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Data governance and Management as a foundation for digital transformation

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5 Dec 2020

Data is the key driver for successful Digital Transformation

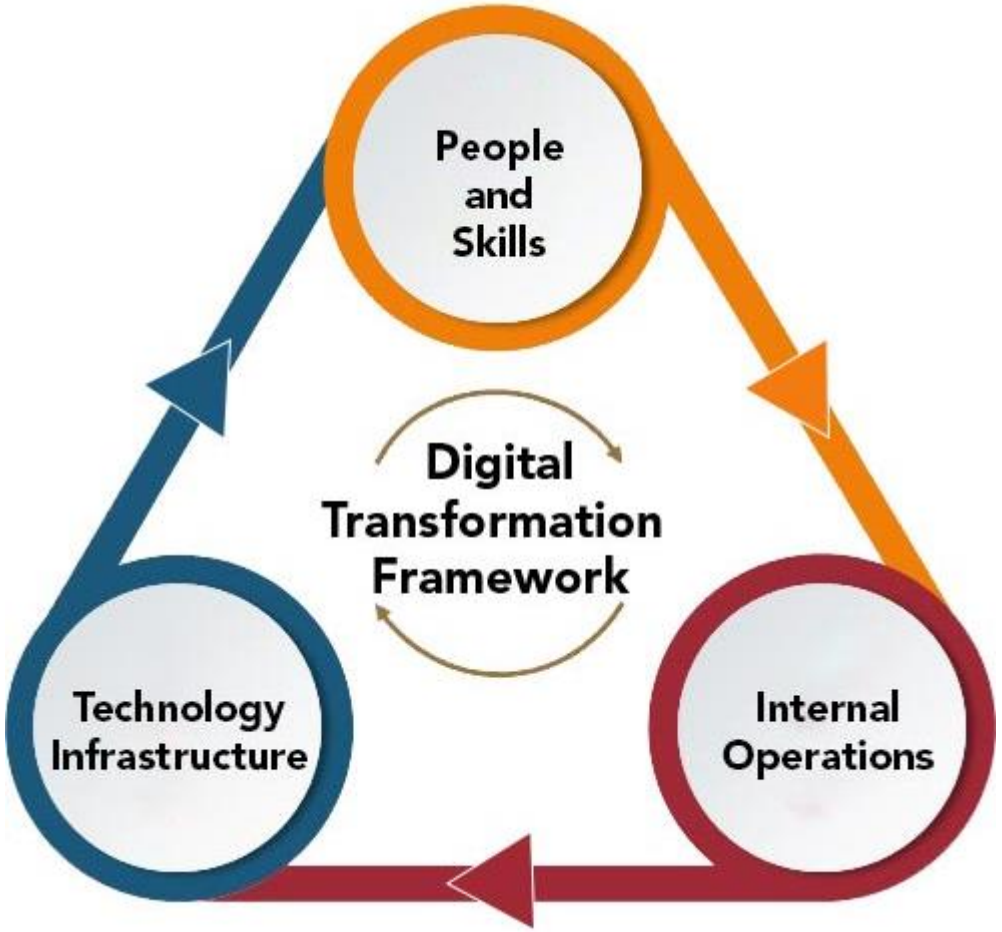
Forbes

Leading organizations in every industry are exercising data and analytics as competitive weapons

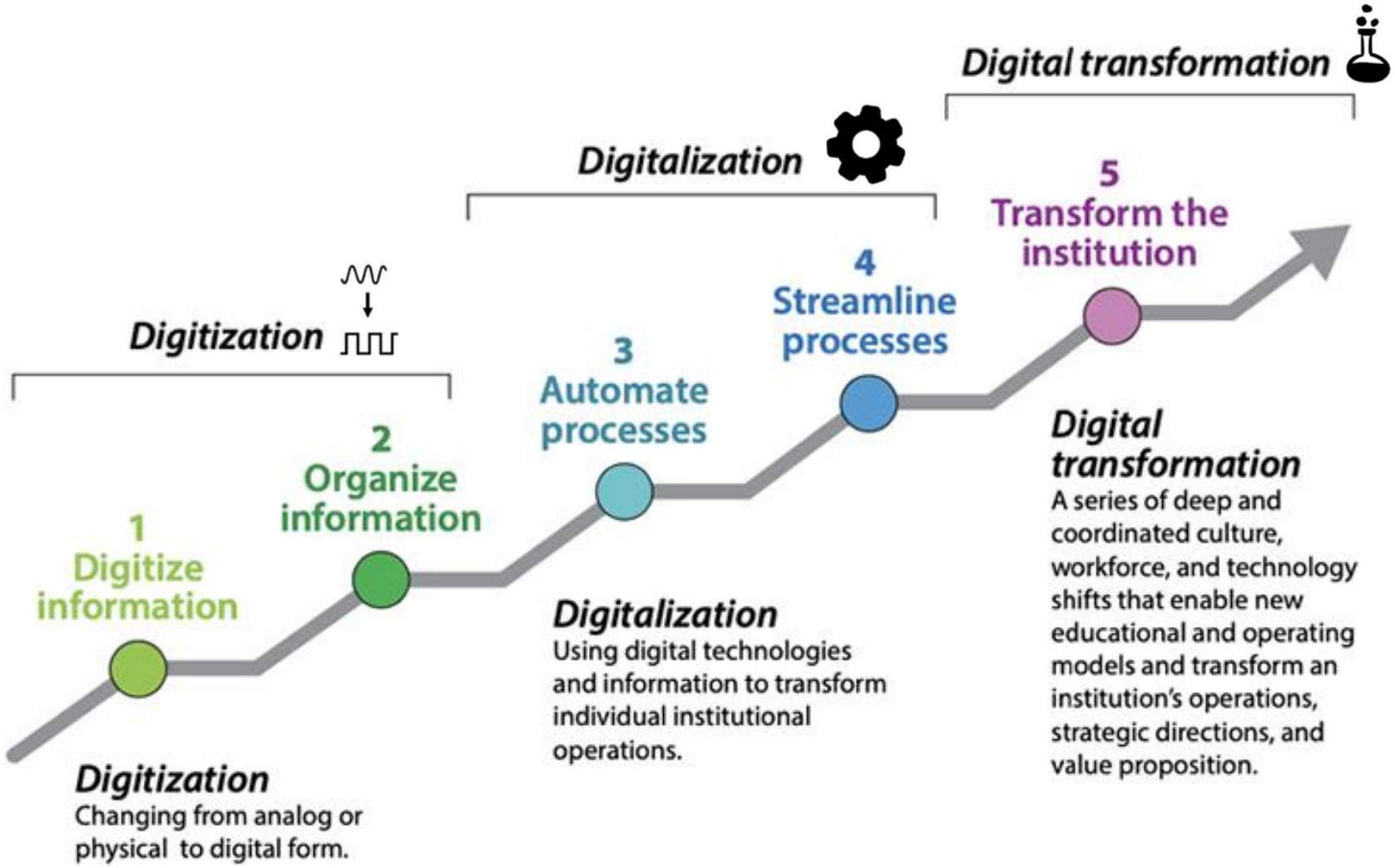
Gartner

What is Digital Transformation

"Digital transformation marks a radical rethinking of how an organization uses technology, people and processes to fundamentally change business performance." *George Westerman, MIT*

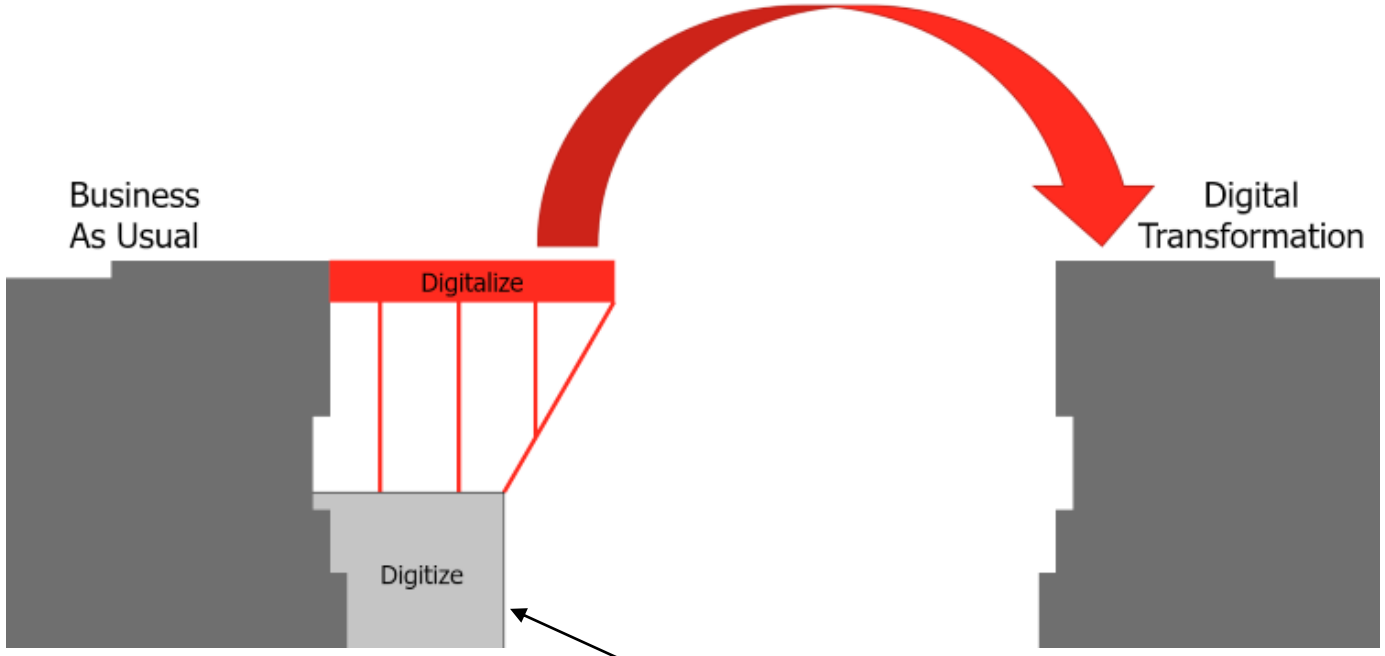


Digitization, Digitalization and Digital Transformation



Conversion (Data) → **Adoption (Processes)** → **Creation (Business)**

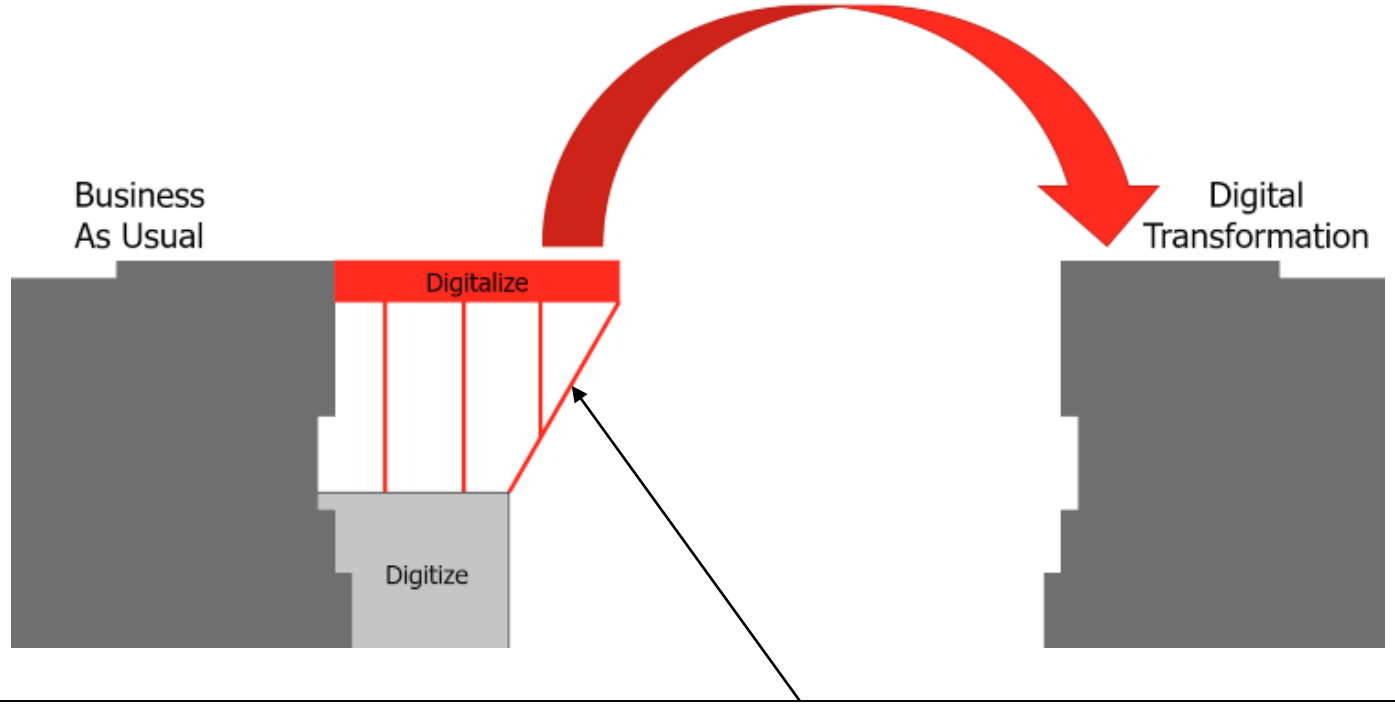
Digitization, Digitalization and Digital Transformation



Digitization : converting an asset **from a physical to a digital format**.

