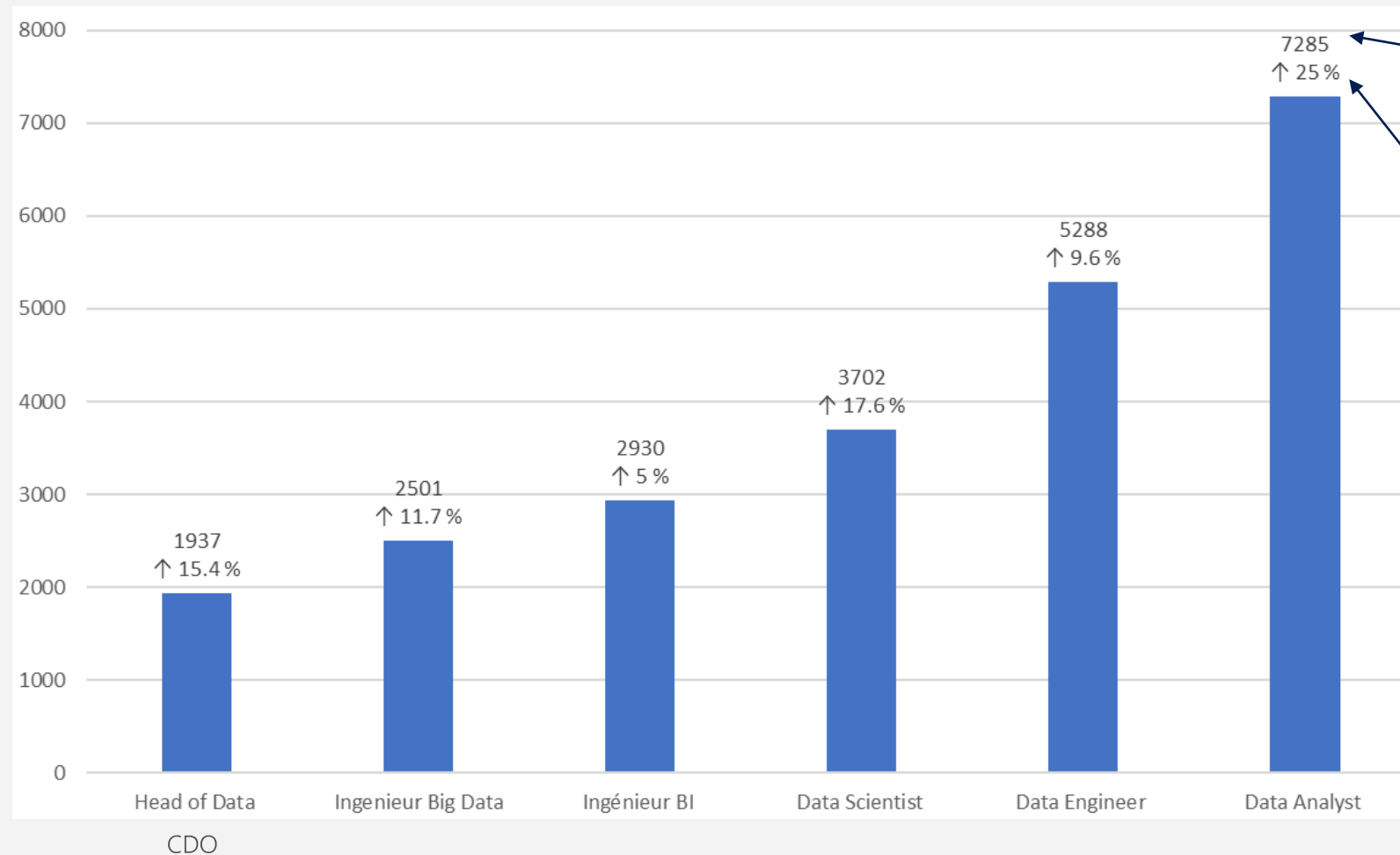


# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE

ORGANISATION (1/3)

CULTURE



Janvier 2018

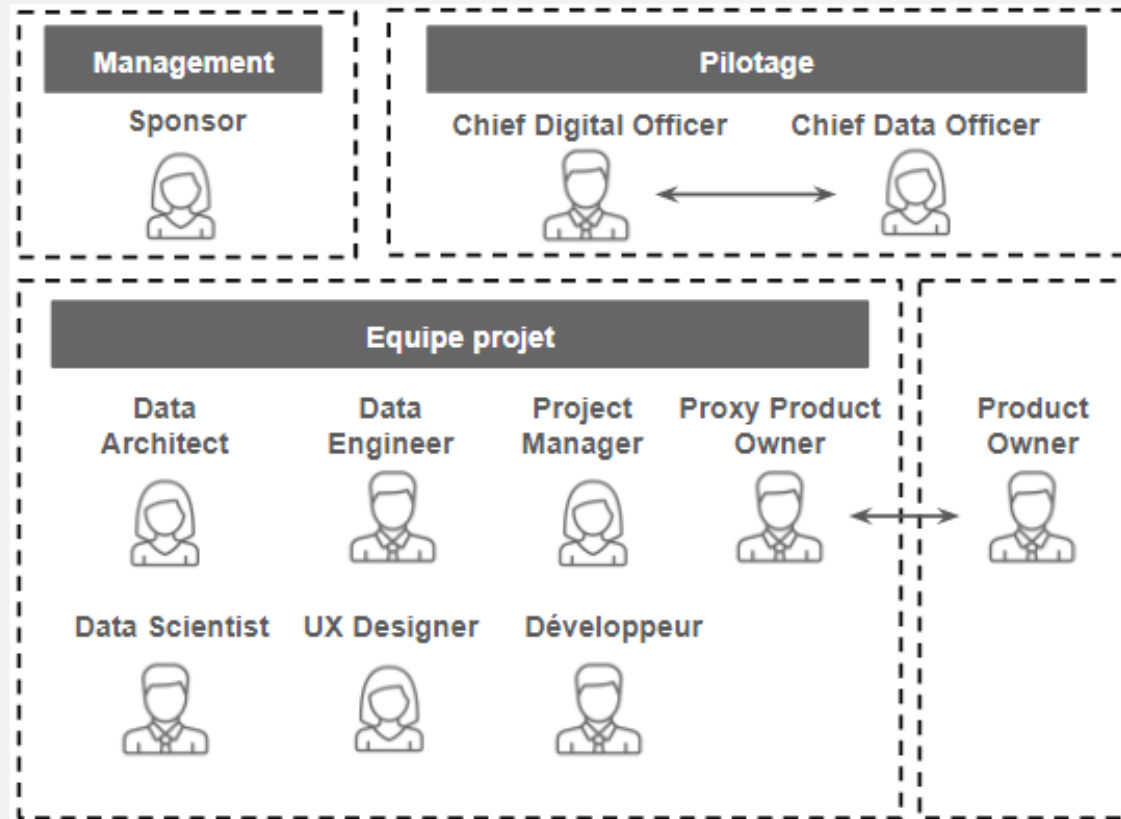
Progression  
par rapport  
Juillet 2017

# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE

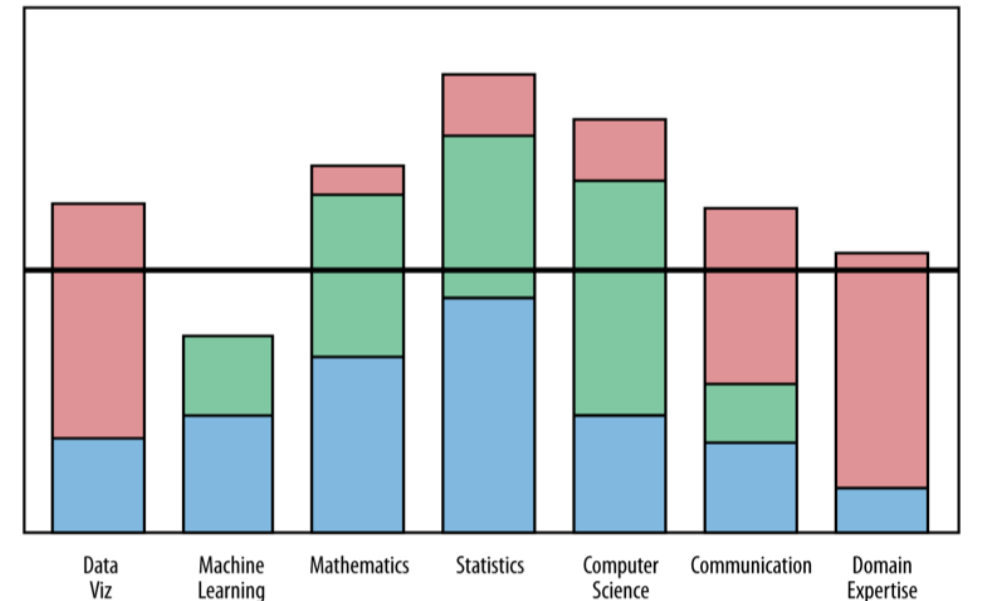
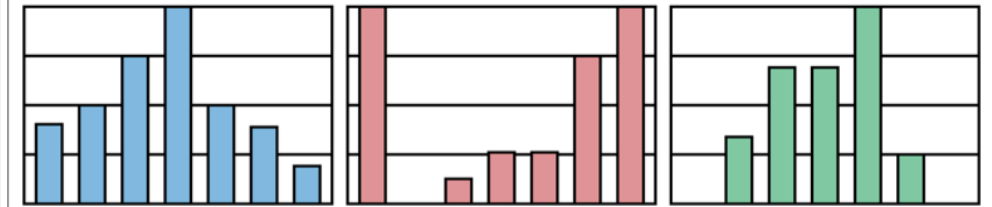
ORGANISATION (2/3)

CULTURE



« Test & Learn »

No one person can be the perfect data scientist, so we need teams.

