ANNIVERSARY MEETING

1974 - 2024

ENDLESS ATTRACTION

SPD Magnetic Solutions

La cultura del dato

Digitale dentro e fuori l'impresa

GIOVANNI MIRAGLIOTTA
Politecnico di Milano

Data Economy

"Data are to this century what oil was to the last one: a driver of growth and change.
Flows of data have created new infrastructures, new businesses, new monopolies, new politics and, crucially, new economics.

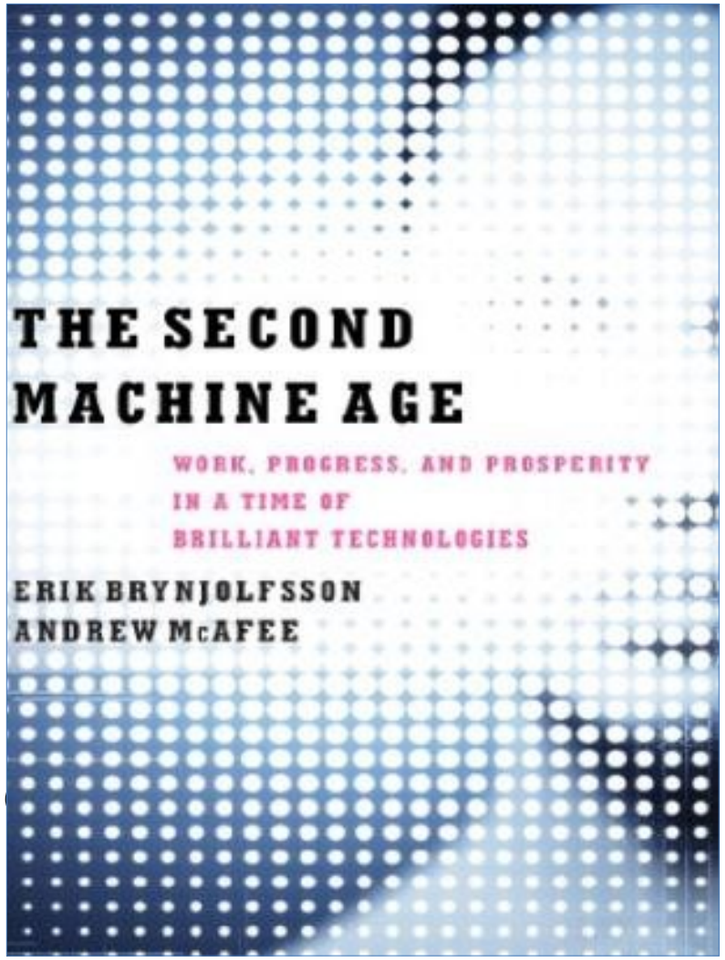
Digital information is unlike any previous resource; it is extracted, refined, valued, bought and sold in different ways. It changes the rules for markets and it demands new approaches from regulators.

Many a battle will be fought over who should own, and benefit from, data."

May, 2017

Data Economy

"*Instant, perfect, free*" →



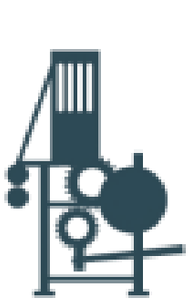
"*Winn*

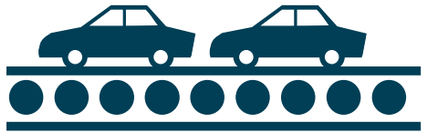
Data Economy

Fonte: Cumulus Media

Data Economy

First Industrial Revolution	Second Industrial Revolution	Third Industrial Revolution	Fourth Industrial Revolution
Steam power, machines in factories	Labor organization, mass production, use of electricity	Automation / robots in factories, computers / SW in business processes	Interconnected digital and physical world thanks to new digital technologies





1780 — First loom powered by steam

1870 — First assembly line (1870)

1970 — First PLC (1969)

2011 — First appearance of "Industrie 4.0"

TIME

Value of data

Value of data

Energy optimization
Consumables wear optimization

Statistical Process Control / Zero Defect

Predictive Maintenance
Production control, cost allocation

Pay per performance / Pay per use

Illegitimate use control

Value of data

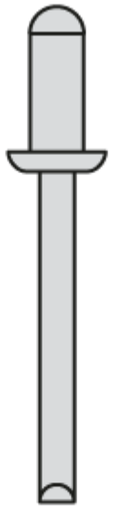
- Se un progettista sceglie un nuovo Raw Material che richiede protezione delle vie respiratorie, il sistema di gestione del personale di fabbrica impedisce ad un operatore senza qualifiche e senza DPI adeguati di accedere all'area di magazzino dove viene stoccato;