- Scanning paper documents and saving them as a digital documents (PDF)
- Converting videos from VHS to a digital format and uploading them to a hard drive
- Using an OCR software to enter physical records into digital databases

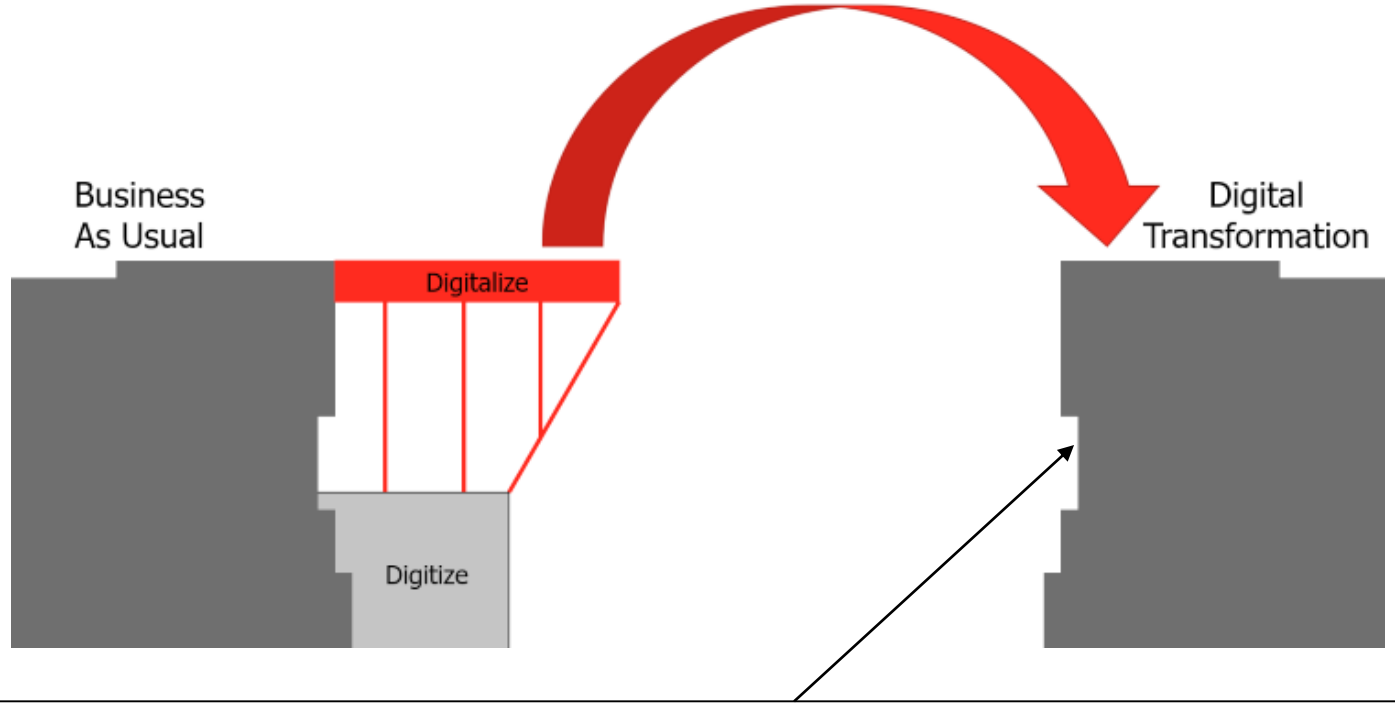
Digitization, Digitalization and Digital Transformation



Digitalization: leveraging the digitized information and using it to **optimize business operations, improving efficiency of processes**.

- Uploading a PDF to the cloud drive and sharing it with relevant teams to allow them to use the data in their daily work
- Converting a spreadsheet file saved on a single computer's hard drive to a cloud format that can be used simultaneously by many users (e.g. via Office 365 or Google Docs)
- Uploading video files from a hard drive to the company's video streaming services (either for internal or external use).

Digitization, Digitalization and Digital Transformation



For **Digital Transformation**: doing things in a new (digital) way

- use the data in the shared file to power application by **analyze the data, and drive results**
- the spreadsheet file **stored customer insights**, you could use them in application to **improve offering and to create better customer experiences**.
- The same goes for streaming services like **Netflix** – if you were to use data on how users engage on the platform, could decide **which recommendations or advertisements to display to them**

What is Digital Transformation

DT is **integrating digital solutions to the very core of the business**, extremely changing how it operates by **creating new** business processes, customer experiences, and organizational culture.

DT is not only enhancing traditional methods but reimaging them for a digital age to meet changing market expectations.

Digital Transformation is NOT About the Technology

Digital Transformation is

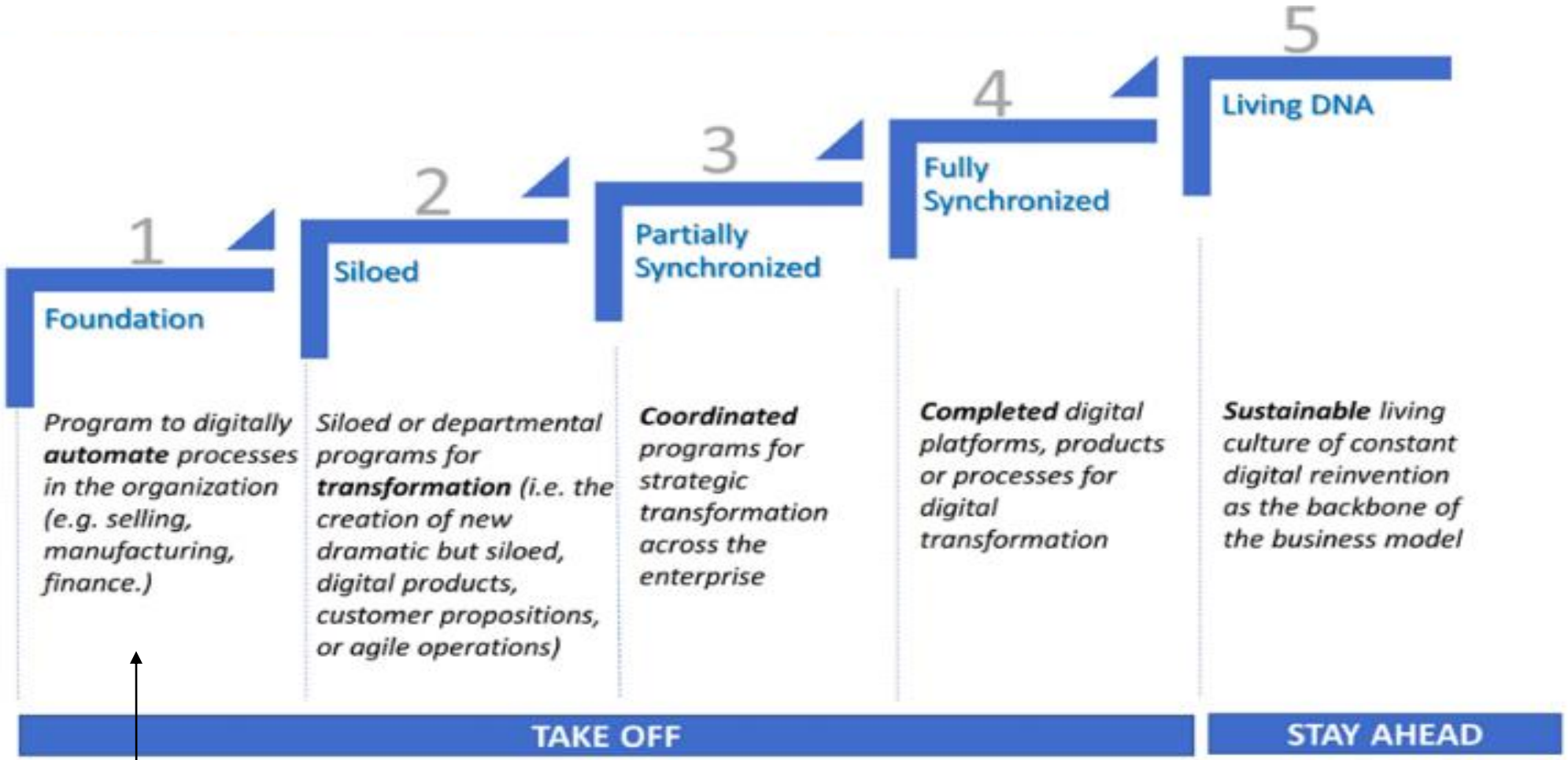
The **strategic use of technologies & information** to:

- Transform business culture
- Drive innovation
- Improve operational efficiency
- Unlock the value of data
- Deliver engaging customer experiences
- Become more profitable

Digital Transformation is NOT

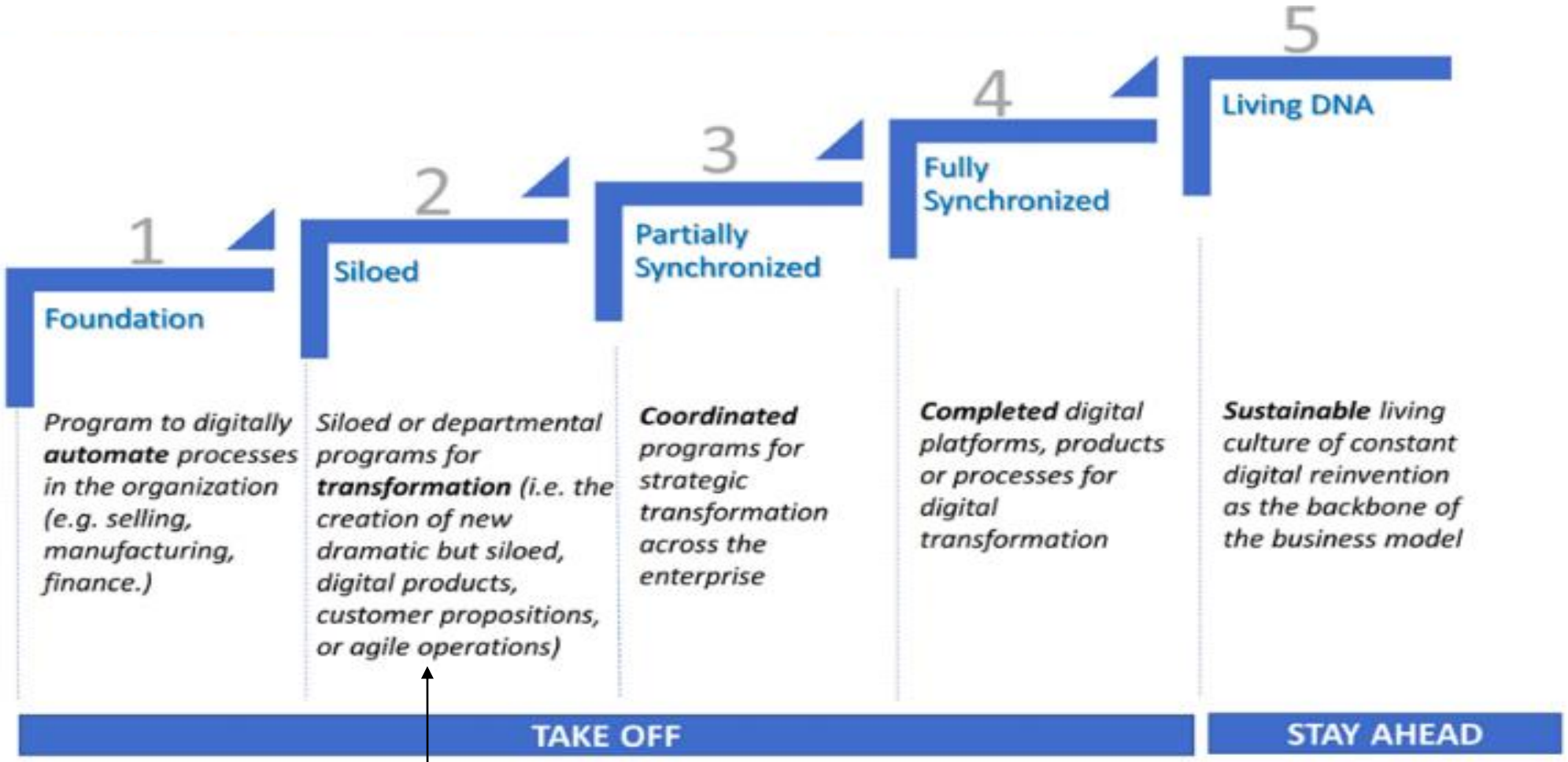
- Moving to the cloud
- Buying/changing technology
- Creating a social media page
- Implementing new solutions