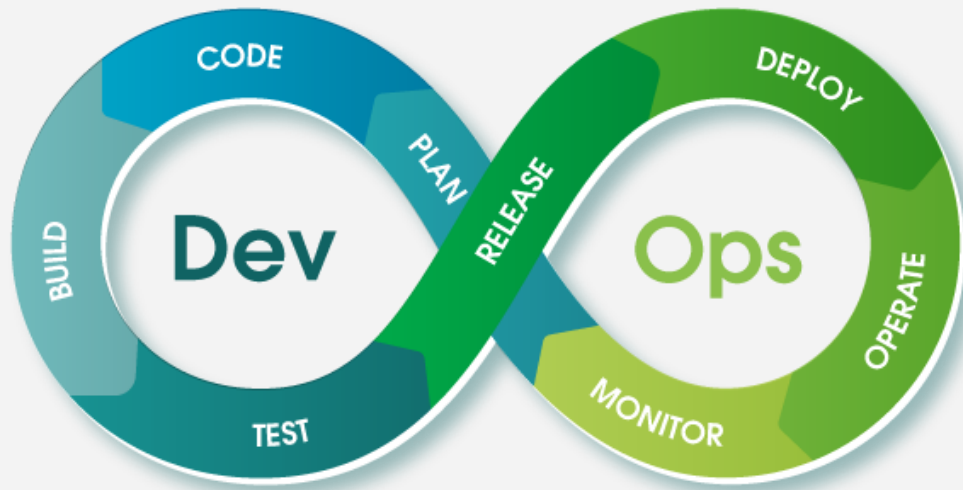


# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE

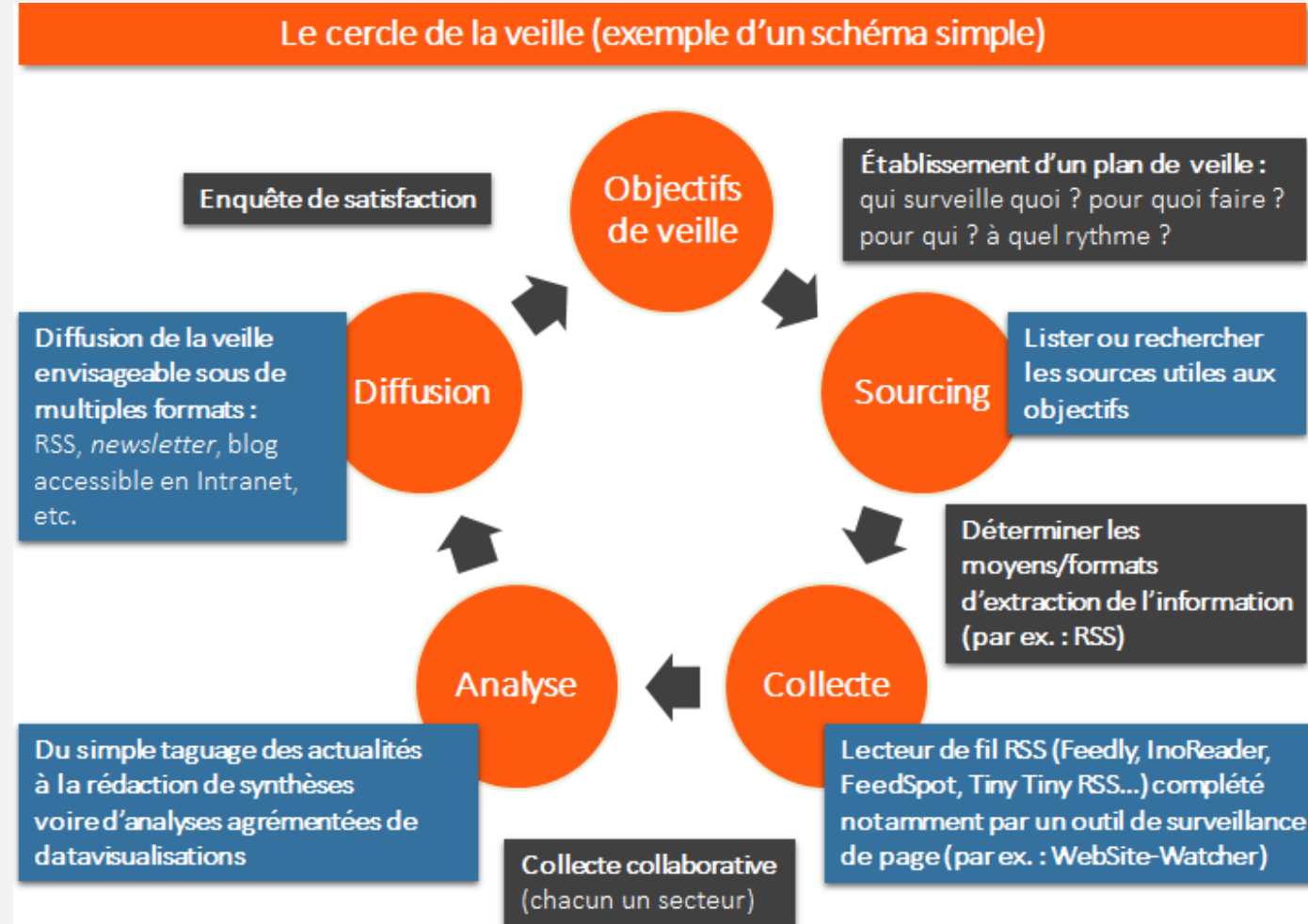
ORGANISATION (3/3)

CULTURE



*Data - Ops*

## Le cercle de la veille (exemple d'un schéma simple)



# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

TECHNOLOGIE

ORGANISATION

CULTURE (1/3)

- La culture d'entreprise est un **ensemble de connaissances**, de **valeurs** et de **comportements**, partagés par la plupart de ses membres, qui facilitent **le fonctionnement** d'une entreprise.
- Data Literacy



*HIPPO acronyme*

# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

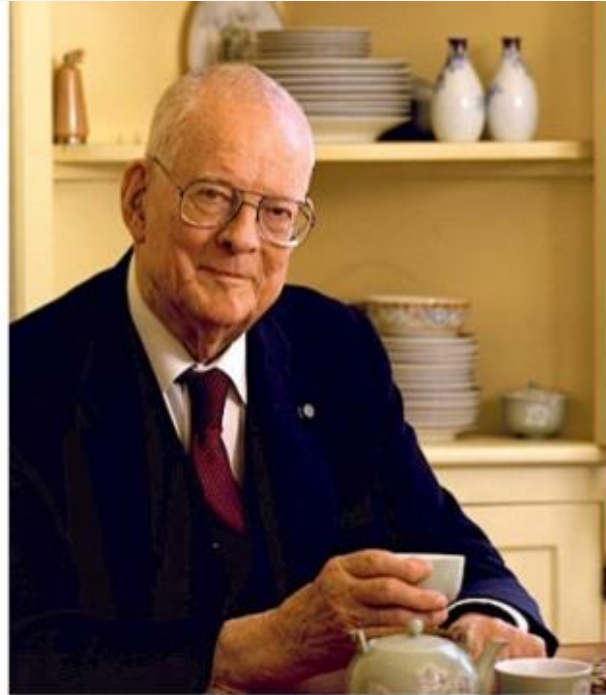
TECHNOLOGIE

ORGANISATION

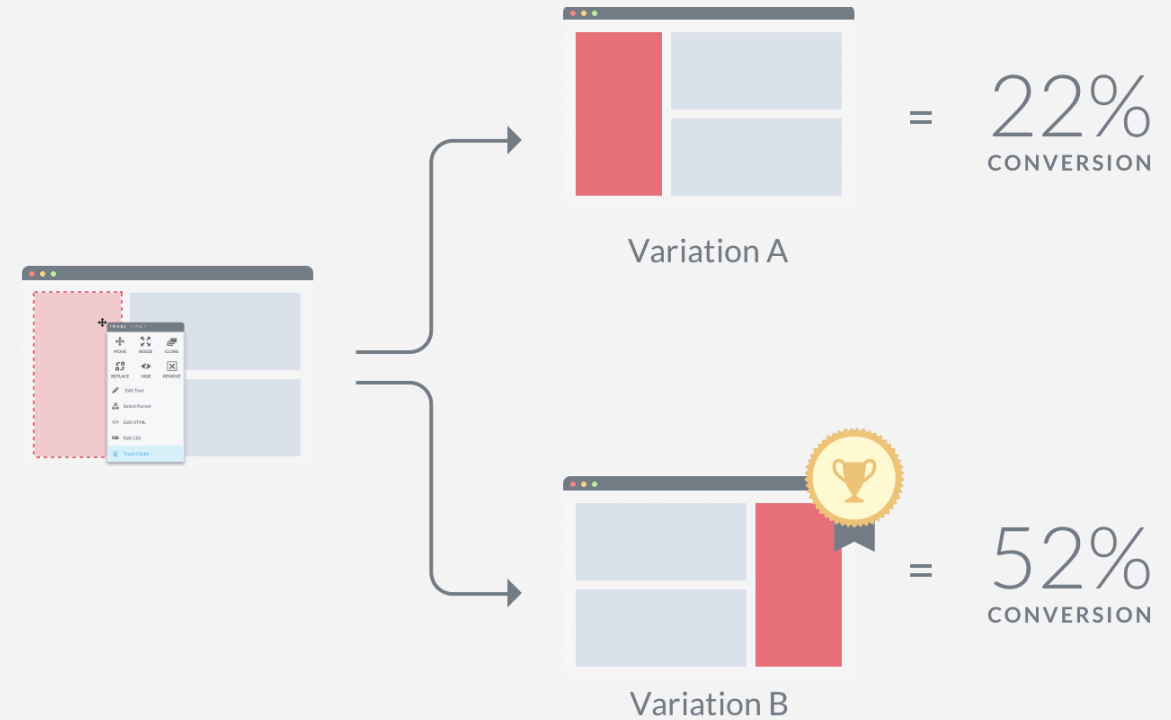
CULTURE (2/3)