- Se in un laboratorio R&D Pharma si sta avviando il test di un nuovo processo / materiale, il sistema BPM aggiorna il tempo di chiusura della sperimentazione alla luce dei tempi di approvazione stabiliti dagli standard GMP;

- Se un set di prodotti sul campo evidenzia continua difettosità in certe condizioni operative, il sistema di schedulazione dei quality circles inserisce nell'ordine del giorno del prossimo meeting col fornitore del sottosistema il punto «difettosità» con alta priorità;

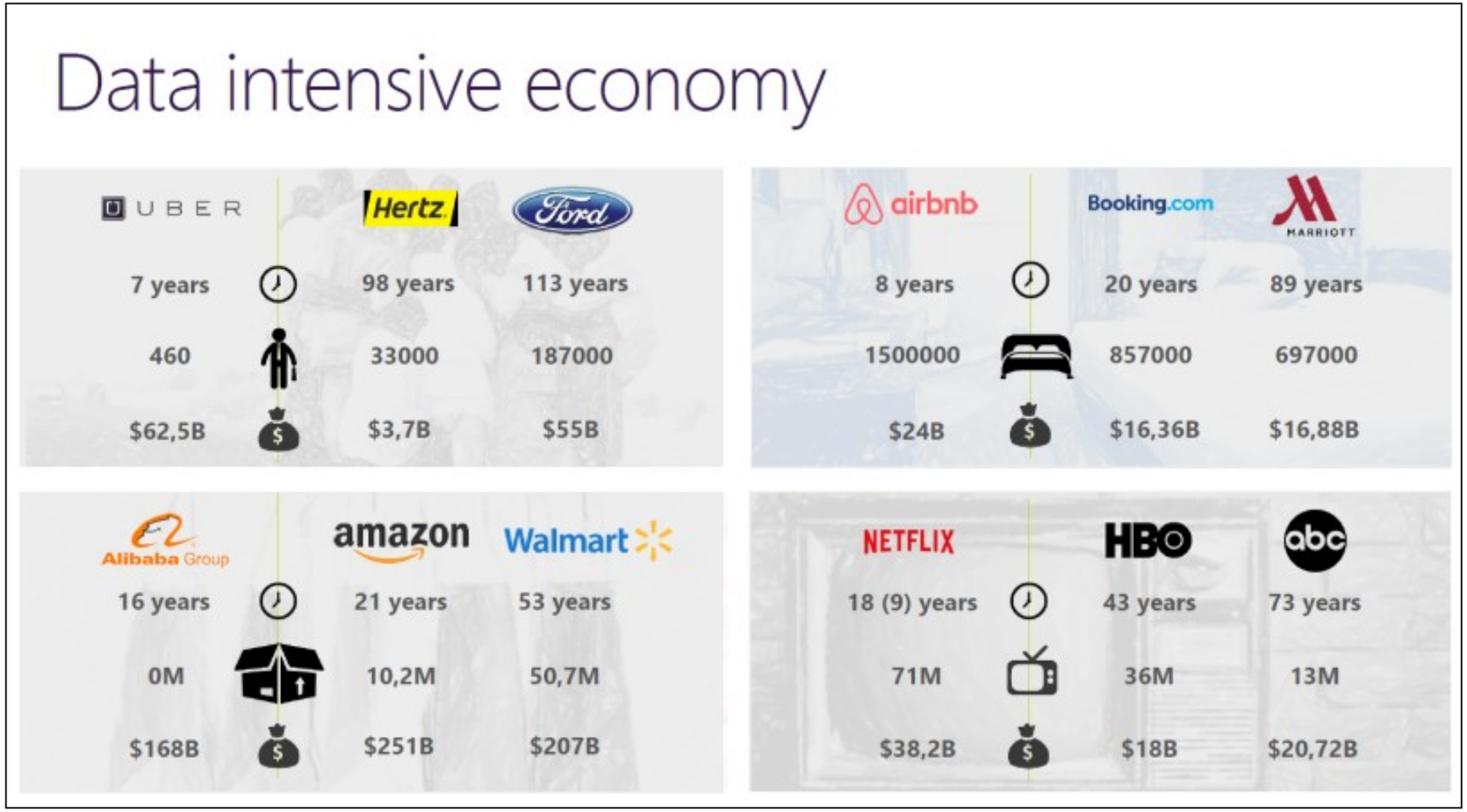
- Se un macchinario viene reso oggetto di un intervento di revamping che ne aumenta il valore, il sistema di schedulazione modifica la sequenza standard della campagna produttiva, per tenere conto del maggiore costo opportunità generato da una cattiva sequenza di setup.