5 Stage Model for Successful Digital Transformation



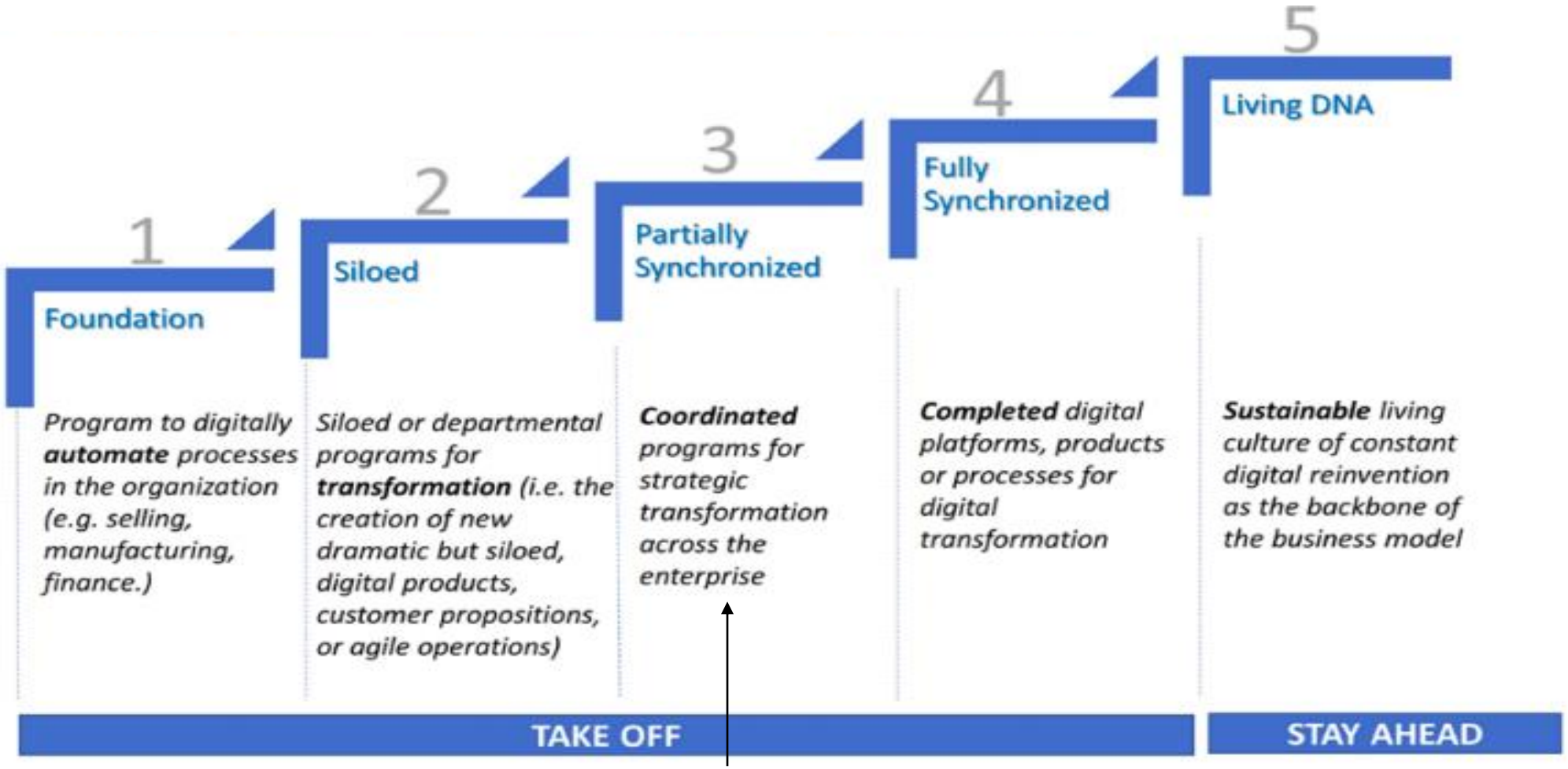
Automate internal processes by using software

5 Stage Model for Successful Digital Transformation



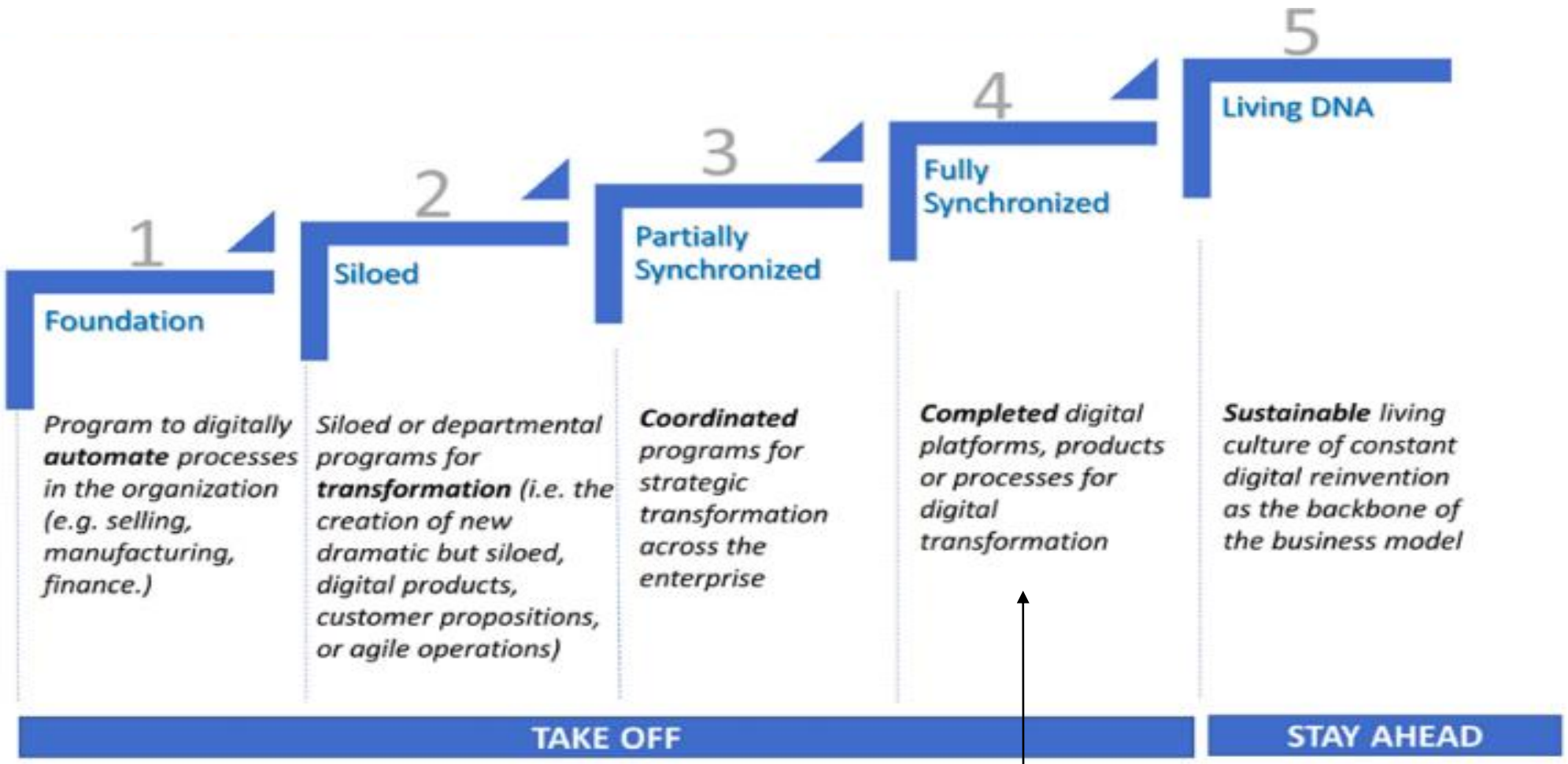
Changes are limited to single business units, don't influence the entire organization

5 Stage Model for Successful Digital Transformation



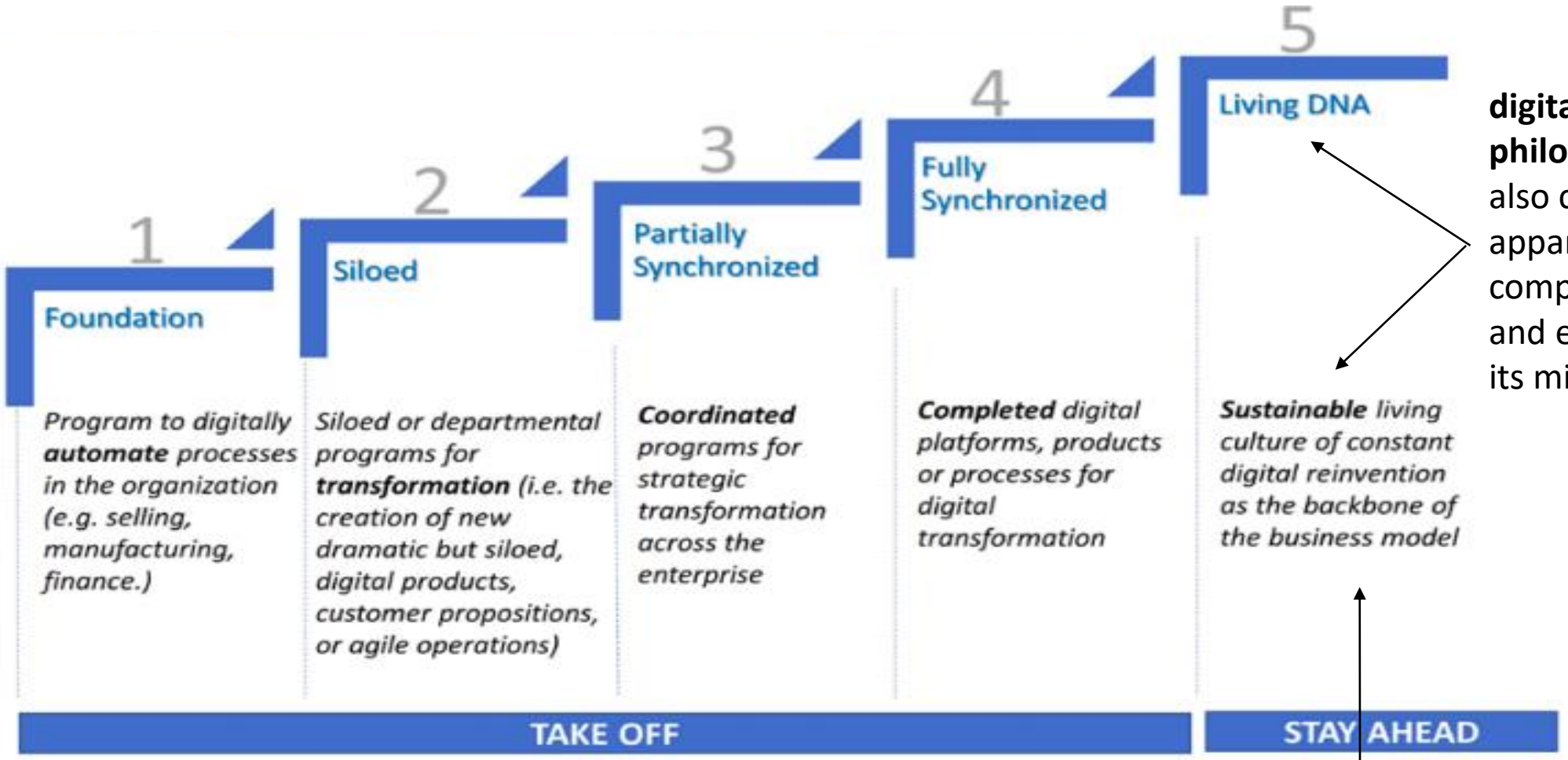
- **C-level suite has decided to push the entire organization into the digital era**
- **Various departments or internal processes are being run in a interconnected manner**
- **In order for digital transformation to spread to all departments, a cross-organizational strategy needs to be implemented to dictate the guidelines all business units need to follow**