*"In God we trust.  
All others must  
bring data."*

W. EDWARDS DEMING



Métrologie : Science de la mesure



# 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

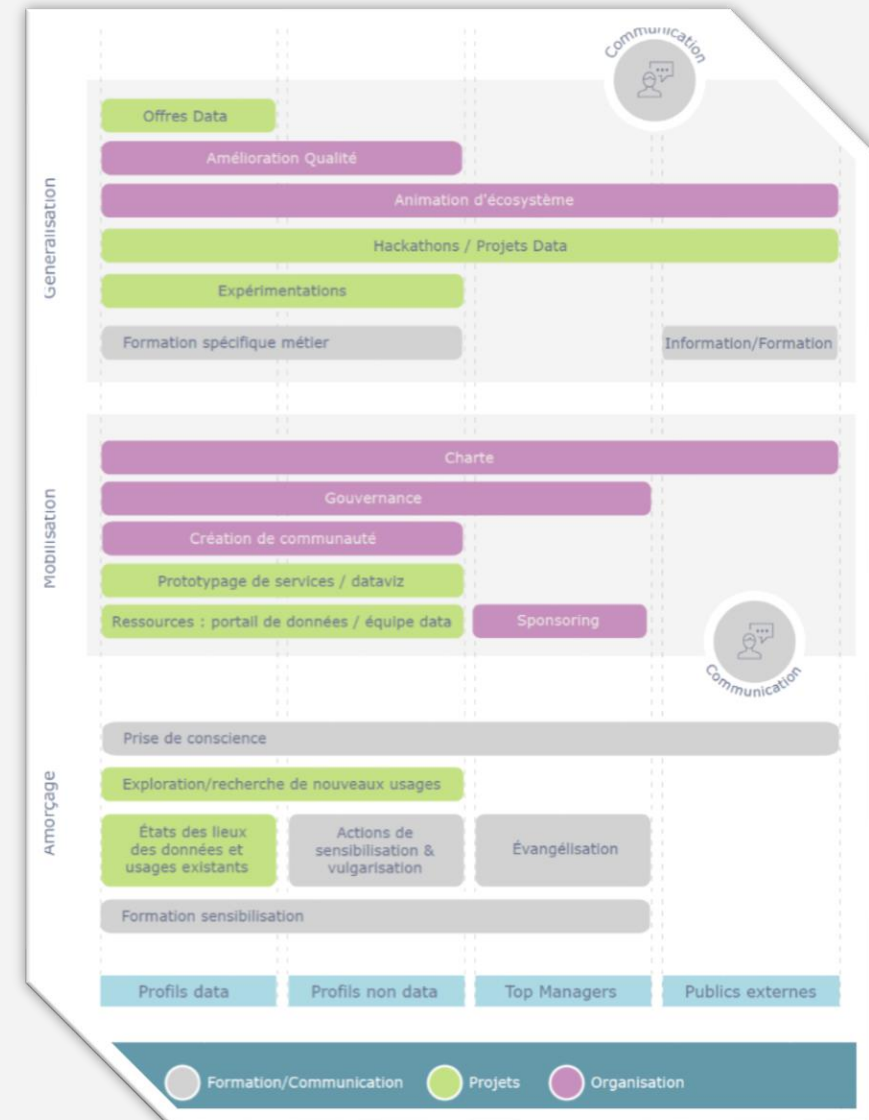
TECHNOLOGIE

ORGANISATION

CULTURE (3/3)

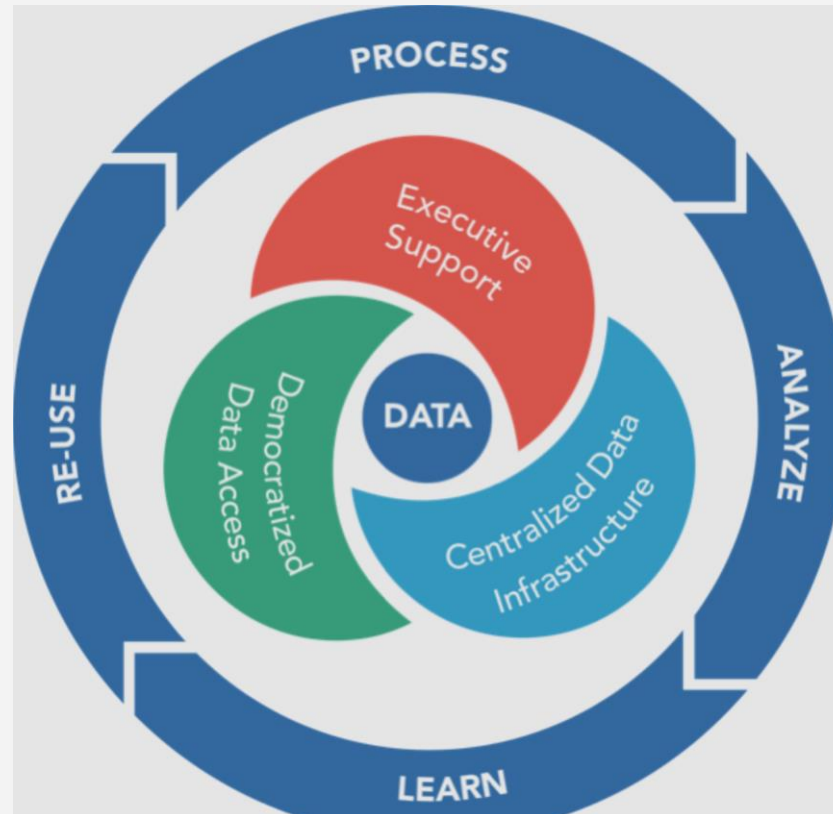


*Enthousiasme*

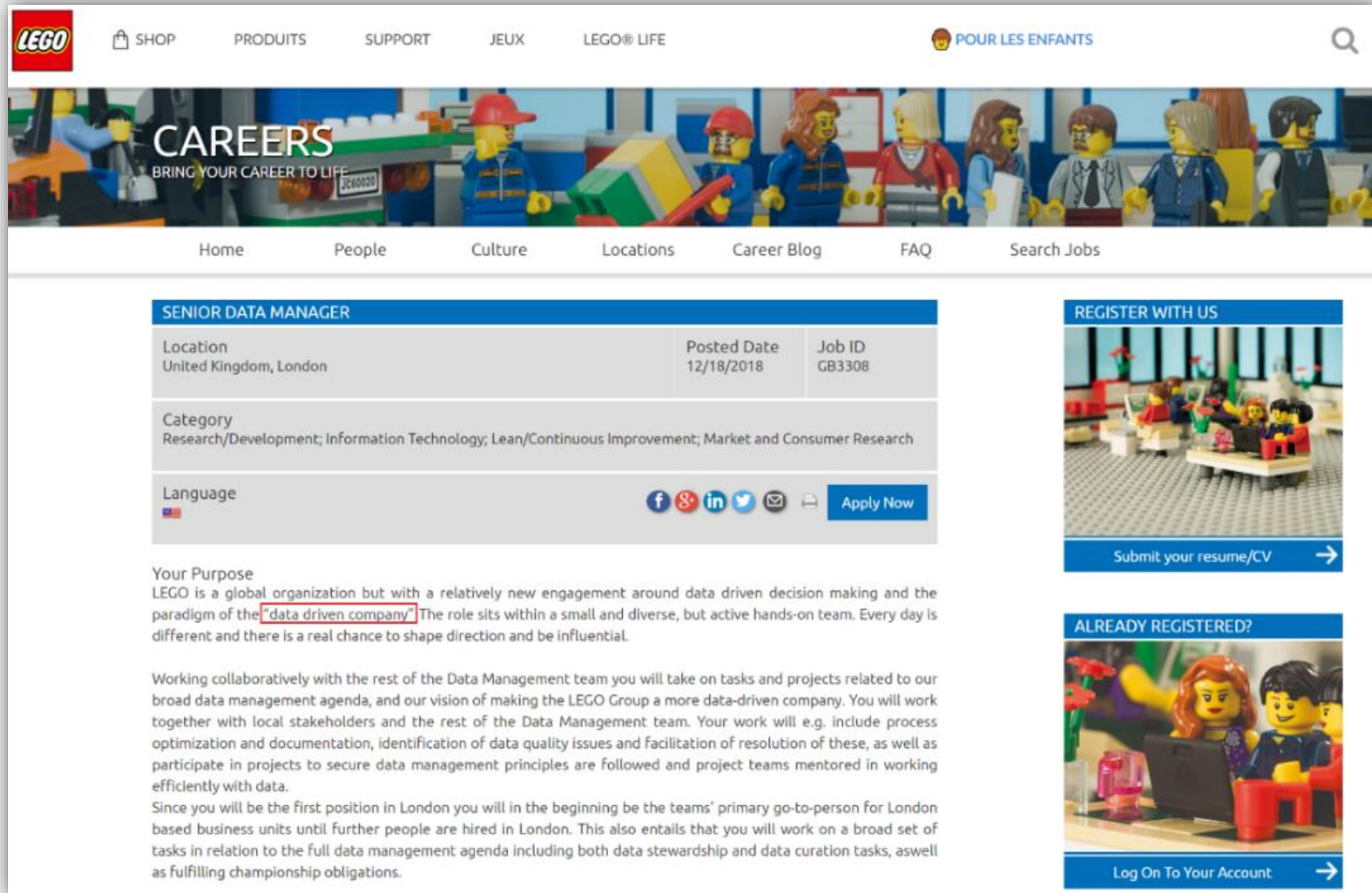


## 2 - ÉVOLUTION ET IMPACTS – TRANSFORMATIONS

Data Company = Technologie + Organisation + Culture



# 3 - DATA COMPANIES










The screenshot shows the LEGO Careers website. At the top, there is a navigation bar with the LEGO logo, a shopping bag icon labeled 'SHOP', and links for 'PRODUITS', 'SUPPORT', 'JEUX', 'LEGO® LIFE', and 'POUR LES ENFANTS'. A search icon is on the right. Below the navigation is a banner image of LEGO minifigures in an office setting with the text 'CAREERS BRING YOUR CAREER TO LIFE'. A secondary navigation bar includes 'Home', 'People', 'Culture', 'Locations', 'Career Blog', 'FAQ', and 'Search Jobs'.

The main content area features a job listing for a 'SENIOR DATA MANAGER' position. The listing includes the following details:

Location	Posted Date	Job ID
United Kingdom, London	12/18/2018	GB3308

Category: Research/Development; Information Technology; Lean/Continuous Improvement; Market and Consumer Research

Language:        [Apply Now](#)

**Your Purpose**  
LEGO is a global organization but with a relatively new engagement around data driven decision making and the paradigm of the "data driven company". The role sits within a small and diverse, but active hands-on team. Every day is different and there is a real chance to shape direction and be influential.

Working collaboratively with the rest of the Data Management team you will take on tasks and projects related to our broad data management agenda, and our vision of making the LEGO Group a more data-driven company. You will work together with local stakeholders and the rest of the Data Management team. Your work will e.g. include process optimization and documentation, identification of data quality issues and facilitation of resolution of these, as well as participate in projects to secure data management principles are followed and project teams mentored in working efficiently with data.

Since you will be the first position in London you will in the beginning be the teams' primary go-to-person for London based business units until further people are hired in London. This also entails that you will work on a broad set of tasks in relation to the full data management agenda including both data stewardship and data curation tasks, as well as fulfilling championship obligations.