Value of data



STANDARD
BLIND RIVETS

Value of data



Value of data

INTANGIBLE ASSET

GOOD DECISIONS

CONNECTING PROCESSES

SERVING CUSTOMERS

Data horror stories

- Company Alfa started a Predictive Maintenance initiative:

- Big investments in its production machines, with multiple sensors capturing high-rate data…

- … planning to use ML algorithms to predict the quality of final product, as long as the WIP is flowing from one machine to the next one…

- …but clocks of the different machines were not synchronized!

Data horror stories

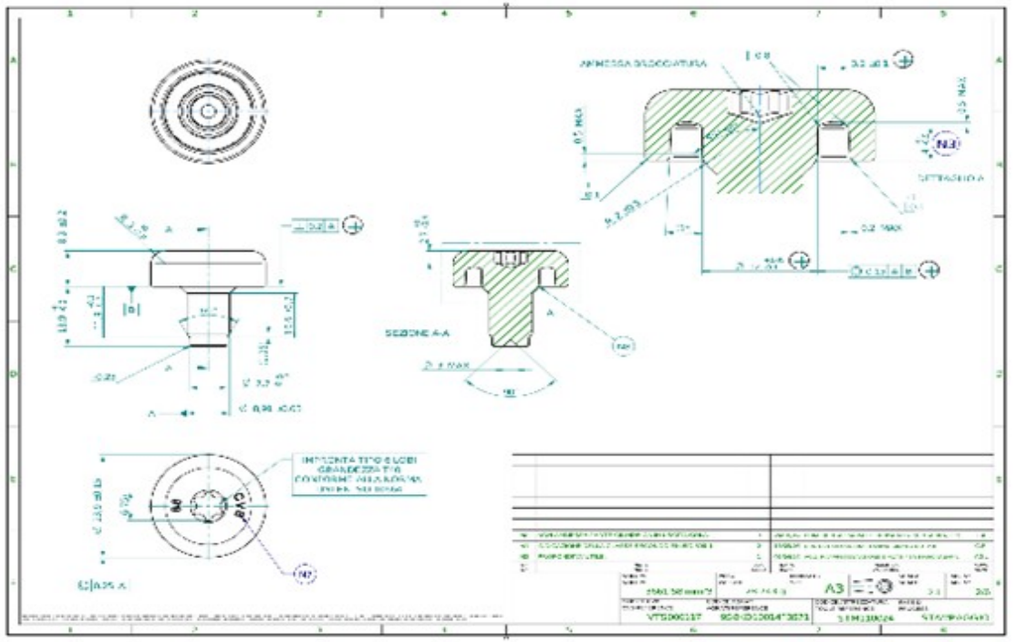
- Company Beta started a Generative Design initiative:

- Difficult to find talented engineers willing to work in the Tech Dept for long periods of time…

- … it started to collect data about past RFQs and the related manufacturing data (cycle, costs) in order to…

- … train a machine to spot similarities across drawings, and learn to design the manufacturing cycle of a newly requested product by searching similar RFQs processed in the past…

- …but drawing standards are not the same neither internally, nor across all customers



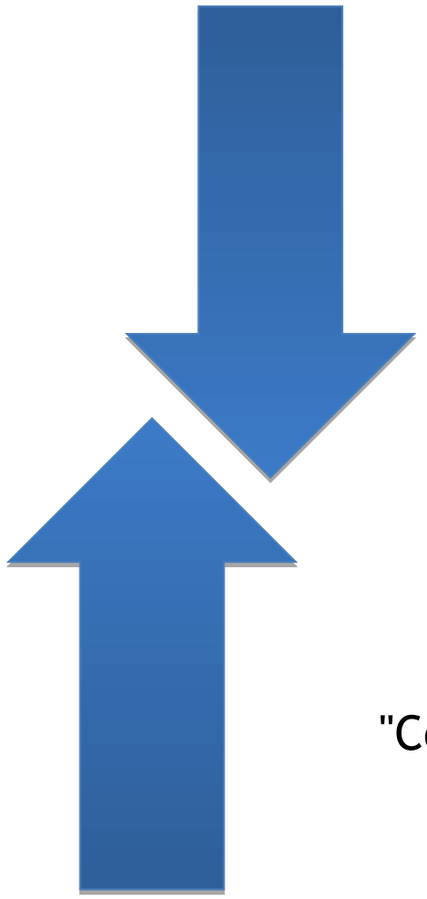
Data horror stories

- Company Gamma started a Predictive Service initiative:
- Exploiting its 20+ year-long database about sold machineries and sold spare parts…
- … using ML algorithms…
- …to predict which spare part could be needed by which customer, and when but…