5 Stage Model for Successful Digital Transformation



- **Digital transformation is in the company's bloodstream and all guidelines are clear for all departments**
- **But the DT isn't entirely done yet**

5 Stage Model for Successful Digital Transformation



digital-first philosophy is also clearly apparent in the company culture and engraved in its mission

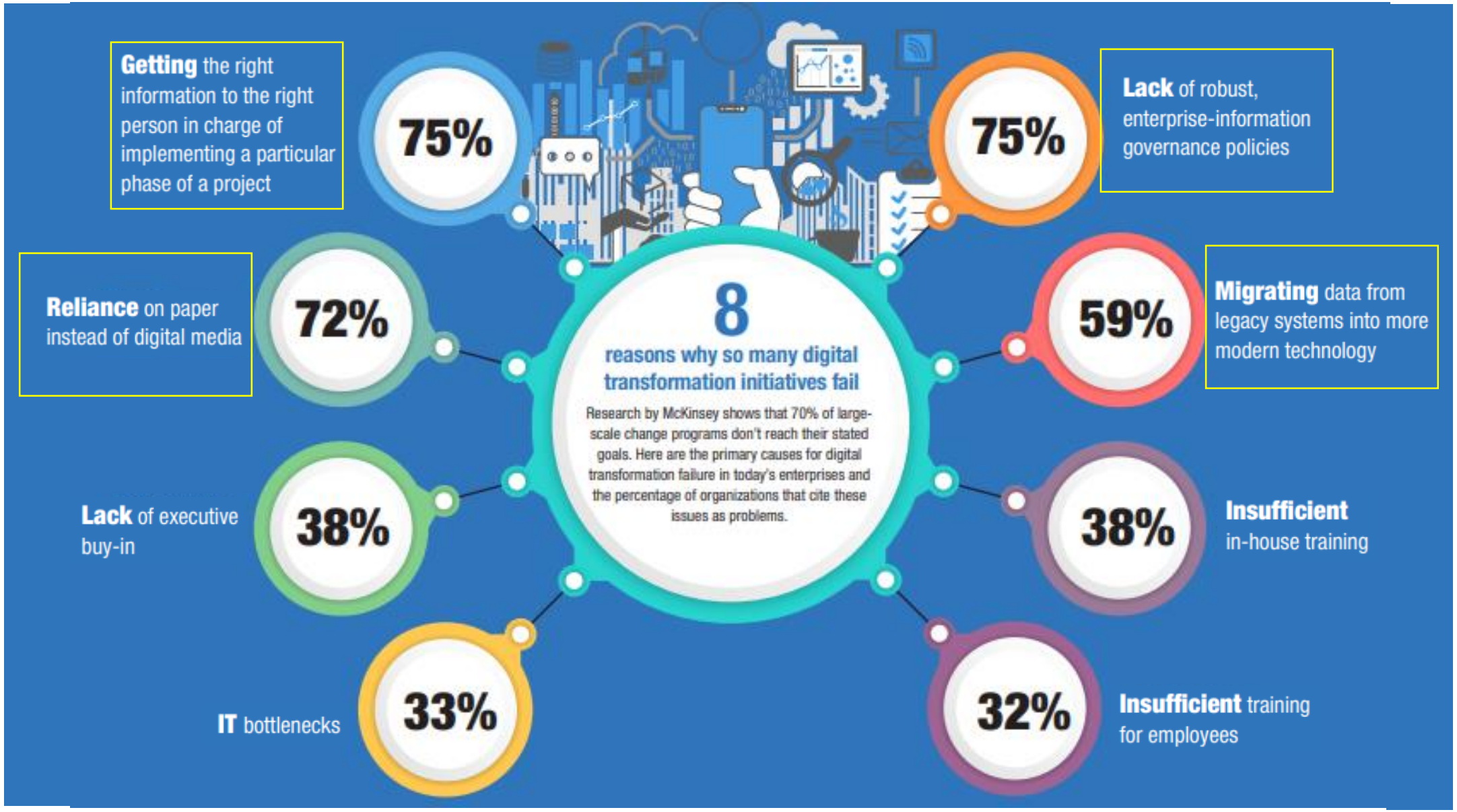
- **Organization places digital transformation strategy at the core of its overall business strategy**
- **Constitutes methods, tools, and capabilities of the company to reliably identify risks and opportunities for disruption as well as repeatedly react to them in a disciplined manner**

What are the benefits of digital transformation

- Actionable insights from data
- Enhanced customer experience
- Increased collaboration across departments
- better and more frequent communication
- Improved agility and enables innovation
- Developing new skill-sets (acquire new skills and knowledge to master them)
  - Overall digital literacy
  - Data analytics and AI-guided decision making
  - System thinking and understanding business models
  - Continuous improvement by using lean and agile methods
- Enhanced operational efficiency and lower costs

Digital Transformation Impacts All Business Areas

Reasons behind DT initiatives fail – Principally Data



McKinsey

Digital Transformation Prediction 2023

- Studies show that global digital transformation technology investments are forecast to reach **$2.3 trillion**
- DT becoming a majority share of total IT budgets in enterprises
- "We are approaching an important milestone in digital transformation investment with our forecast showing its share of **total worldwide technology investment hitting 53% in 2023**"

Craig Simpson - IDC's

Digital Transformation is Hard and Possible to Fail

- Yet **84%** of all DT initiatives do not reach their goals. (Forbes)
- About $1.3 trillion that was spent on 2019 for - estimated that $900 billion went to waste

- **Common DT challenges encountered**

Strategy	Lack of leadership or vision, cultural changes difficult	Anchor strategy to KPI metrics
People	Siloed functional leadership, resistance to change	Include the “Voice of the Customer” Communicate the benefits of DT
Process	Getting out of comfort zone	Establish a cross-functional team to evaluate every process and determine what should change
Technology	Hard to walk away from existing investments	Focus on what to do best. Buy or partner for what do not have
Data	Poor quality, difficult to leverage	Adopt Data Governance and Data Management

How to Implement Digital Transformation

DATA

- What data do I have, where is it stored and how do I turn data into actionable insights?
- Do I need access to more data sources?
- What data or analytics projects are planned or in flight?

TECHNOLOGY

- Am I using the right technology for the right jobs?
- Will my current technology scale with my vision?
- How do I leverage modern technology?

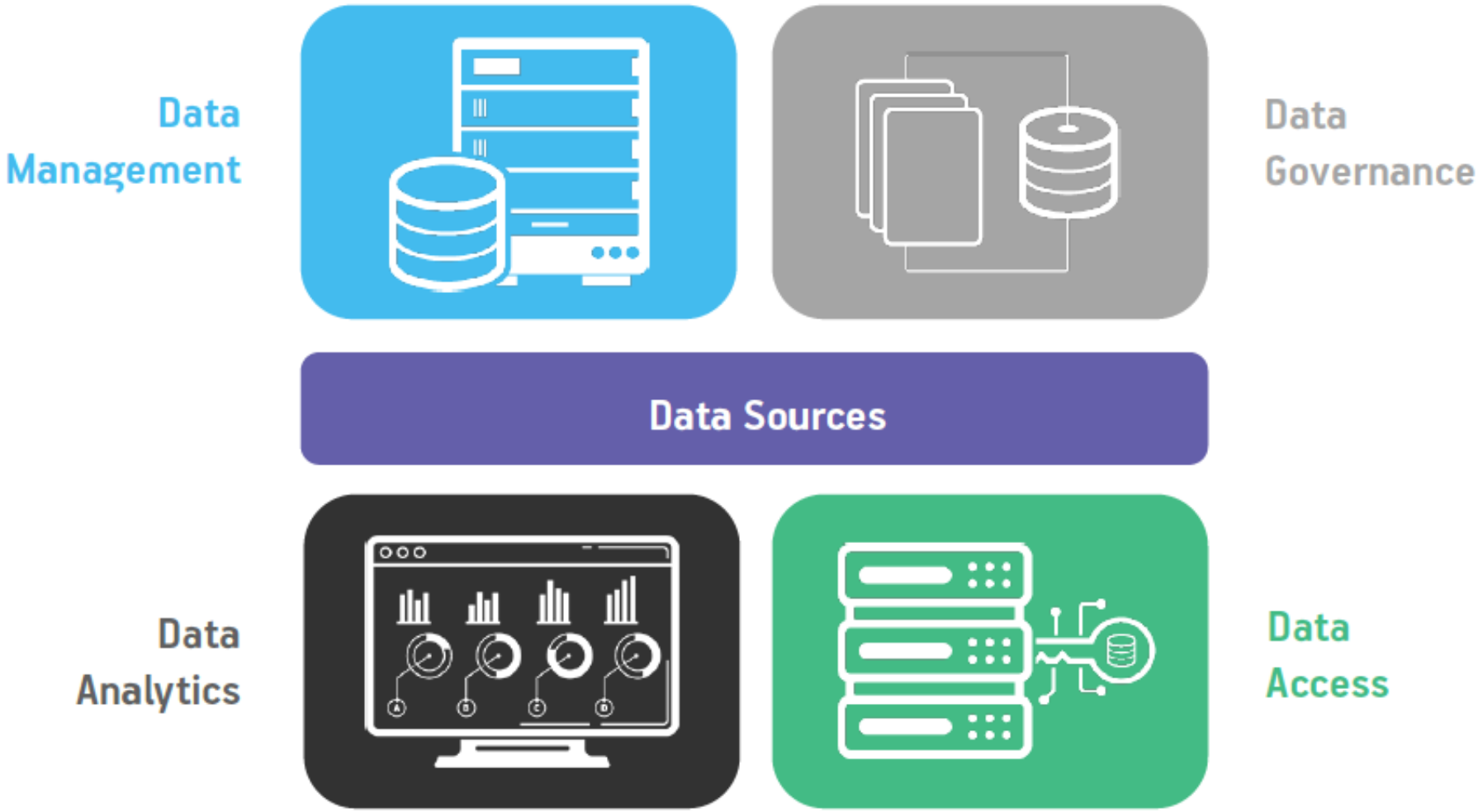
PEOPLE

- What skills do I have now and are they sufficient for the future state?
- What is the right organizational structure to drive insights?
- How do I incorporate change management for digital transformation?

PROCESS AUTOMATION & GOVERNANCE

- What are my core processes and what does the future state look like?
- What processes could leverage automation to drive efficiency?
- How does digital technology support process governance?