**REGISTER WITH US**



[Submit your resume/CV](#) →

**ALREADY REGISTERED?**



[Log On To Your Account](#) →



# 3 - DATA COMPANIES - DÉFINITION

Harvard Business Review (2018)

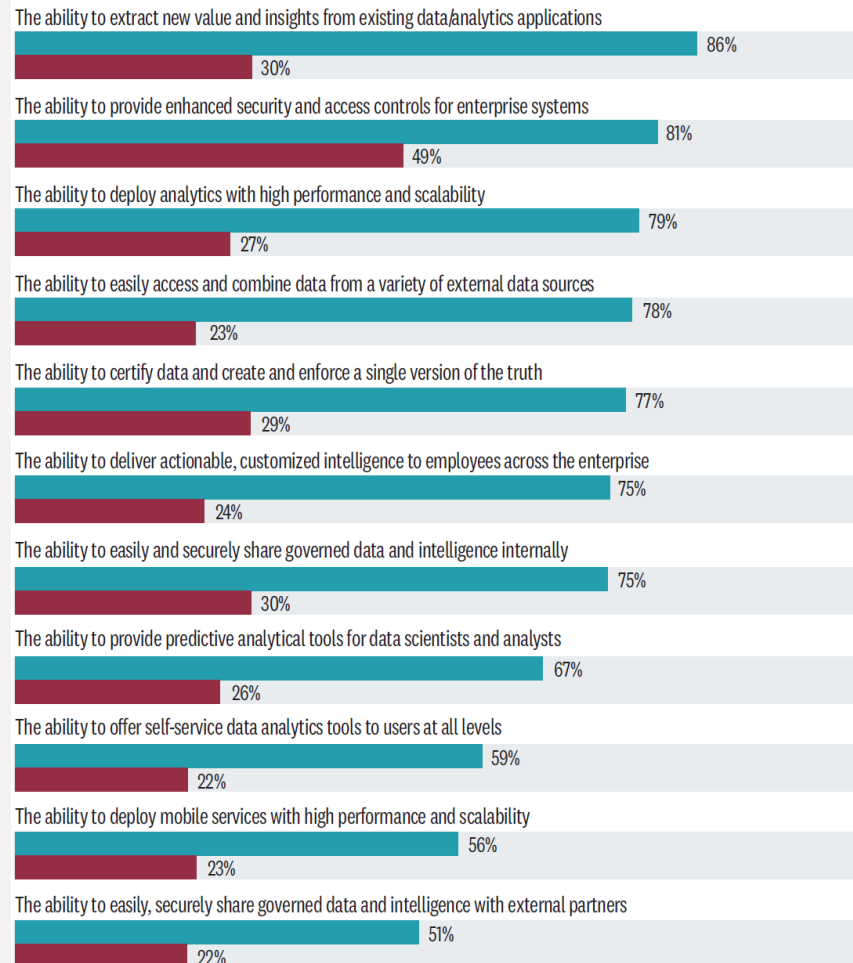
« Une Data Driven Company est une entreprise qui cherche continuellement à améliorer l'ensemble des processus de l'entreprise par l'utilisation qualitative et quantitative de données, tout le temps et sur tout ».

Joseph Glorieux, [OCTO](#).

## KEY CAPABILITIES OF THE DATA-DRIVEN ENTERPRISE

Percentage of respondents who say the following capabilities are very important for the data-driven enterprise versus the percentage who say their organization is very effective in these areas

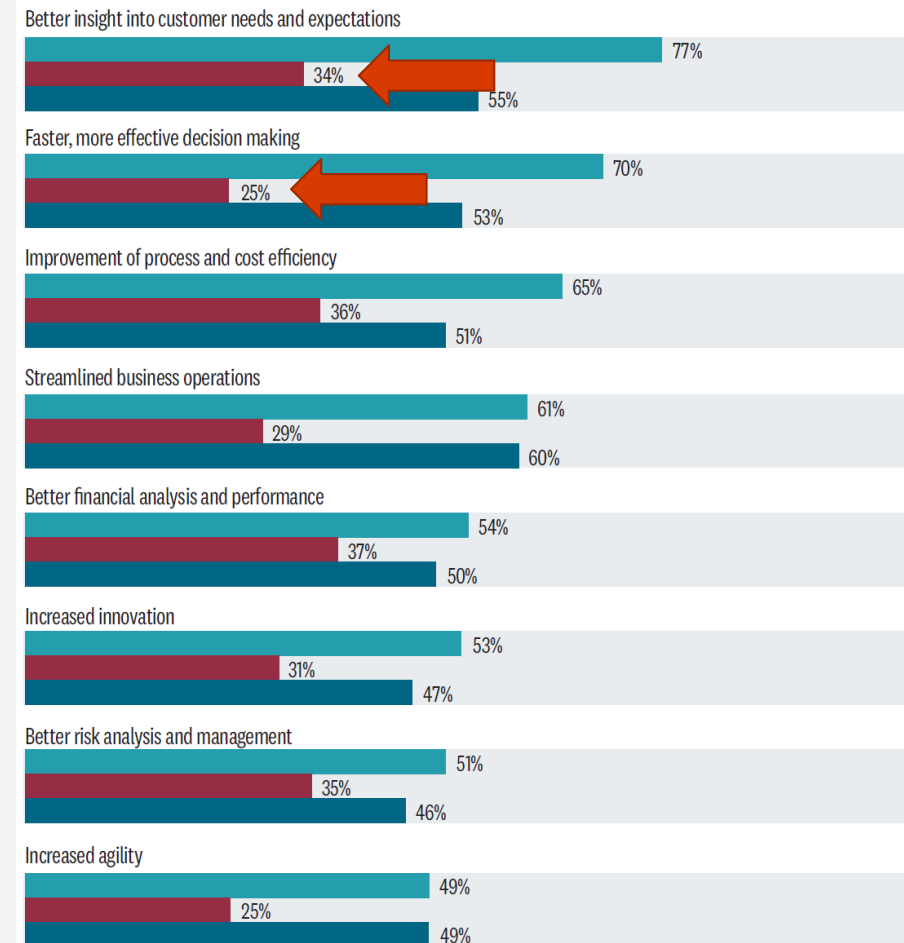
● VERY IMPORTANT ● VERY EFFECTIVE



## TRANSFORMATION GOALS AND BENEFITS

Percentage of respondents who say the following goals are most important to their organization's evolution into a more data-driven, intelligent enterprise, as well as the percentage who say they have seen benefits in each area

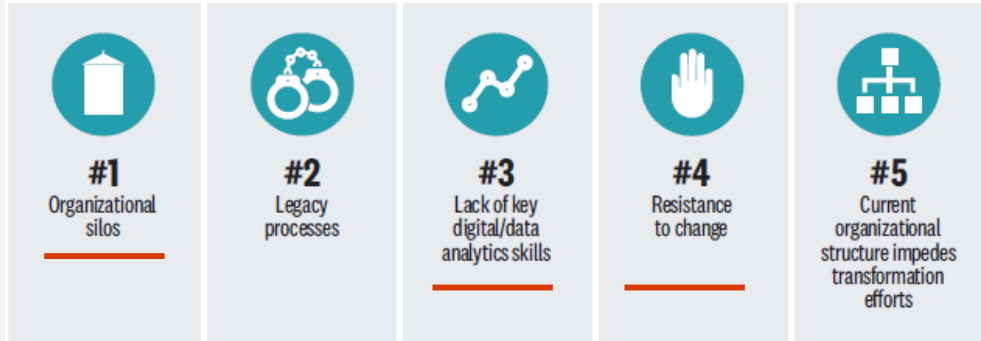
● IMPORTANT ● SIGNIFICANT BENEFITS ● SOME BENEFITS



# 3 - DATA COMPANIES - BARRIÈRES

## ORGANIZATIONAL BARRIERS

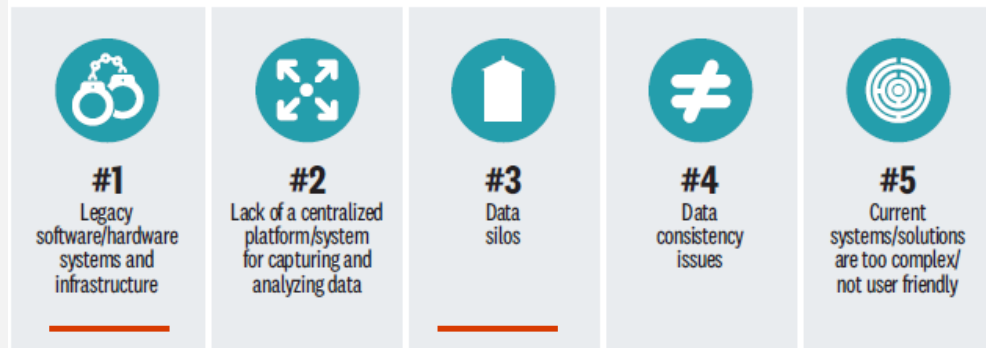
The most significant organizational barriers to respondents' transformation into data-driven, intelligent enterprises



SOURCE: HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, AUGUST 2018

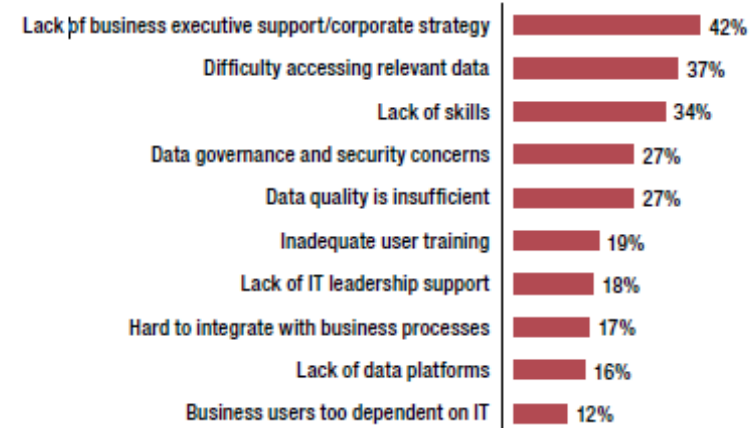
## TECHNOLOGY BARRIERS

The biggest technology barriers to respondents' transformation into data-driven, intelligent enterprises