- But performances was lower than expected:
- Spare parts orders are recorded in the ERP system
- No «reason why» data is managed in the ERP
- Some customers' orders are not linked to actual breakdowns, as:
  - some are just speculative purchases
  - some are just orders to «clean the budget» at the end of the FY

- This information is known to Service Managers only:
  - Not recorded at all, or…
  - Recorded in Emails or Excel files

Data Collection Principles



"Focus on decisions, engineer the data"

"Collect everything, we'll figure it out"

Data Collection Principles

Data Warehouse

- Contenitore generalizzato di dai aziendali, generalmente strutturati
- Finalità e formato definiti
- Ottimizzato per interrogazioni
- Spesso accoppiato a Data Marts, ovvero estratti specializzati per funzione aziendale / area di processo

Data Lake

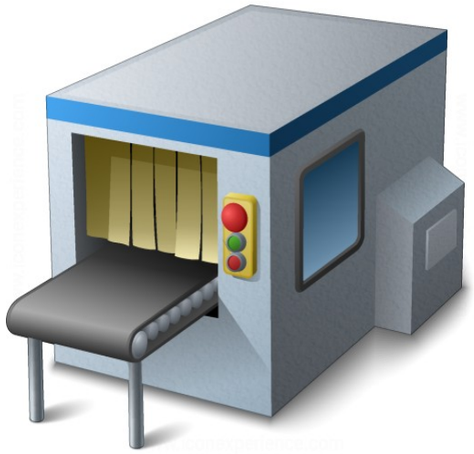
- Repository di dati grezzi, strutturati e non strutturati
- Finalità non ancora definita, qualità non verificata
- Compatibili con contesti Big Data
- Estremamente accessibili
- Pensati per facilitare attività di Data Analytics / Data Science