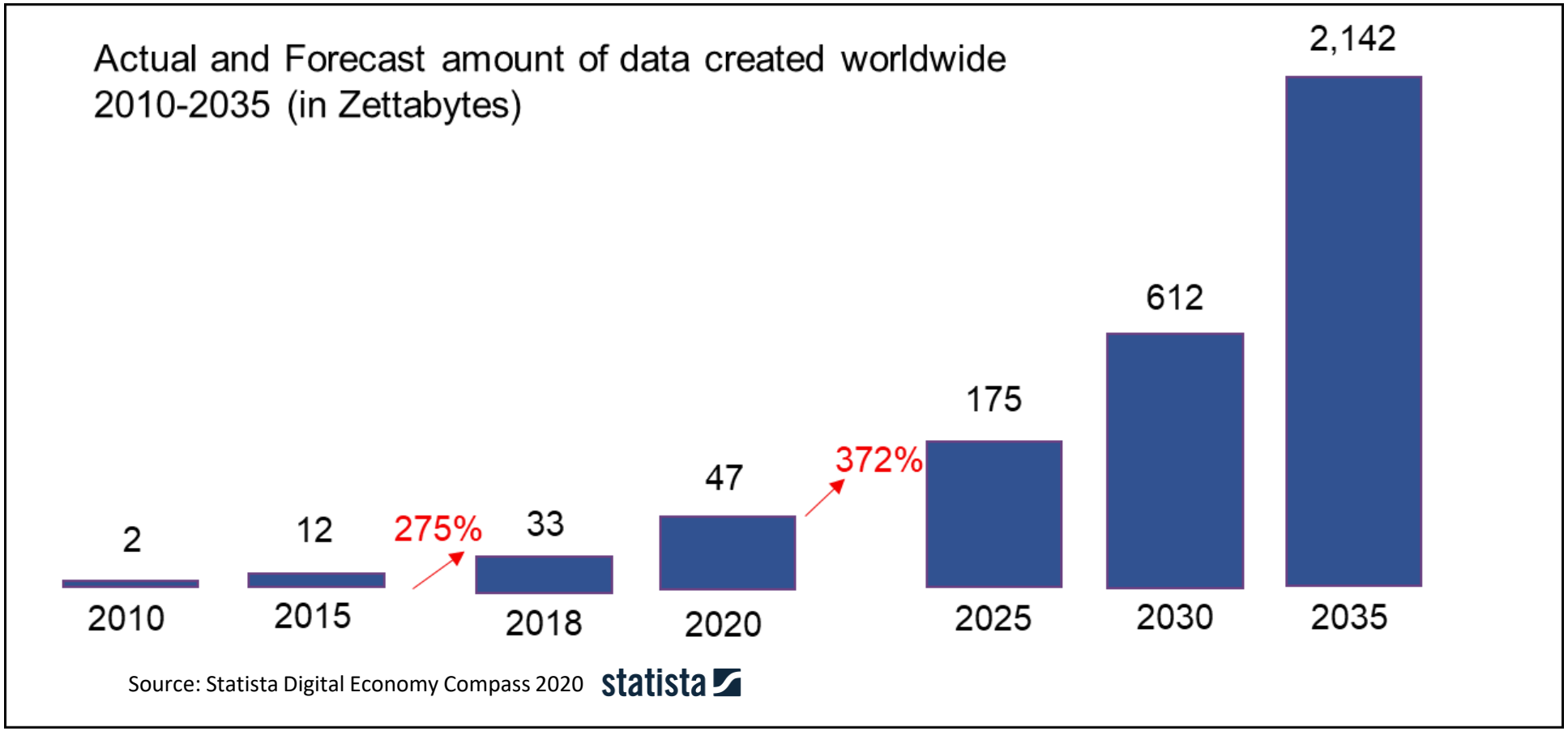
Data Strategy for Digital Transformation



Essential Data Steps for Digital Transformation

Global Data Creation is About to Explode

“Data is New Oil”



1 Zettabyte = 1 billion terabytes

175 Zettabyte = 43 Trillion DVDs

- Would be long enough to circle Earth 222 times
- 1.8 billion years to download

A Day in Data

Here are some key <u>daily</u> statistics about Data Volume:

- **500 million** tweets are sent
- **294 billion** emails are sent
- **4 petabytes** of data are created on Facebook (**4000 TB**)
- **4 terabytes** of data are created from each **connected car**
- **65 billion** messages are sent on **WhatsApp**
- **5 billion** searches are made

Abbreviation	Unit	Value
b	bit	0 or 1
B	bytes	8 bits
KB	kilobytes	1,000 bytes
MB	megabyte	$1{,}000^2$ bytes
GB	gigabyte	$1{,}000^3$ bytes
TB	terabyte	$1{,}000^4$ bytes
PB	petabyte	$1{,}000^5$ bytes
EB	exabyte	$1{,}000^6$ bytes
ZB	zettabyte	$1{,}000^7$ bytes
YB	yottabyte	$1{,}000^8$ bytes

Data predictions for the year 2023-2025

Gartner predicts that by 2022, **90%** of corporate strategies will explicitly mention **information as a critical enterprise asset and data analytics as an essential competency**.

By 2025 (IDC)

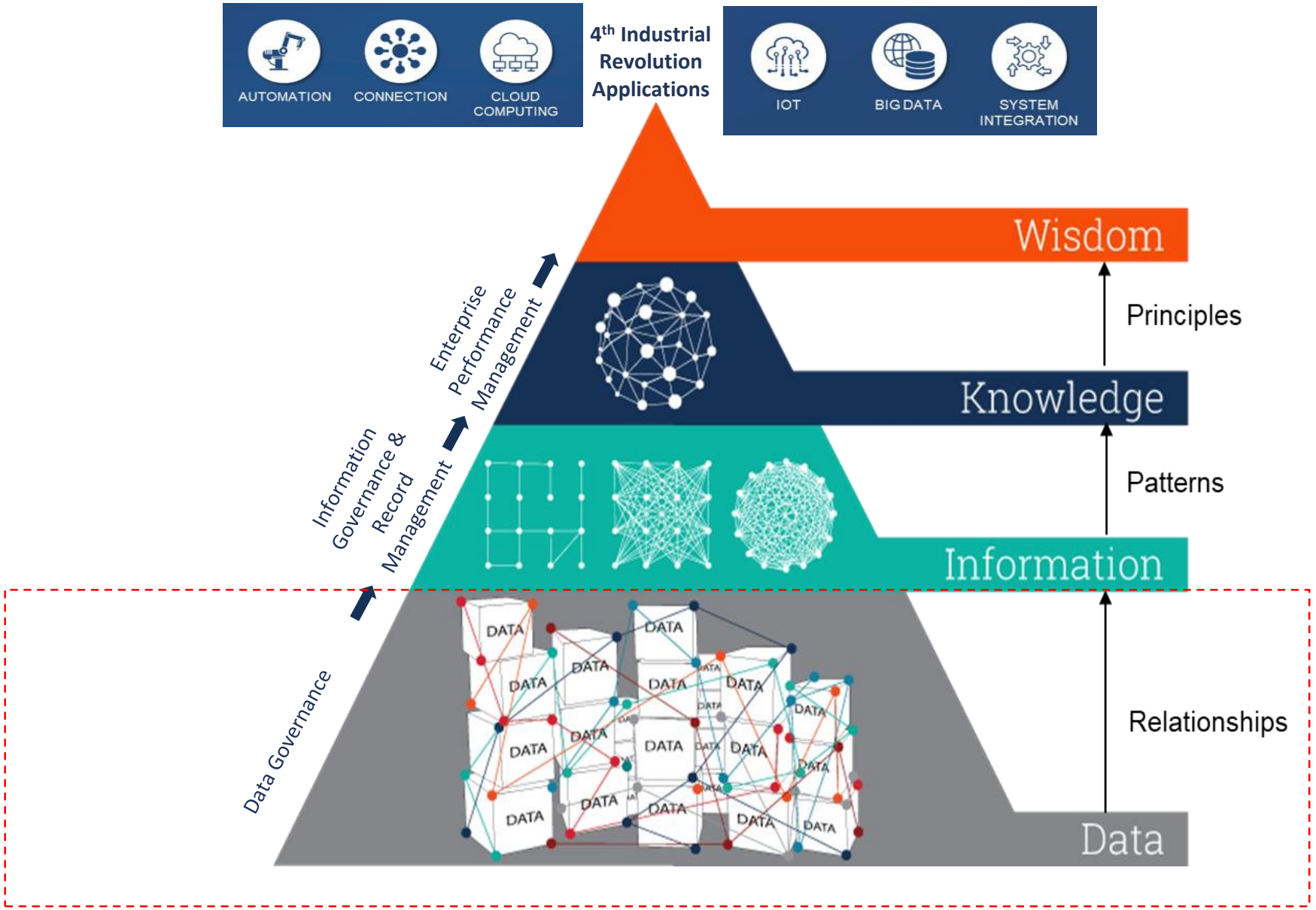
- **90ZB** of data will be created on IoT devices by 2025
- **49%** of data will be stored in public cloud environments
- **30%** of the data generated will be consumed in real-time by 2025
- **150 billion** devices will be connected across the globe
- **6 billion** consumers (75% of the world) will interact with data every day
- The average connected person will interact with their device every 18 seconds
- Estimated that 463 exabytes (463,000,000 TB) of data will be created each day globally – that's the equivalent of 212,765,957 DVDs per day!

Cost of bad Data for Organizations

- **IBM's** estimate, the US lost **$3.1 trillion yearly due to bad data**
- **Gartner.com** states that organizations **lose $13.3 Million yearly** average on poor data
- **MITSloan** states employees waste **50% of their time** handling with everyday data quality tasks
- **Econsultancy.com** states **21% of** businesses experienced reputation damages due to bad data
- **Kissmetrics** states businesses **lose up to 20 percent** of their revenue because of bad data.
- **CrowdFlower** states data scientists **spend 60%** of their time cleaning and organizing data.
- **Pragmaticworks** states **20% to 30% of operating expenses** are due to bad data

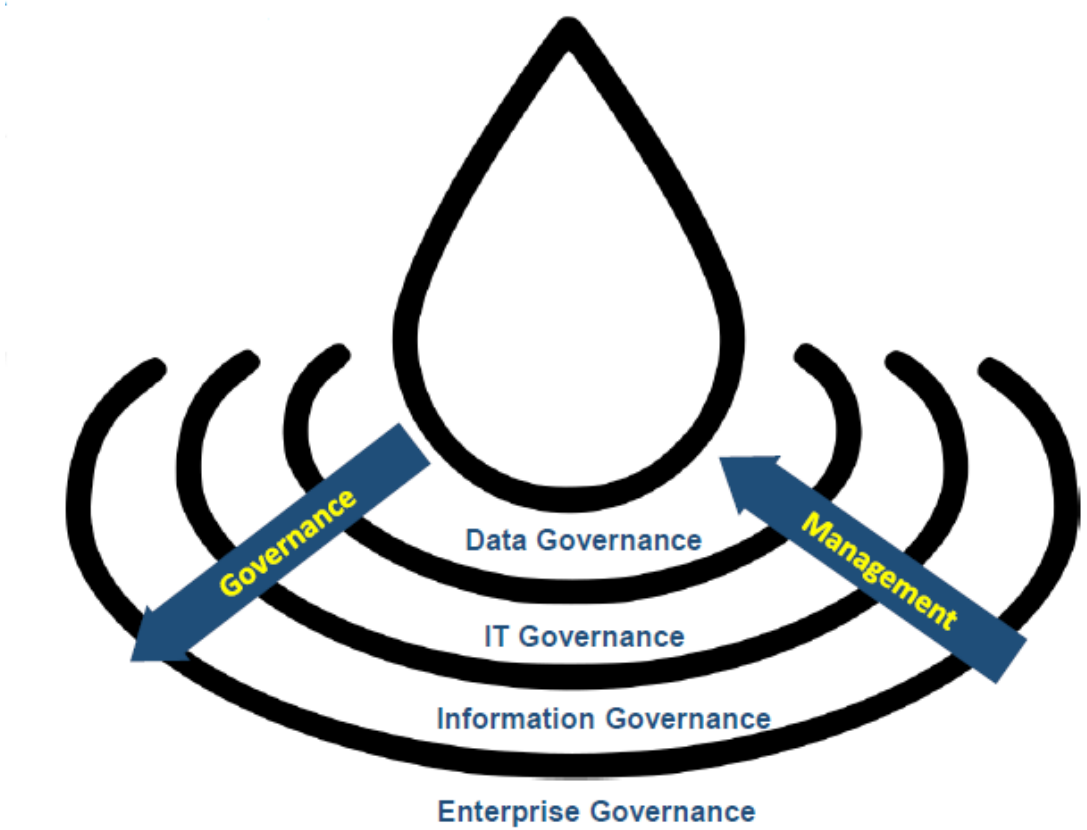
- **Bad data is characterized as:**
  - Inaccurate
  - Incomplete
  - Inappropriate
  - Non-conforming
  - And/or Duplicate