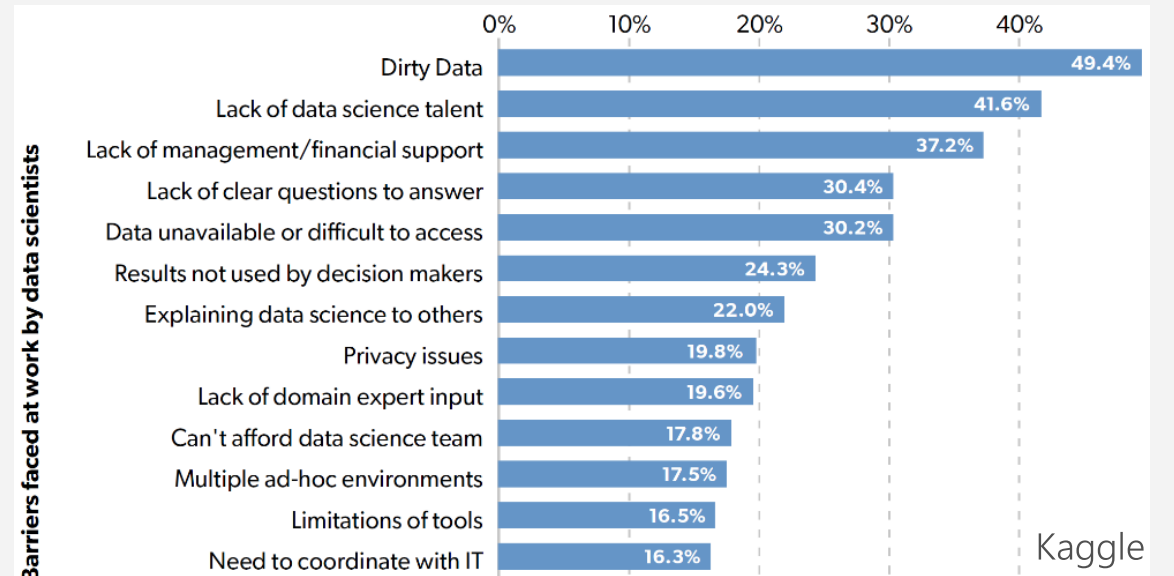


SOURCE: HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, AUGUST 2018

In your organization, which of the following factors present the biggest barrier to being data-driven?



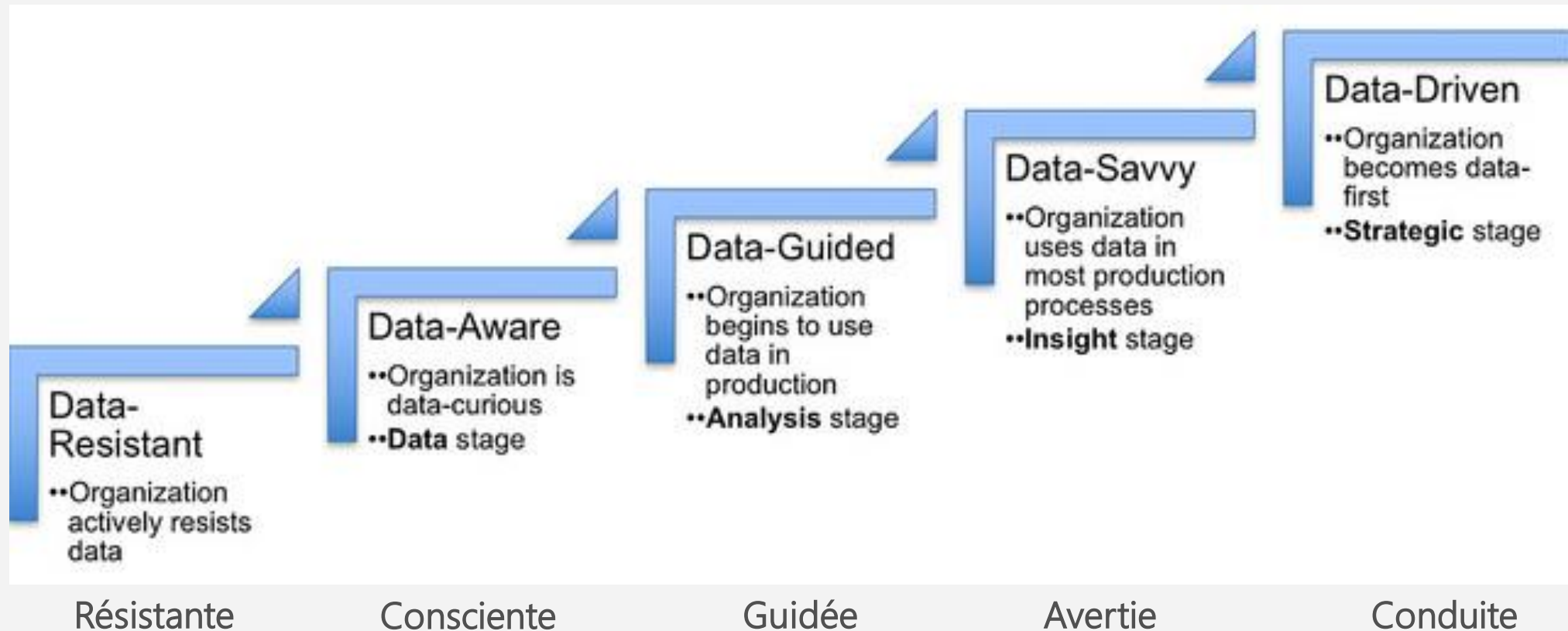
TDWI, 2017



Barriers faced at work by data scientists

Kaggle

# 3 - DATA COMPANIES - ÉTAPES



# 3 - DATA COMPANIES - EXEMPLE

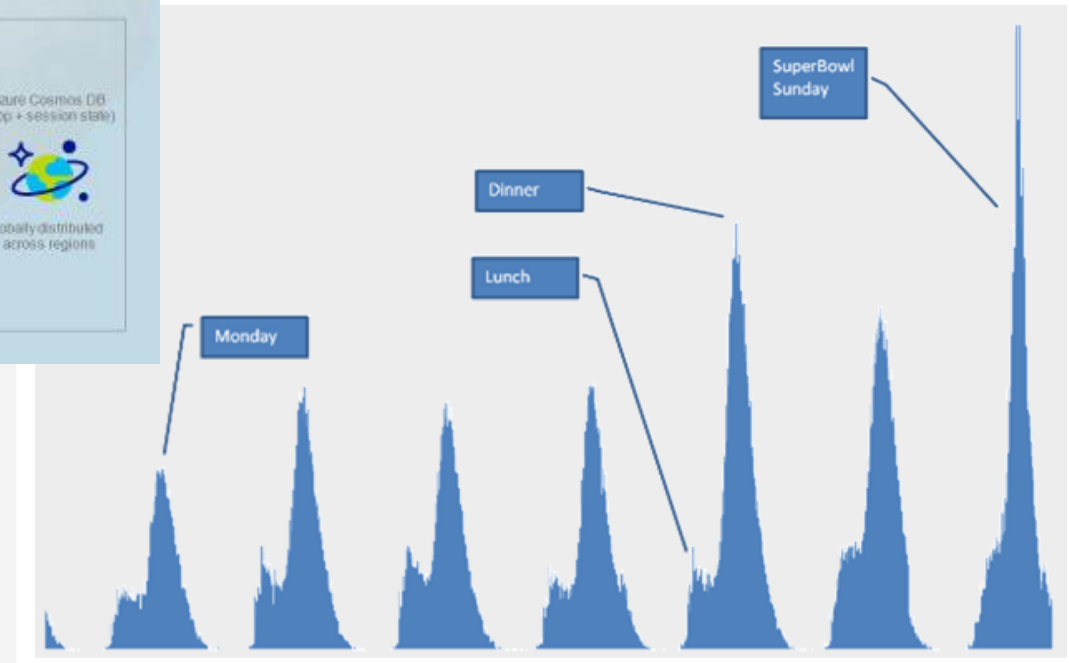
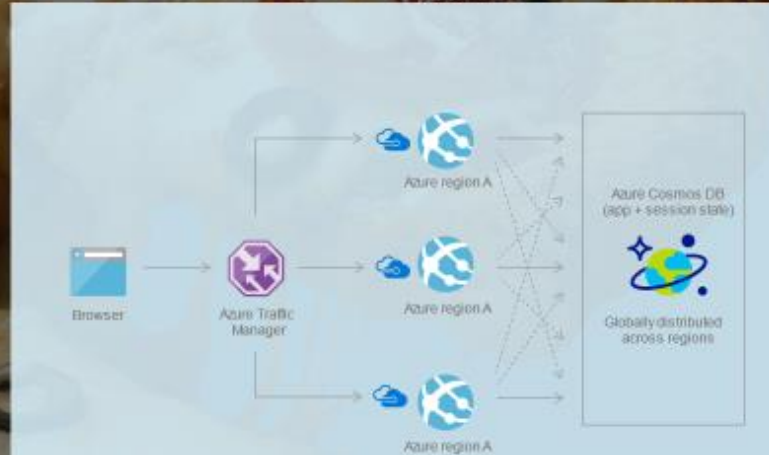


Globally-distributed mission-critical apps

## Domino's Pizza delivers through globally-distributed apps

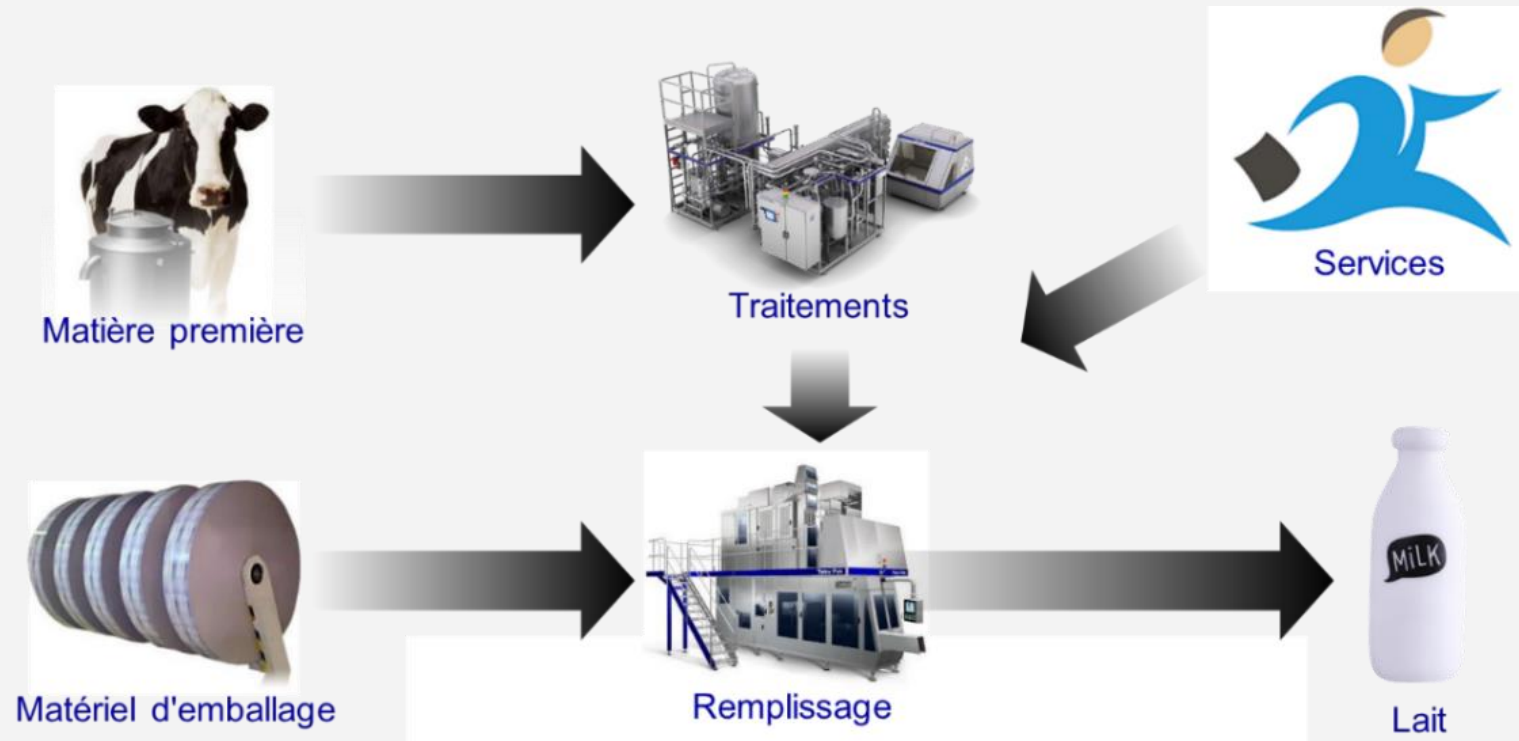
Tech-centric consumers across continents demand instant access and uninterrupted service