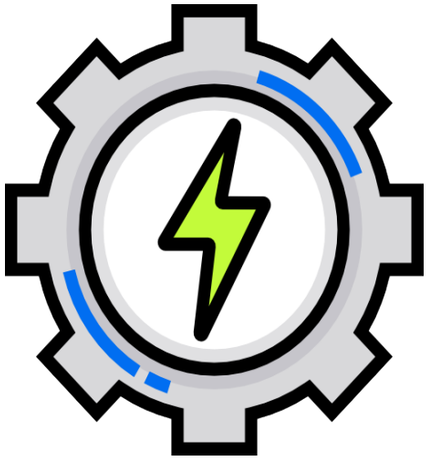
…

Data Lakes or… Data Swamps

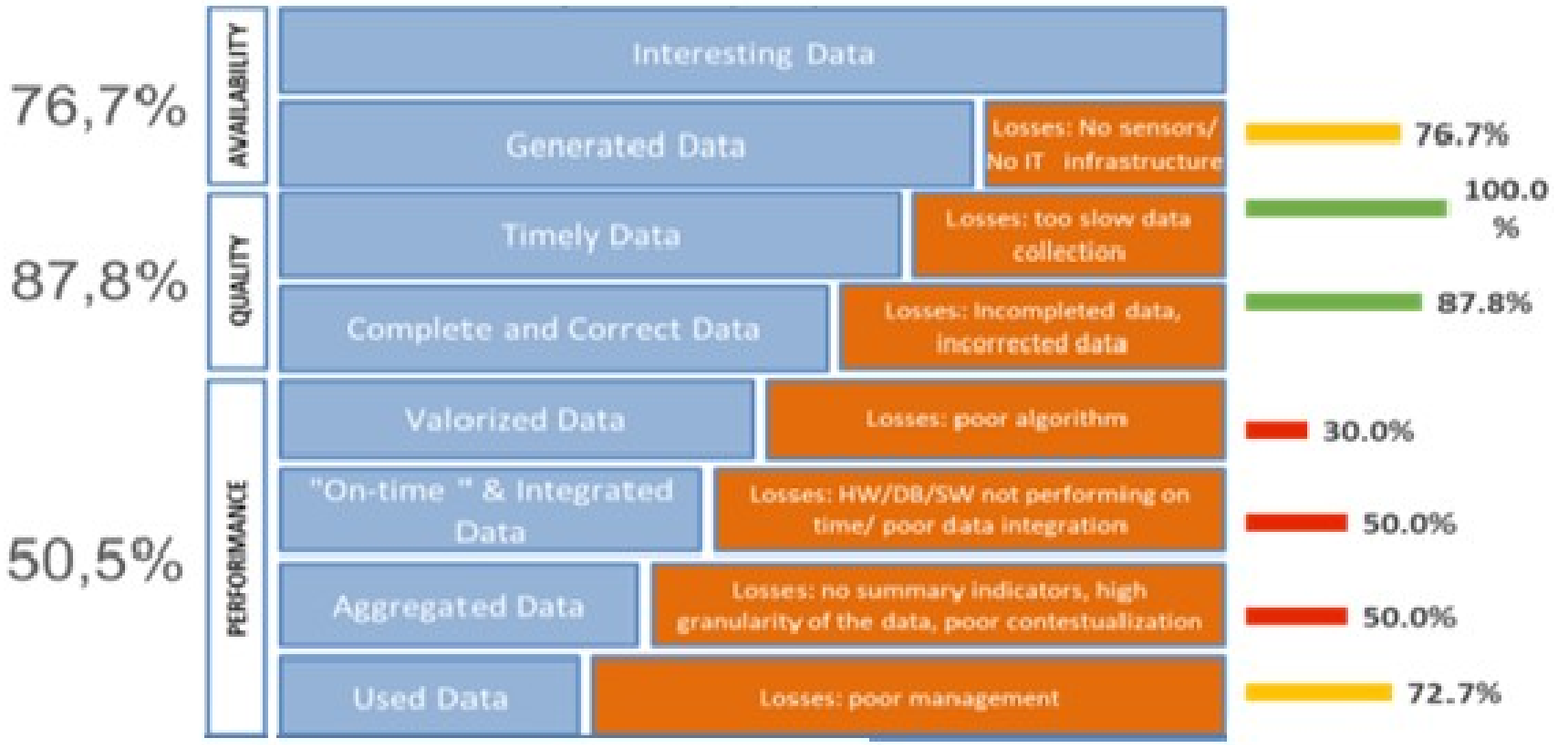
From Data Lakes to Data Pipelines

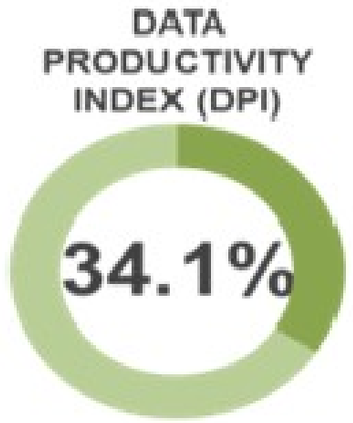