Data, Information, Knowledge and Wisdom

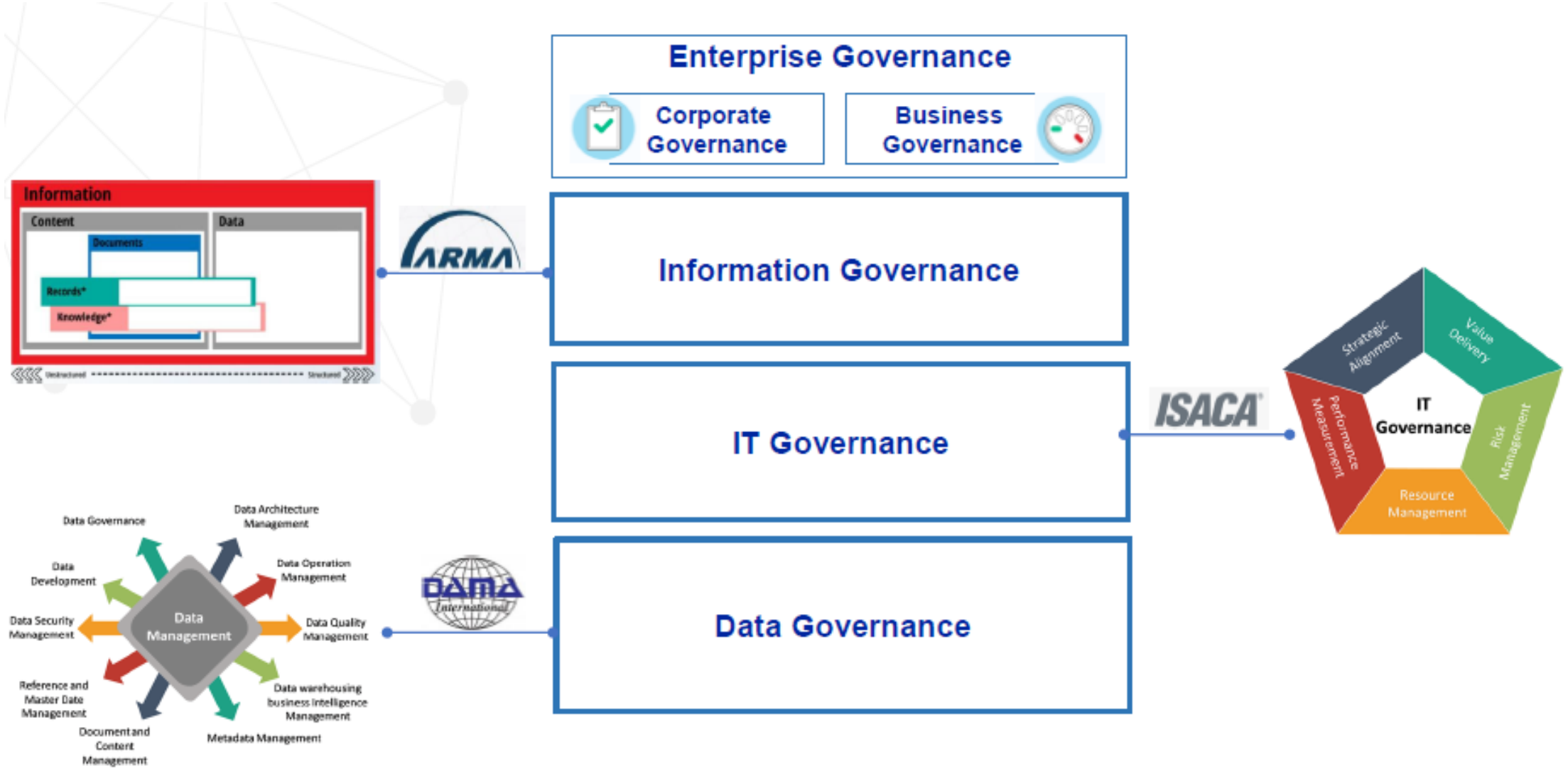


What is Governance Frameworks

- The term “governance”, in general, refers to the way an organization ensures that strategies are set, monitored, and achieved
- The governance concept can be understood in different contexts like **corporate governance, information governance, IT governance, and data governance**



Framework Per Levels of Governance



Where does Data Governance live?

Data Compliance
- Data Access Policy
- Data Retention
- Forensics

Data Risk
- Preparing for potential issues
- Data loss
- Data inaccessibility (service outage)
- Data exposure

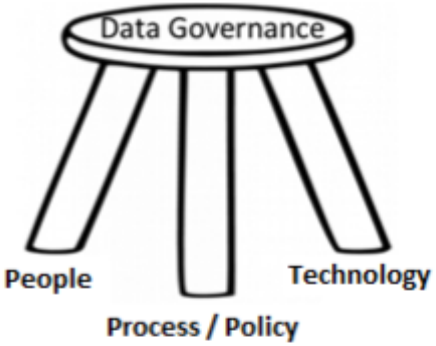
Data Security
- Access control
- Encryption
- Data Integrity
- Data Leakage Prevention

Data Governance Components

The formal orchestration of **People**, **Process**, and **Technology** to enable an organization to **leverage data** as an **enterprise asset**.

People + Process / Policy + Technology = Data Governance Center

- Roles
- Responsibilities
- Partners
- HR Job Descriptions
- Executive Support
- Engaged

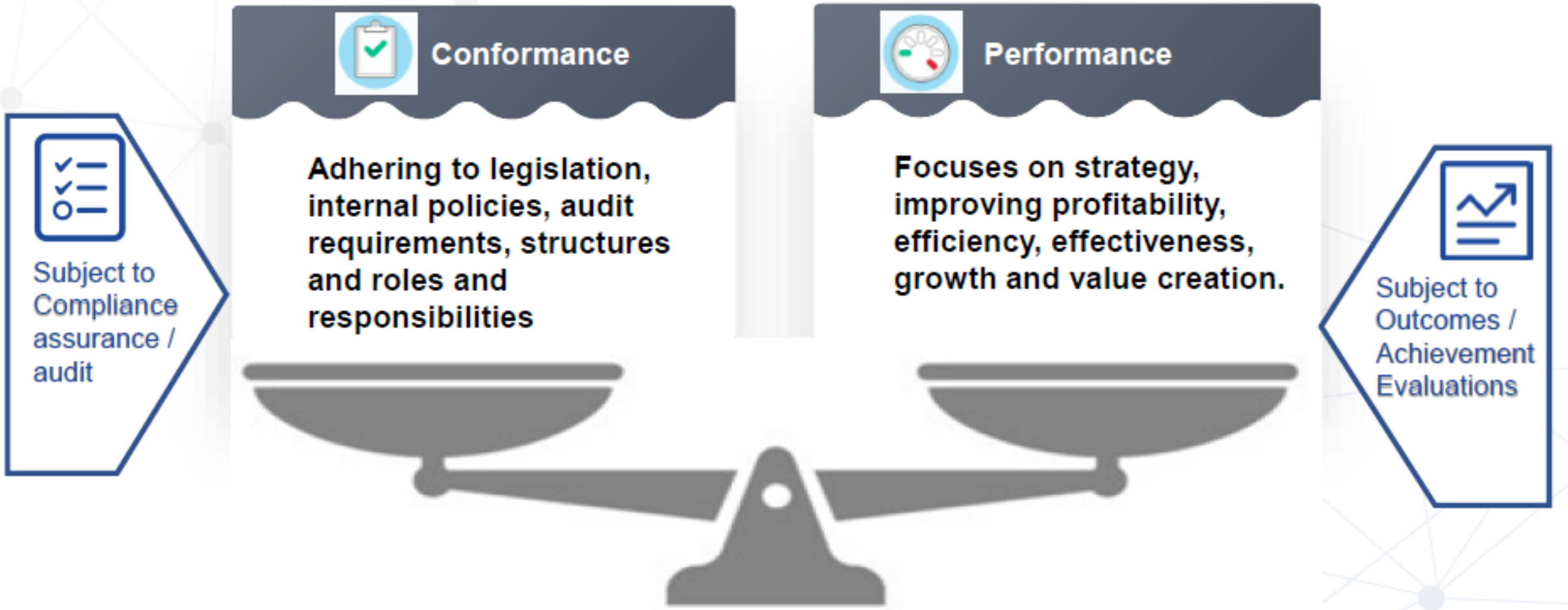


- Metadata Repository
- BI Integration
- Process Workflow
- Report Catalog
- Data Quality
- Master Data Integration

- Policy – The What
- Process – The How

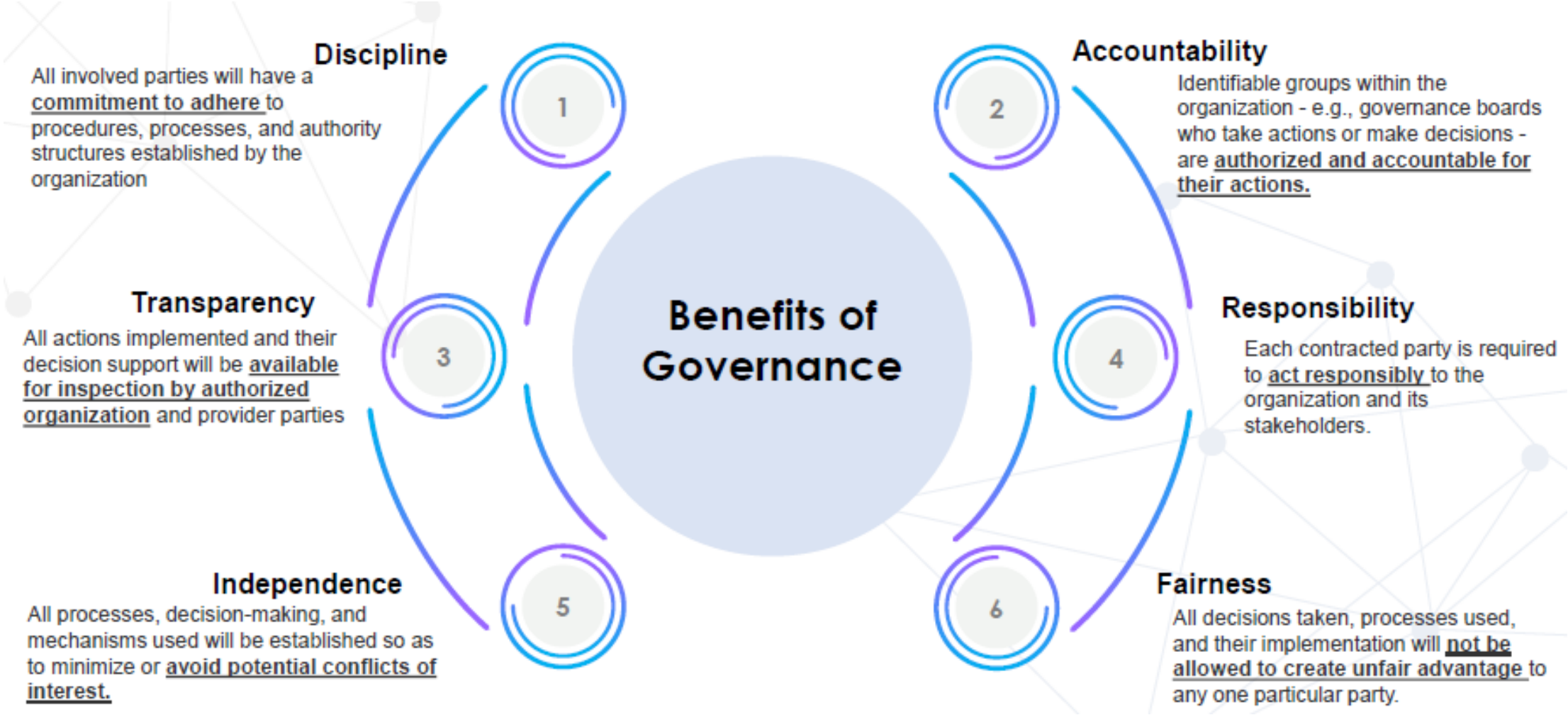
Governance Dimensions

There are 2 key dimensions of Governance which need to be balanced:



Characteristics of Governance

The following characteristics presents the value and necessity for governance as an approach to be adopted within governments/organizations and their dealings with all involved parties:



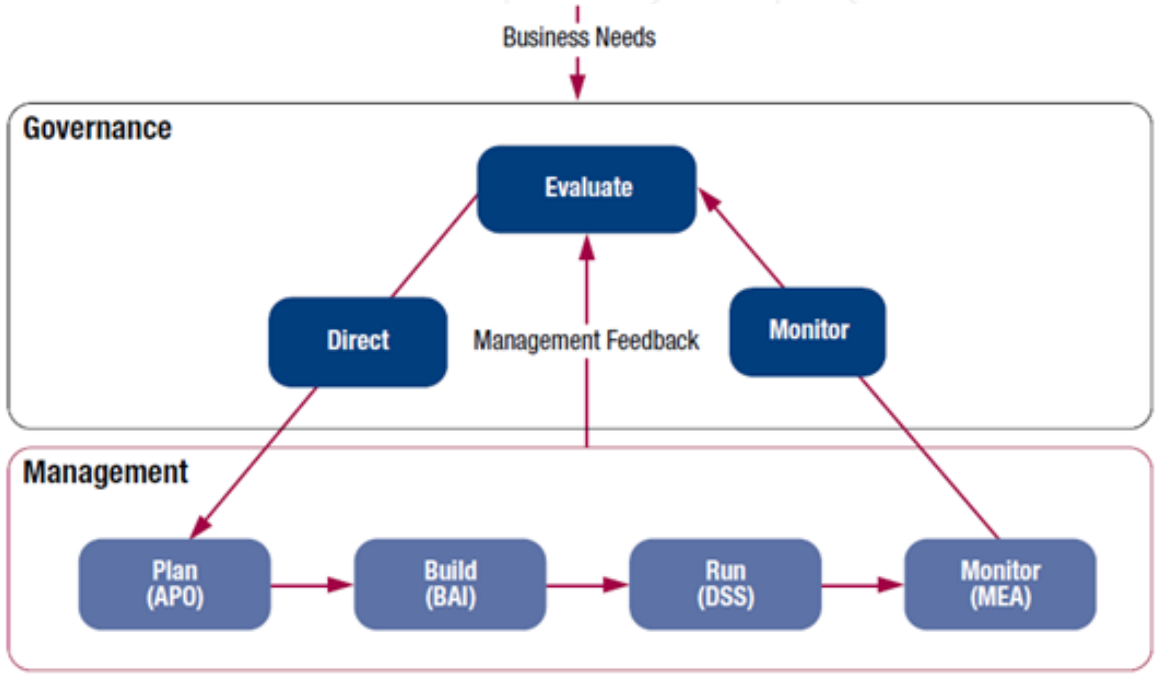
Governance vs. Management

Governance

- **Setting** clear **vision**, strategic direction, and goals
- **Formulate** policies and setting standards for management
- **Oversee** management and government entities performance
- **Setting objectives** for practices and monitoring performance
- **Oversee the management** to ensure the government is achieving the desired outcomes
- **Ensuring resources** are used efficiently, practice is compliant and fulfils its obligations

Management

- **Support** the Governance board in developing the strategic plan
- **Run the plans** in line with the governance board goals ad directions
- **Develop** and recommends operational plans (to achieve strategic goals)
- **Ensures** the governance board has **information** needed to fulfil their responsibilities
- **Ensure** the government entities **implements** the plan and policies, achieve goals.

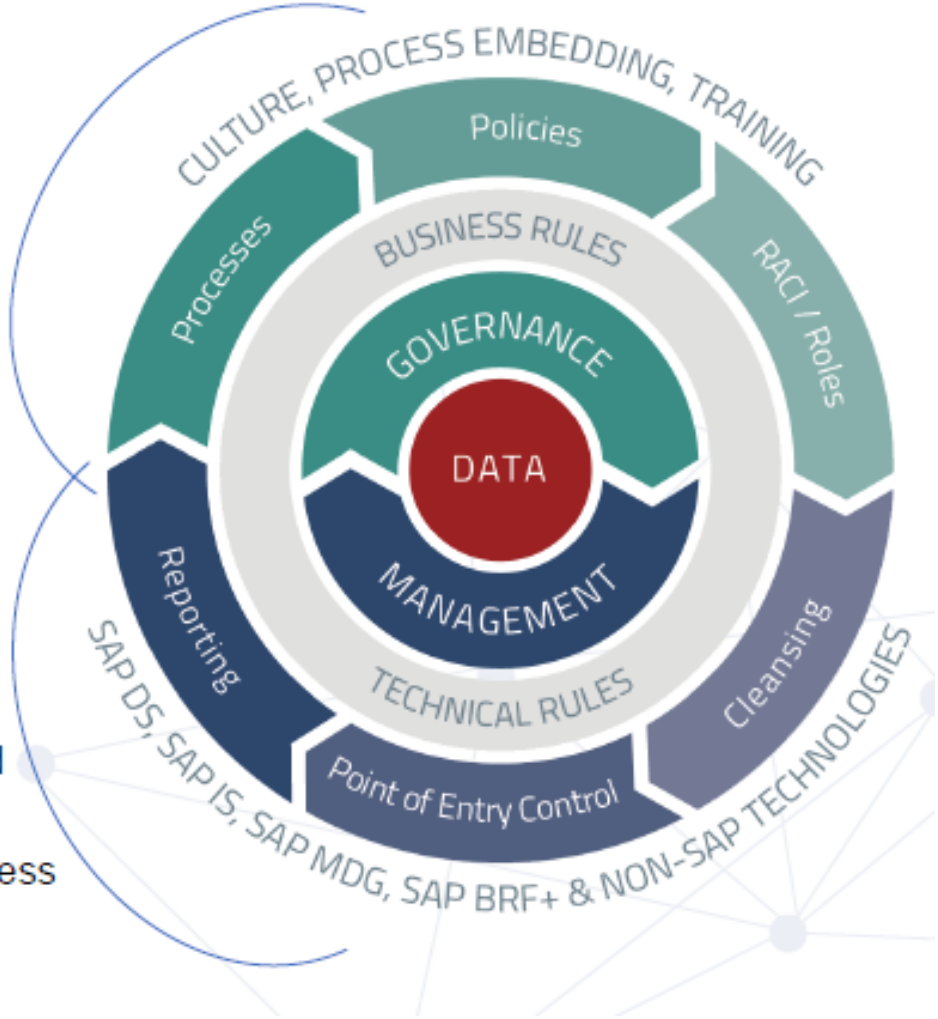


Data Governance vs. Data Management

- **Data Governance**
  - Policy level guidance
  - Setting general guidelines and direction
  - Example: All information not marked public should be considered confidential

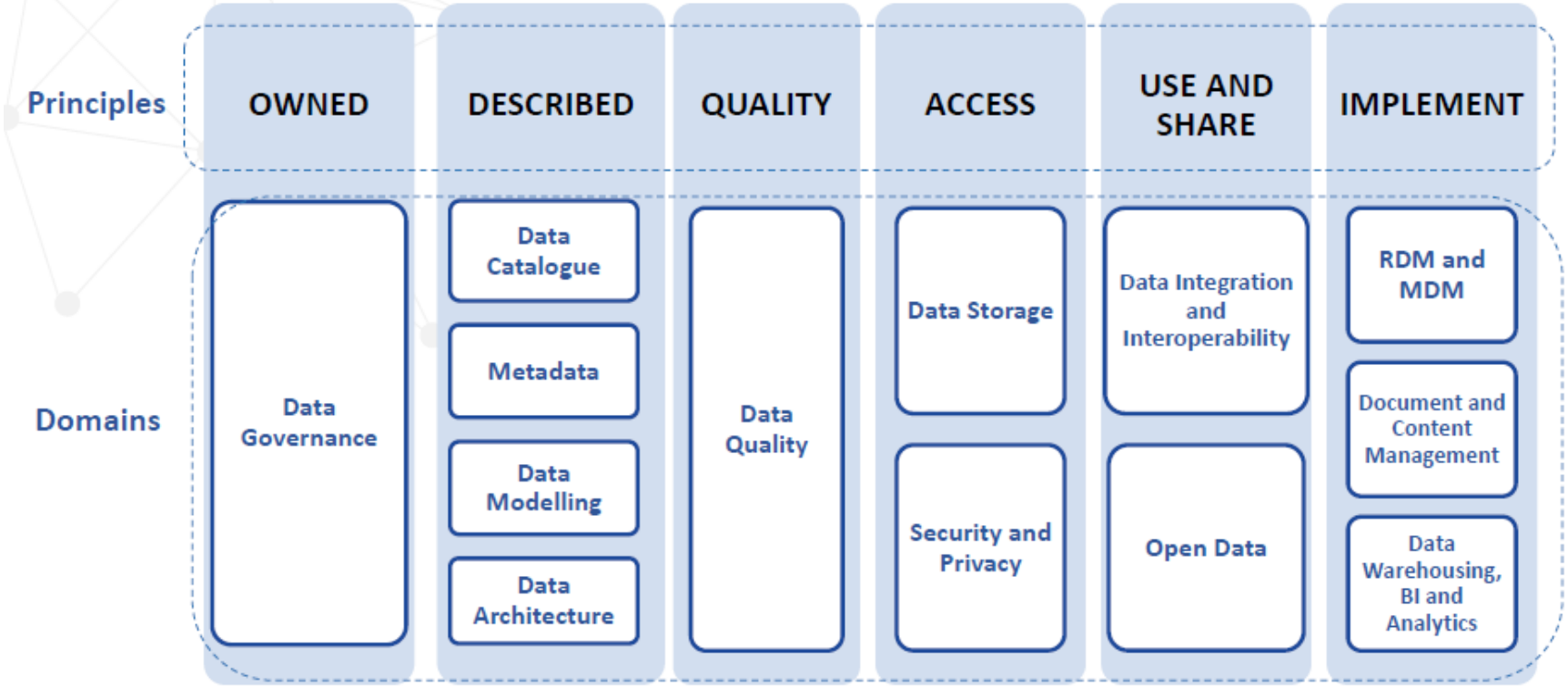
Data must first be appropriately governed; only then can the supporting data management principles to enable successful data management

- **Data Management**
  - The function of planning, controlling and delivering data/information assets
  - Example: Delivering data to solve business challenges

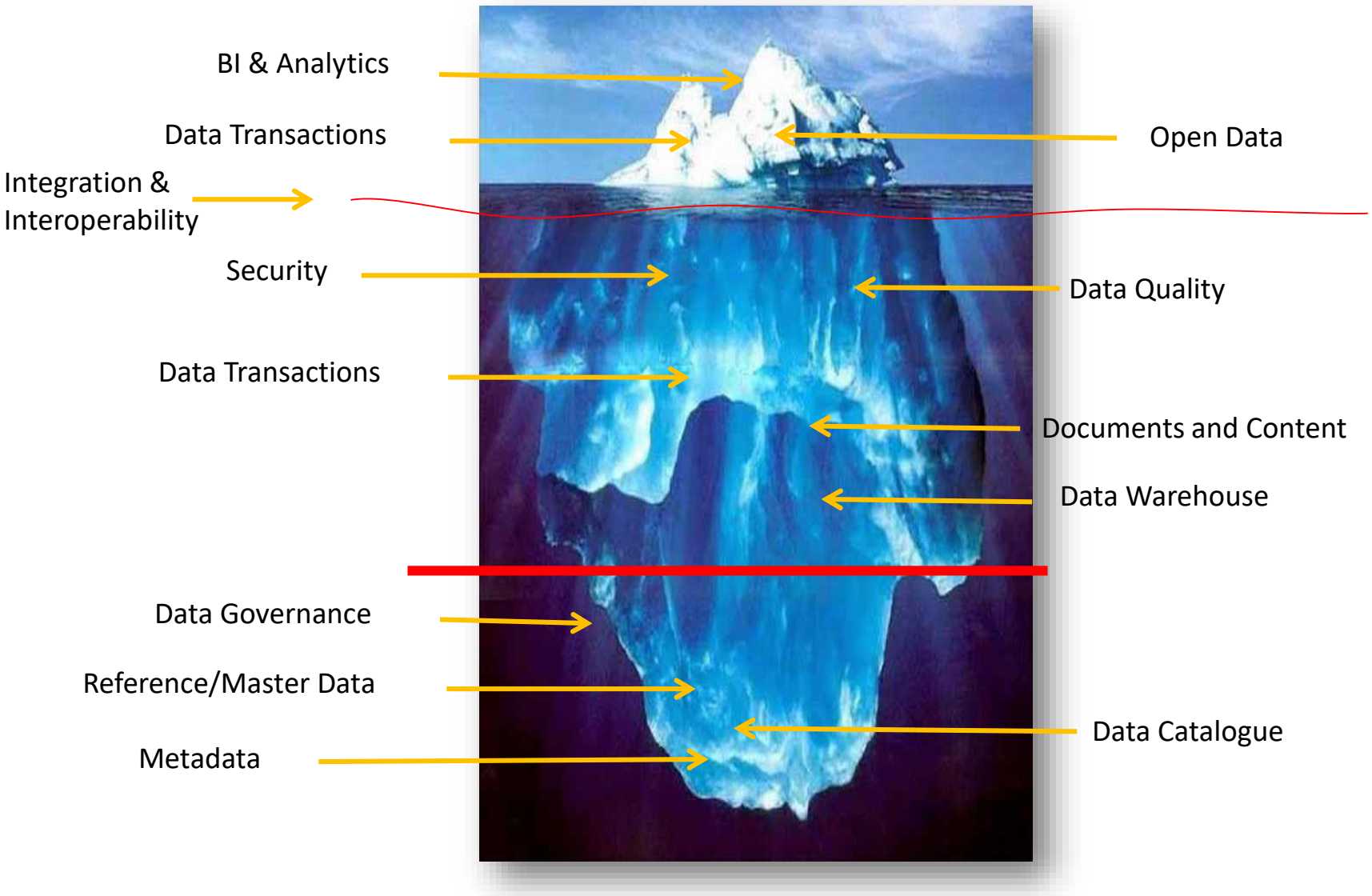


Data Management Domains and Functions (DMBOK)