- 99.99% uptime
- Millisecond load latency
- Globally distributed order-processing

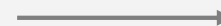


# 3 - DATA COMPANIES - ETUDE DE CAS

Contoso est un fabricant mondial d'équipements de conditionnement et de transformation des aliments.

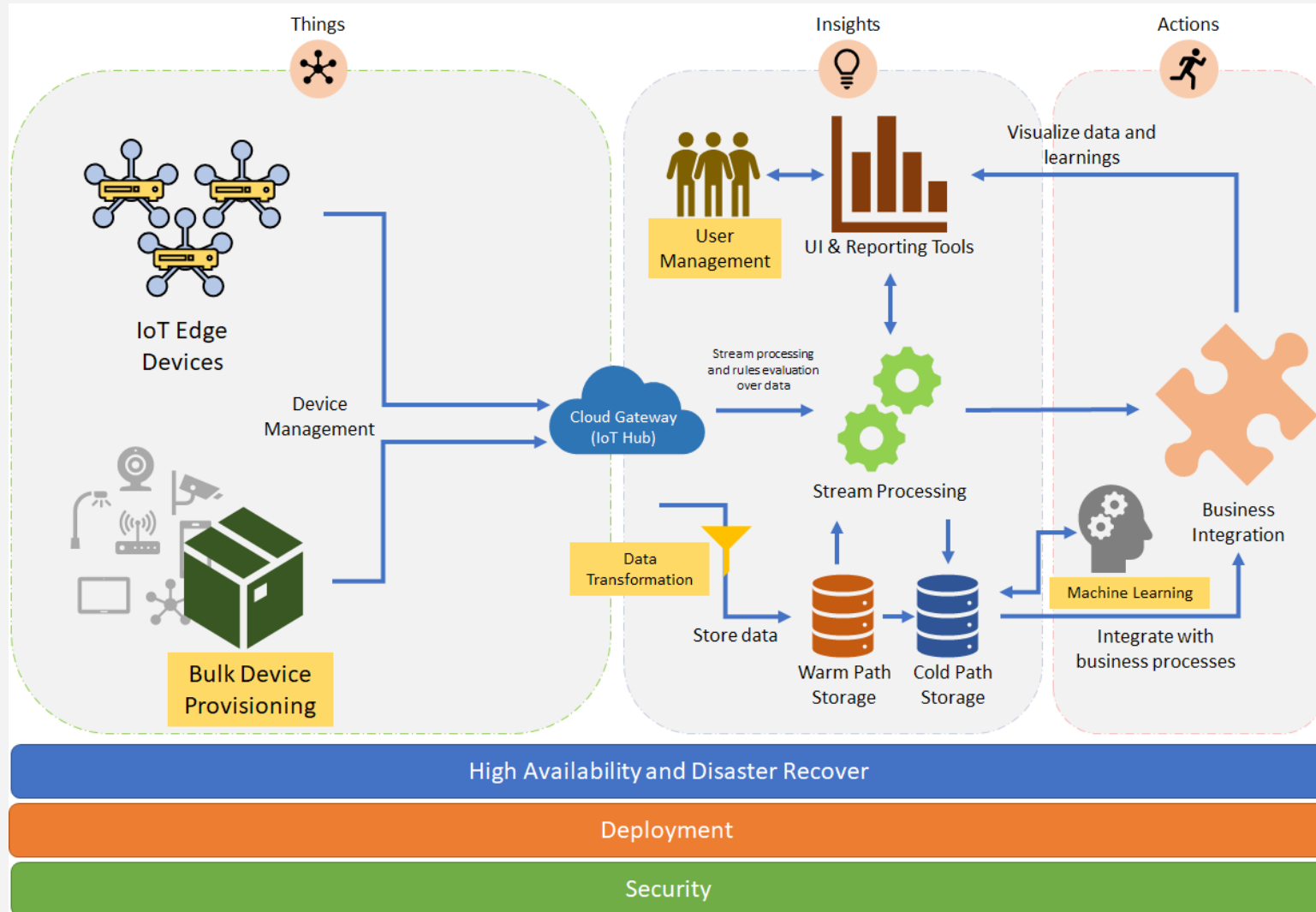


Contoso souhaite transformer son secteur d'activité en intégrant des services numériques.

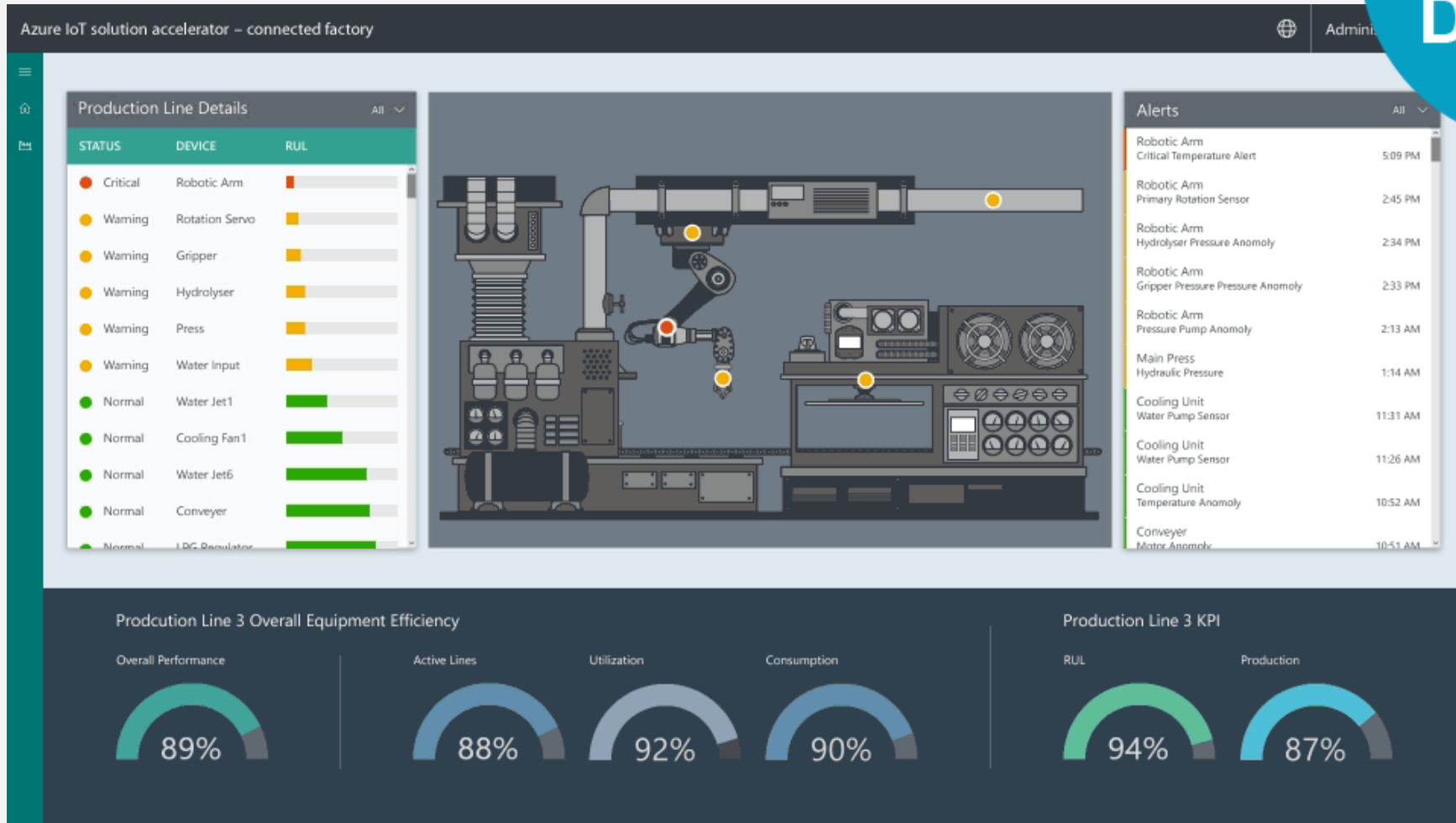


Suivi informatisé du conditionnement et maintenance prédictive

# 3 - DATA COMPANIES - ETUDE DE CAS



# 3 - DATA COMPANIES - ETUDE DE CAS



*Maintenance prédictive, Valeur ajoutée de ses services, Service de formation, Data Literacy, ...*