Measuring data productivity



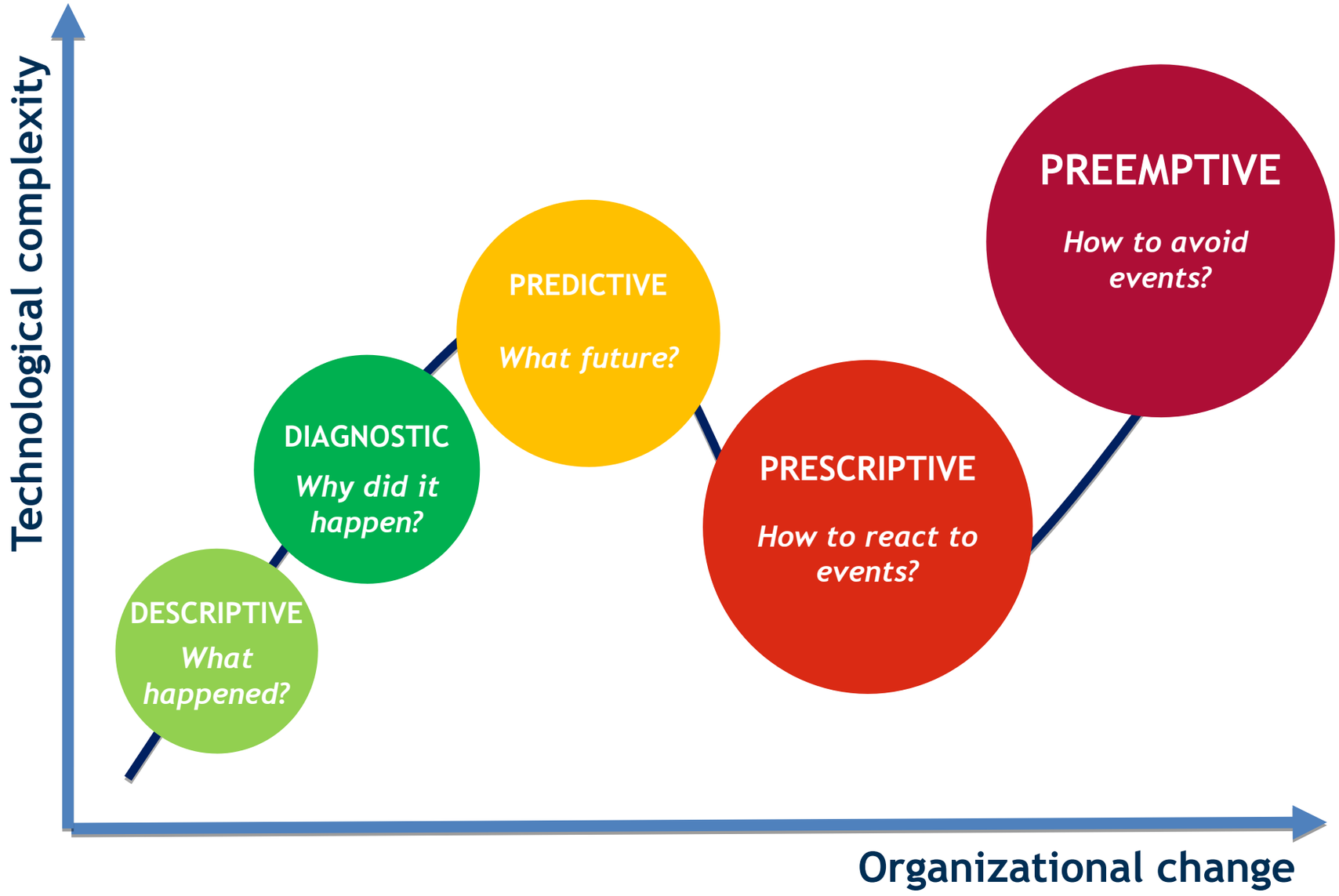


Measuring data productivity





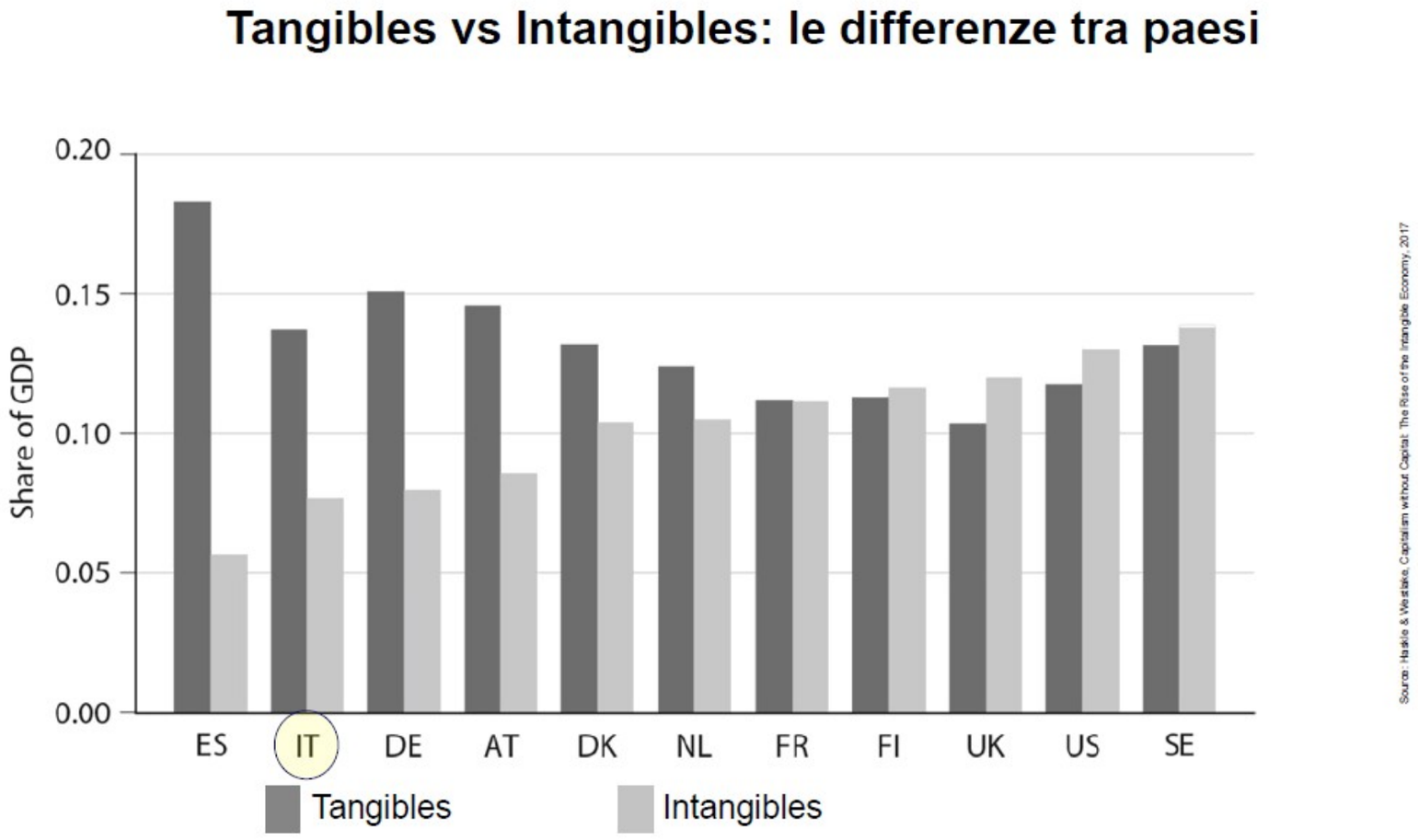
Data Collection Principles



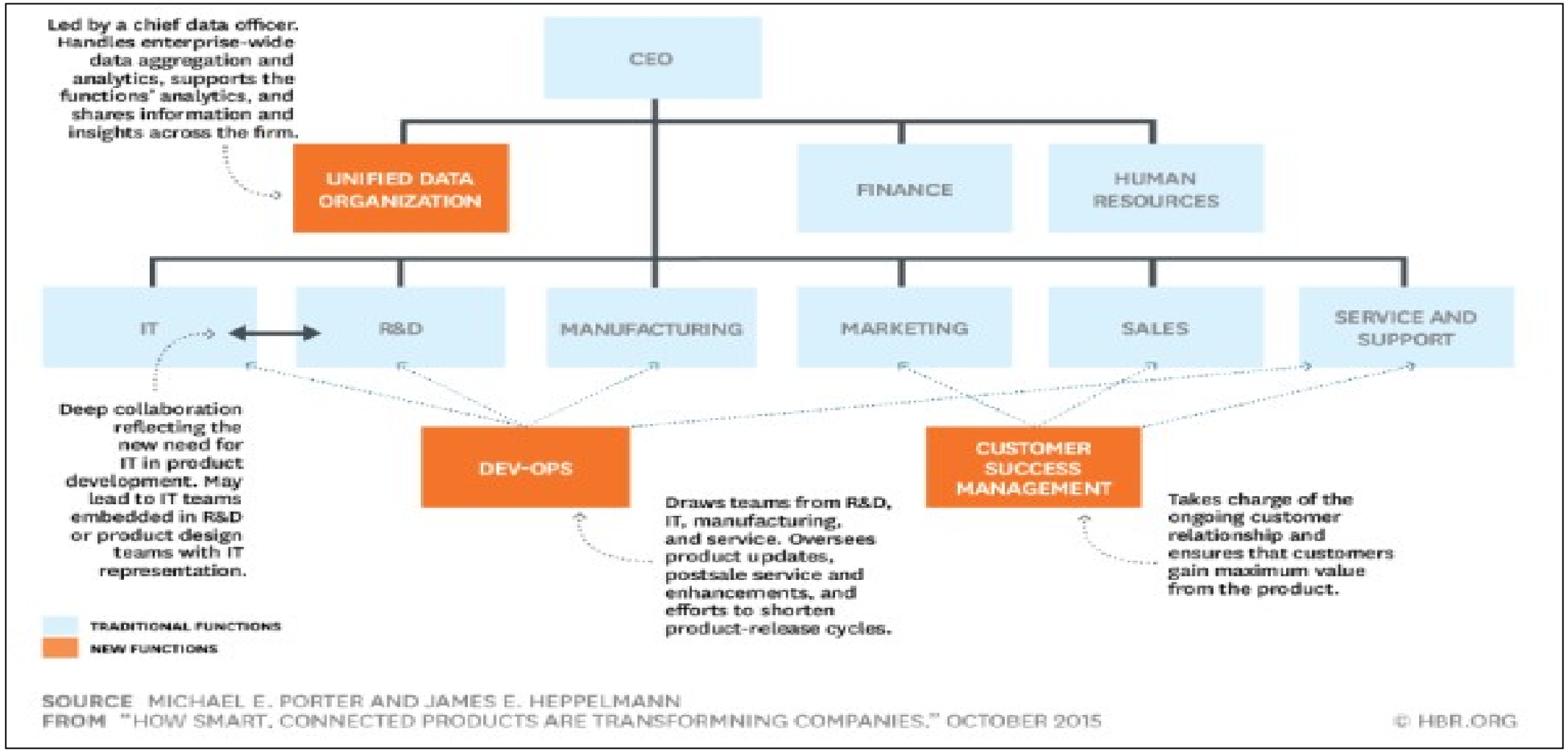
Creating a data culture

1. People are jealous of their knowledge
2. Company culture is not really «customer oriented»
3. People assessment (and incentives) are focused on individual performances