### Factory Locations All

STATUS	LOCATION	PRODUCTION
<span style="color: red;">●</span> Critical	Hannover	Diesel Engine
<span style="color: orange;">●</span> Warning	Atlanta	Transmission System
<span style="color: orange;">●</span> Warning	Edinburgh	Hydraulic System
<span style="color: orange;">●</span> Warning	Seattle	Airbag Assembly
<span style="color: green;">●</span> Warning	Dubai	Petrol Engine
<span style="color: green;">●</span> Warning	Edinburgh	Manifolds
<span style="color: green;">●</span> Normal	Munich	Electrical Systems
<span style="color: green;">●</span> Normal	Paris	Onboard Computer
<span style="color: green;">●</span> Normal	Moscow	Hydraulic System
<span style="color: green;">●</span> Normal	Tokyo	Petrol Engine
<span style="color: green;">●</span> Normal	Singapore	Manifolds



### Alerts All

Hannover	Critical Device Alert	5:09 PM
Berlin	Critical Production Alert	2:45 PM
Warsaw	Critical Device Alert	1:09 PM
Nagpur	Maintenance Warning	1:07 PM
Moscow	Anomaly Warning	11:59 AM
Paris	Utilization Warning	11:54 AM
Madrid	Sensor Warning	11:31 AM
Bangalore	Device Alert	11:26 AM
Sao Paulo	Maintenance Warning	10:52 AM
Seattle	Device Alert	10:51 AM

#### Global Overall Equipment Efficiency

Overall Efficiency



Availability



Utilization



Performance



#### Global KPI

Energy Consumption



Production Health

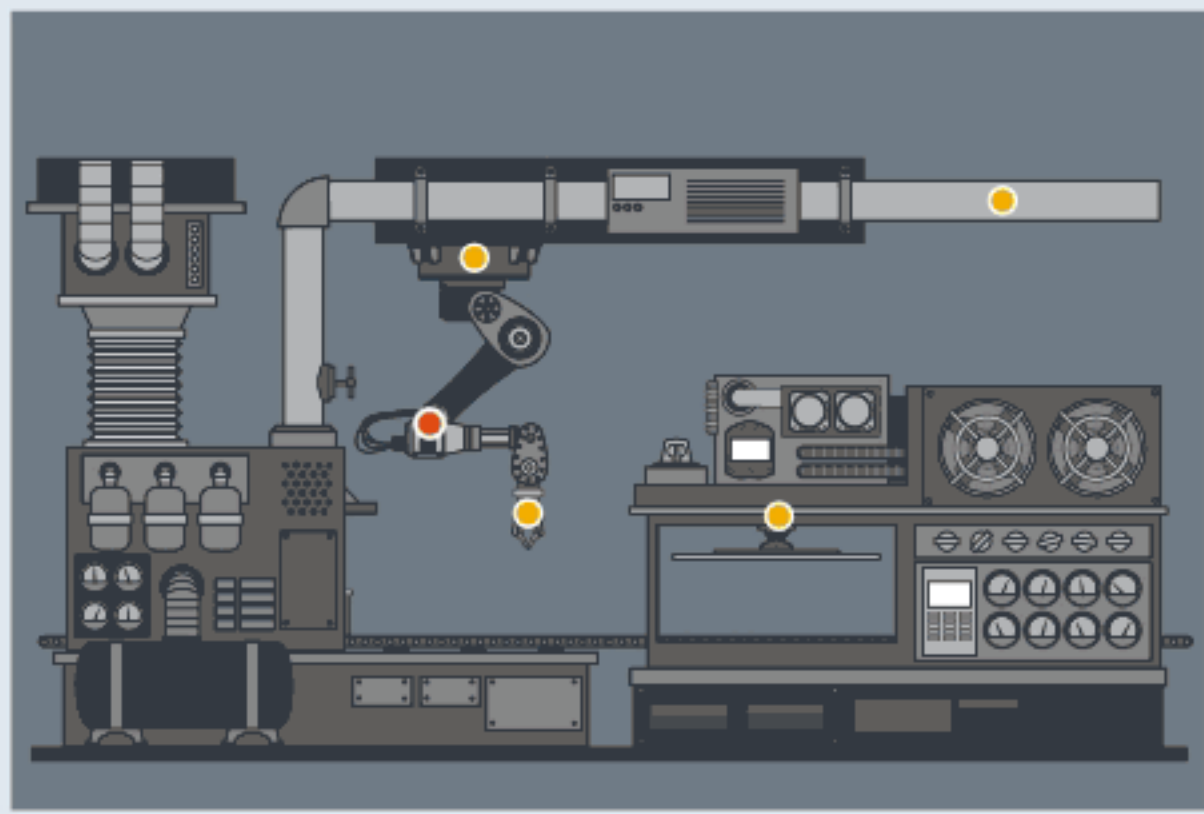






### Production Line Details All

STATUS	DEVICE	RUL
<span style="color: red;">●</span> Critical	Robotic Arm	<div style="width: 10%; background-color: red;"></div>
<span style="color: orange;">●</span> Warning	Rotation Servo	<div style="width: 20%; background-color: orange;"></div>
<span style="color: orange;">●</span> Warning	Gripper	<div style="width: 20%; background-color: orange;"></div>
<span style="color: orange;">●</span> Warning	Hydrolyser	<div style="width: 20%; background-color: orange;"></div>
<span style="color: orange;">●</span> Warning	Press	<div style="width: 20%; background-color: orange;"></div>
<span style="color: orange;">●</span> Warning	Water Input	<div style="width: 20%; background-color: orange;"></div>
<span style="color: green;">●</span> Normal	Water Jet1	<div style="width: 40%; background-color: green;"></div>
<span style="color: green;">●</span> Normal	Cooling Fan1	<div style="width: 40%; background-color: green;"></div>
<span style="color: green;">●</span> Normal	Water Jet6	<div style="width: 60%; background-color: green;"></div>
<span style="color: green;">●</span> Normal	Conveyer	<div style="width: 80%; background-color: green;"></div>
<span style="color: green;">●</span> Normal	LPG Regulator	<div style="width: 80%; background-color: green;"></div>



### Alerts All

Robotic Arm	Critical Temperature Alert	5:09 PM
Robotic Arm	Primary Rotation Sensor	2:45 PM
Robotic Arm	Hydrolyser Pressure Anomaly	2:34 PM
Robotic Arm	Gripper Pressure Pressure Anomaly	2:33 PM
Robotic Arm	Pressure Pump Anomaly	2:13 AM
Main Press	Hydraulic Pressure	1:14 AM
Cooling Unit	Water Pump Sensor	11:31 AM
Cooling Unit	Water Pump Sensor	11:26 AM
Cooling Unit	Temperature Anomaly	10:52 AM
Conveyer	Motor Anomaly	10:51 AM

#### Production Line 3 Overall Equipment Efficiency

Overall Performance



Active Lines



Utilization



Consumption



#### Production Line 3 KPI


RUL

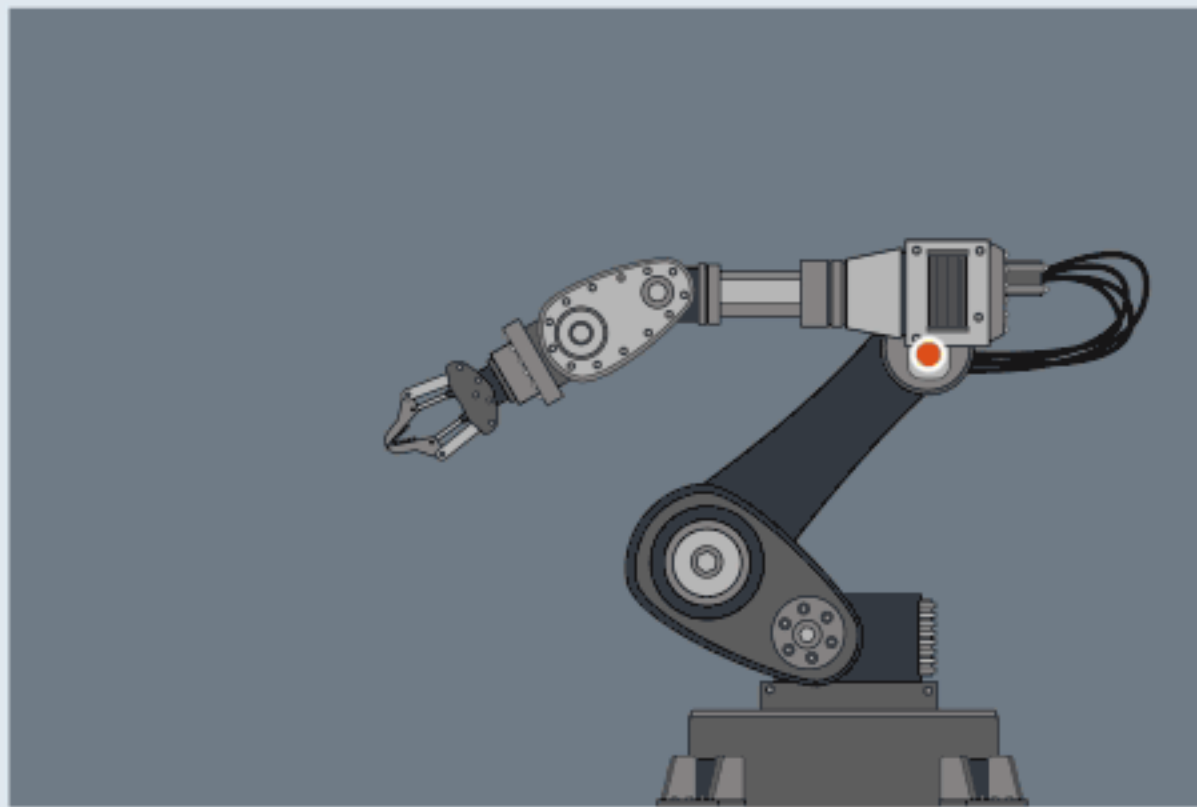


Production





PLC Status <span style="float: right;">All </span>		
STATUS	METRICS	VALUE
<span style="color: red;">●</span> Critical	Servo Temp	279 °F
<span style="color: orange;">●</span> Warning	Air Pressure	290 PSI
<span style="color: orange;">●</span> Warning	Servo Temp	279 °F
<span style="color: orange;">●</span> Warning	Gripper Strength	267 PSI
<span style="color: orange;">●</span> Warning	Hydrolyser	12%
<span style="color: green;">●</span> Normal	Pressure Pump	2903 PSI
<span style="color: green;">●</span> Normal	Fan Speed	1300 RPM
<span style="color: green;">●</span> Normal	Pressure Regulator	2311 PSI
<span style="color: green;">●</span> Normal	Compressor	4500 PSI
<span style="color: green;">●</span> Normal	Cooling Unit	182 °F
<span style="color: green;">●</span> Normal	Control Unit	182 °F



Alerts <span style="float: right;">All </span>	
Robotic Arm Master Temperature	279 °F
Primary Turn Table Rotation Sensor	8,3490 RPM
Hydrolyser Pressure Anomaly	421 PSI
Gripper Pressure Anomaly	397 PSI
Pressure Pump Pressure Anomaly	411 PSI
Primary Cooling Unit Temperature Anomaly	165 °F
Secondary Arm Tension Sensor	87 cN
Secondary Cooling Unit Temperature Anomaly	176 °F
Gripper Tension Anomaly	89 cN
Gripper Pressure Anomaly	390 PSI

### Robotic Arm Health and Performance

Overall Performance



Unit Efficiency



Temperature



Humidity



### Robotic Arm KPI

RUL

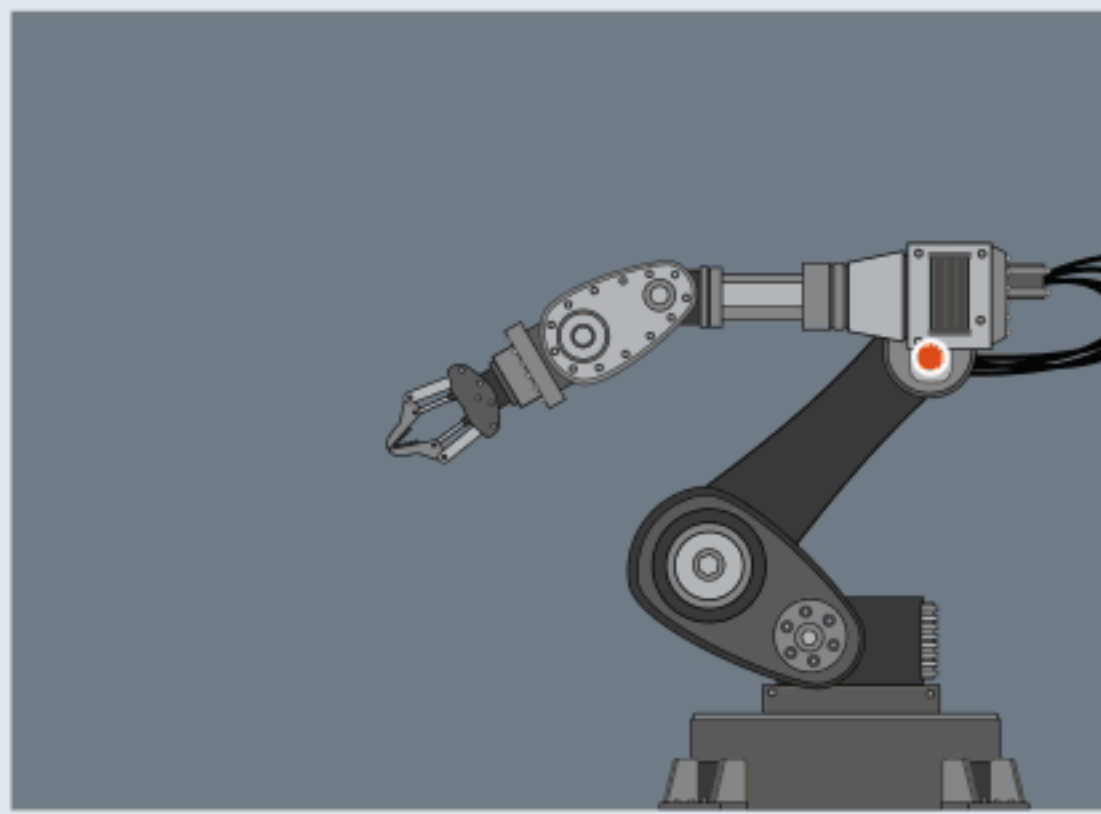


Running Time

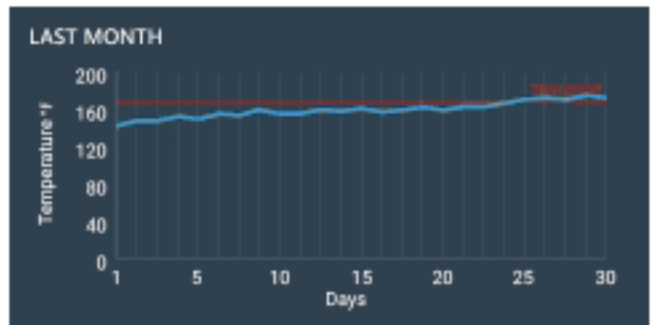
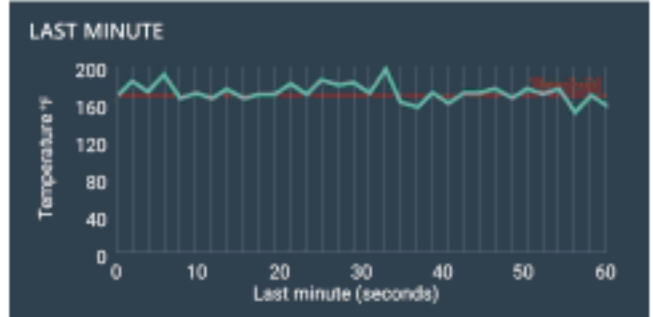




PLC Status <span>All</span>		
STATUS	METRICS	VALUE
<span style="color: red;">●</span> Critical	Servo Temp	279 °F
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<span style="color: green;">●</span> Normal	Fan Speed	1300 RPM
<span style="color: green;">●</span> Normal	Pressure Regulator	2311 PSI
<span style="color: green;">●</span> Normal	Compressor	4500 PSI
<span style="color: green;">●</span> Normal	Cooling Unit	182 °F
<span style="color: green;">●</span> Normal	Control Unit	102 °F



### Temperature ➤



**NOTES**

Temperature value has exceeded threshold tolerance – unit is operating outside of intended parameters

- [Request Analysis](#)
- [Create Service Ticket](#)

### Robotic Arm Health and Performance



# CONCLUSION - ASSERTION

Systèmes de calcul de maturité de la transformation numérique

Four Dimensions Determine Digital Maturity

## Culture

A company's approach to digitally driven innovation and how it empowers employees with digital technology



## Technology

A company's use and adoption of emerging technology



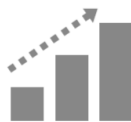
## Organization

How aligned a company is to support digital strategy, governance, and execution



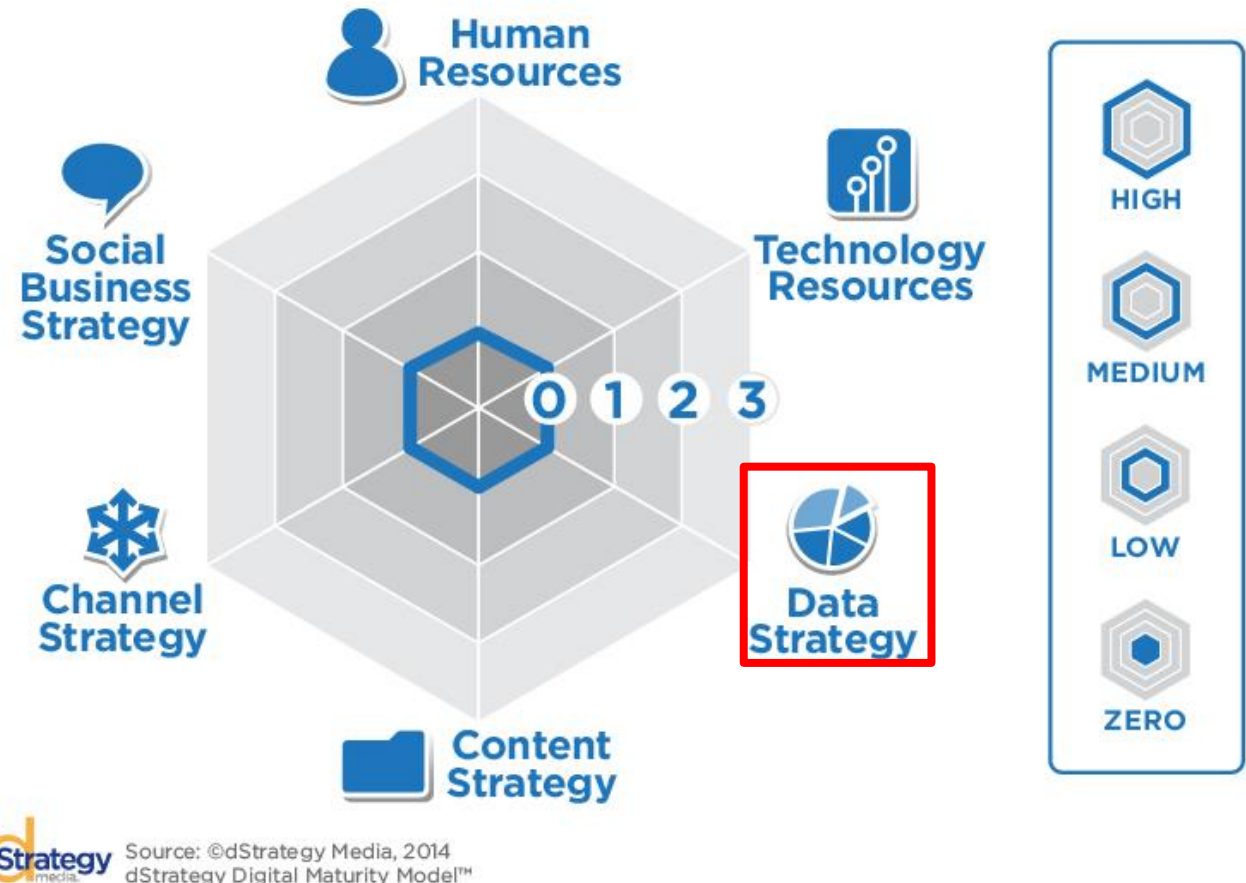
## Insights

How well a company uses customer and business data to measure success and inform strategy



[Forrester](#) Digital Maturity Model 5.0

## Six Dimensions of Digital Maturity™



[dStrategy](#) Digital Maturity Model

# CONCLUSION - LIMITE

- Absence de données
- Ethique et amélioration
- Focus excessif -> Paralysie
- Remise en cause
- Cobra Effect

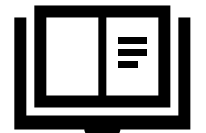


# CONCLUSION

- Data Company = Défis

Technologie + Organisation + Culture

- La donnée est bel et bien au cœur de la transformation numérique des sociétés.
- Toutes les entreprises sont vouées à être pilotées par les données.



# MERCI