Creating a data culture

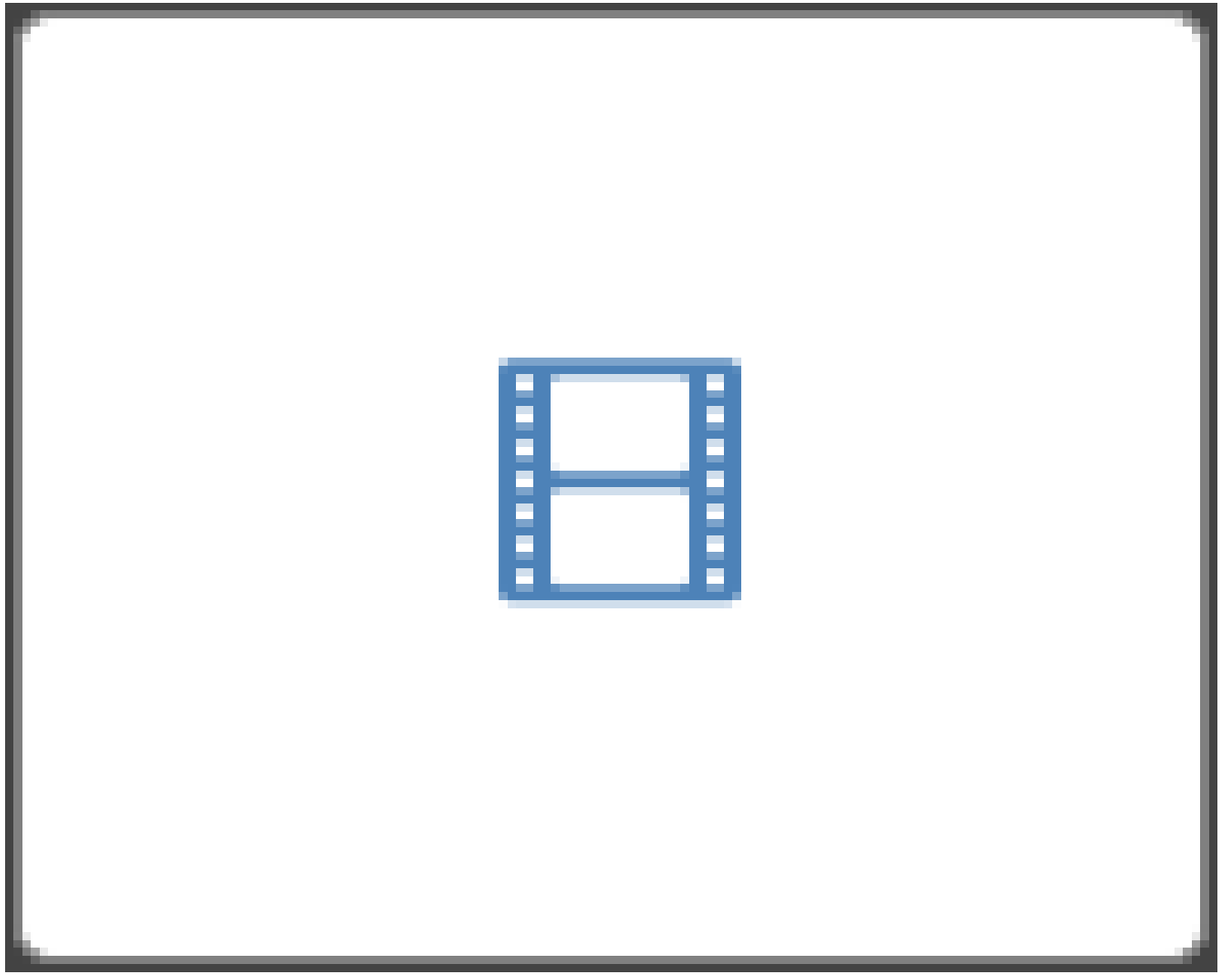


Creating a data culture



Thinking broader…

Thinking broader…



Value of data

INTANGIBLE ASSET

GOOD DECISIONS

CONNECTING PROCESSES

SERVING CUSTOMERS

INNOVATION PLATFORM

Thank you

1974-2024
ENDLESS ATTRACTION
SPD
Magnetic Solutions