13 data management domains in total



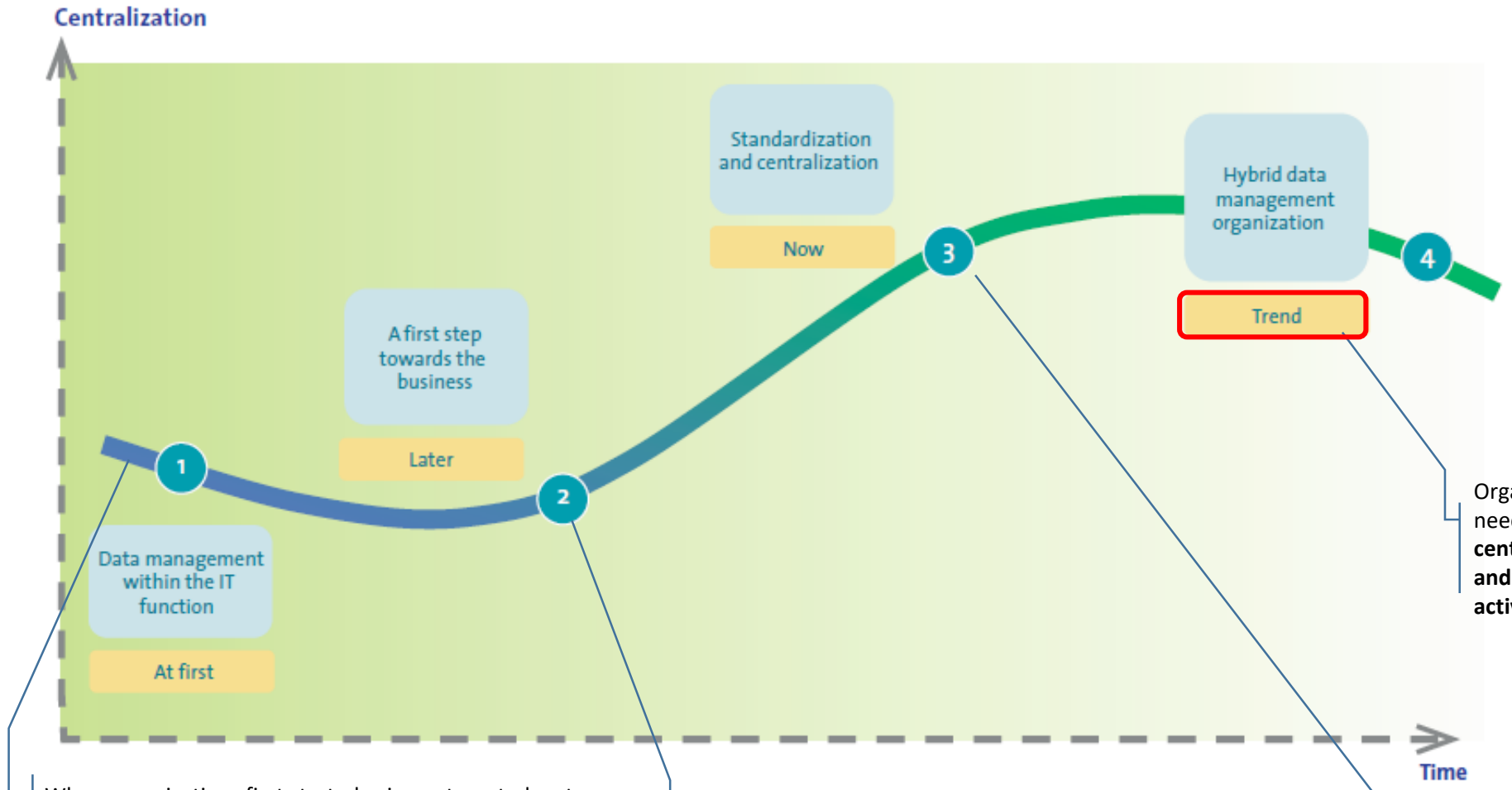
Information is the ‘tip of the iceberg’….



Data Governance & Management Goals

- **Reduce cost**
- **Avoid data duplicates**
- Ensure **data ownership**
- Improve **data security, privacy** and **confidentiality**
- **Decrease the risk** of regulatory fines
- Increase the **quality of master data (accuracy**, **integrity**, **integration**, **relevance** and **usefulness)**
- **Increase consistency** and confidence in decision making
- **Accelerate availability** of up-to-date master data in the business network
- Provide **transparency** on who has changed what, when & why
- **Convert manual processes** to system guided processes with **workflow approval**
- **Capture, store, protect, and ensure the integrity of data assets**
- **maximize the effective use and value of data and information assets**

The Evolvement of the DG & DM Organization



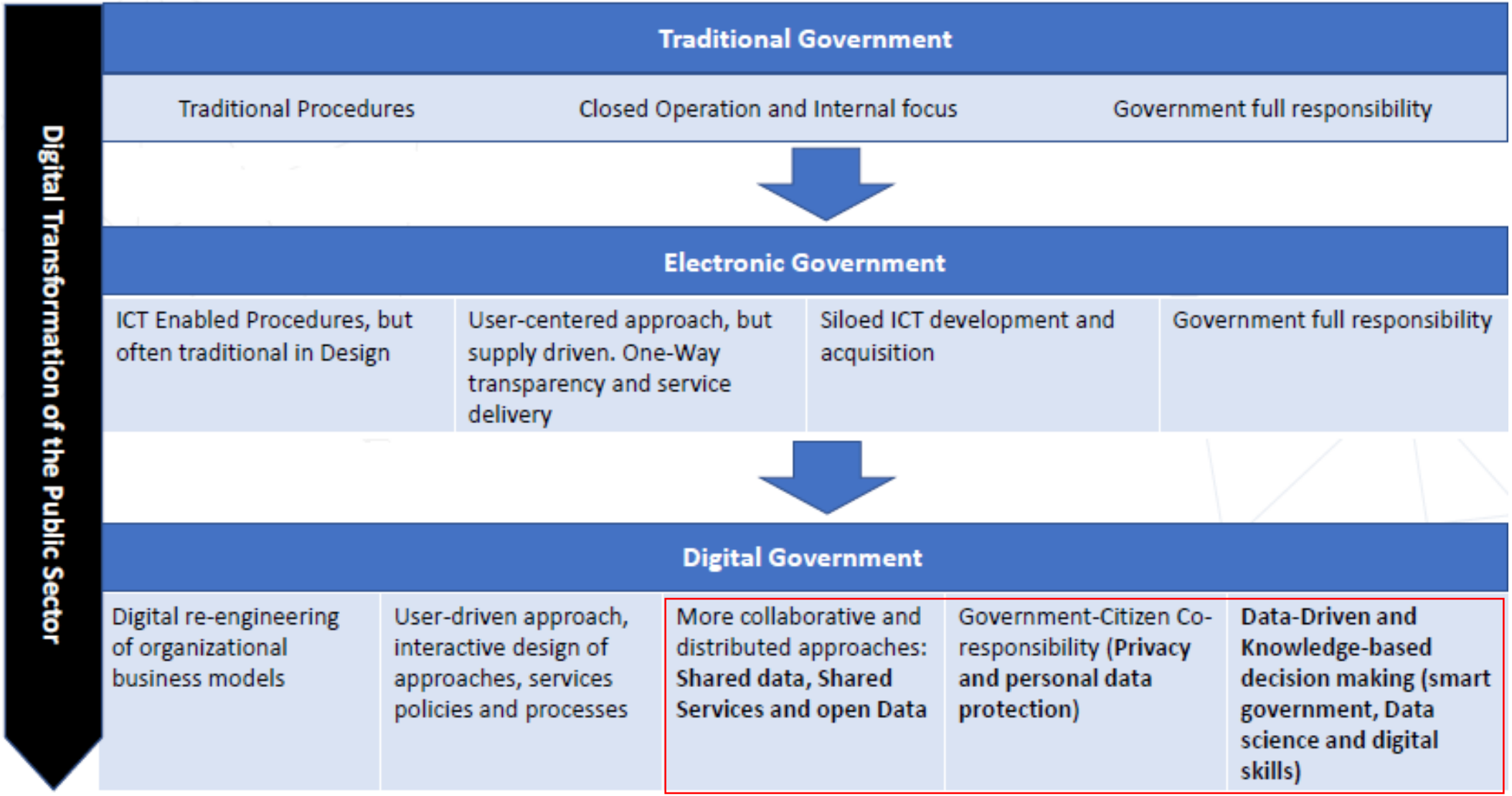
When organizations first started using automated systems (pre-ERP) as administrative tooling, **data was just a record 'doing nothing'.** When issues occurred, this was seen as an IT issue. Obviously, **ownership of data was within IT**.

Starting to realize that data is the fuel of many primary business processes, organizations positioned **data management activities in the back office of the business**.

Organizations started realizing the need for standardization by **centralized data governance office and decentralized management activities**

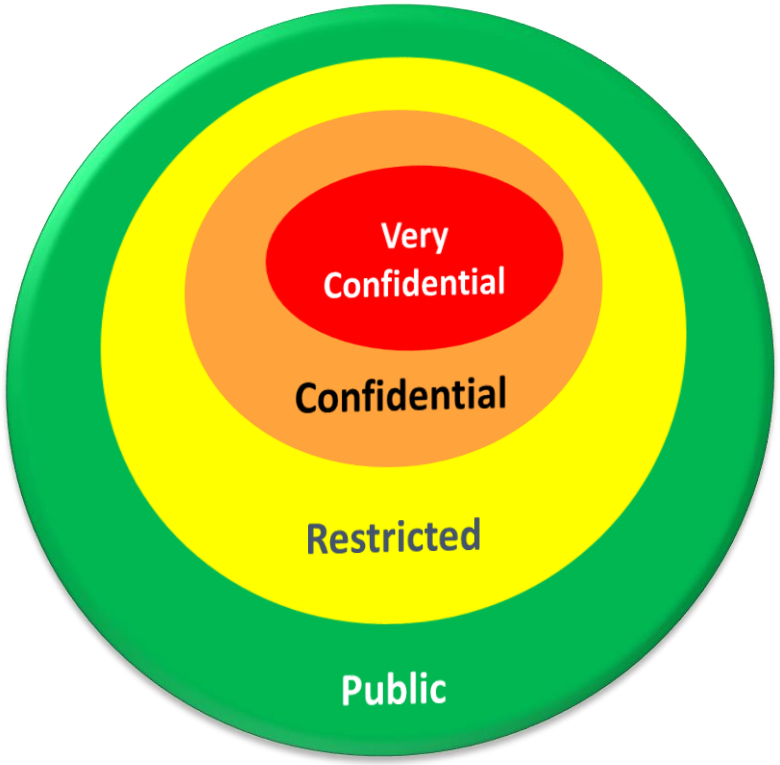
Organizations started realizing the need for standardization and even **centralization of data management activities**

Digital Transformation in Governments



Data Classification

DATA CLASSIFICATION LEVELS



Public

* Data disclosure would ***have no negative impact*** on the below criteria
* It is openly disclosed to individuals, government and non-government organizations for use, reuse and sharing

Restricted

Data that is related to identity which may have a ***limited negative impact*** on government bodies, companies or individuals

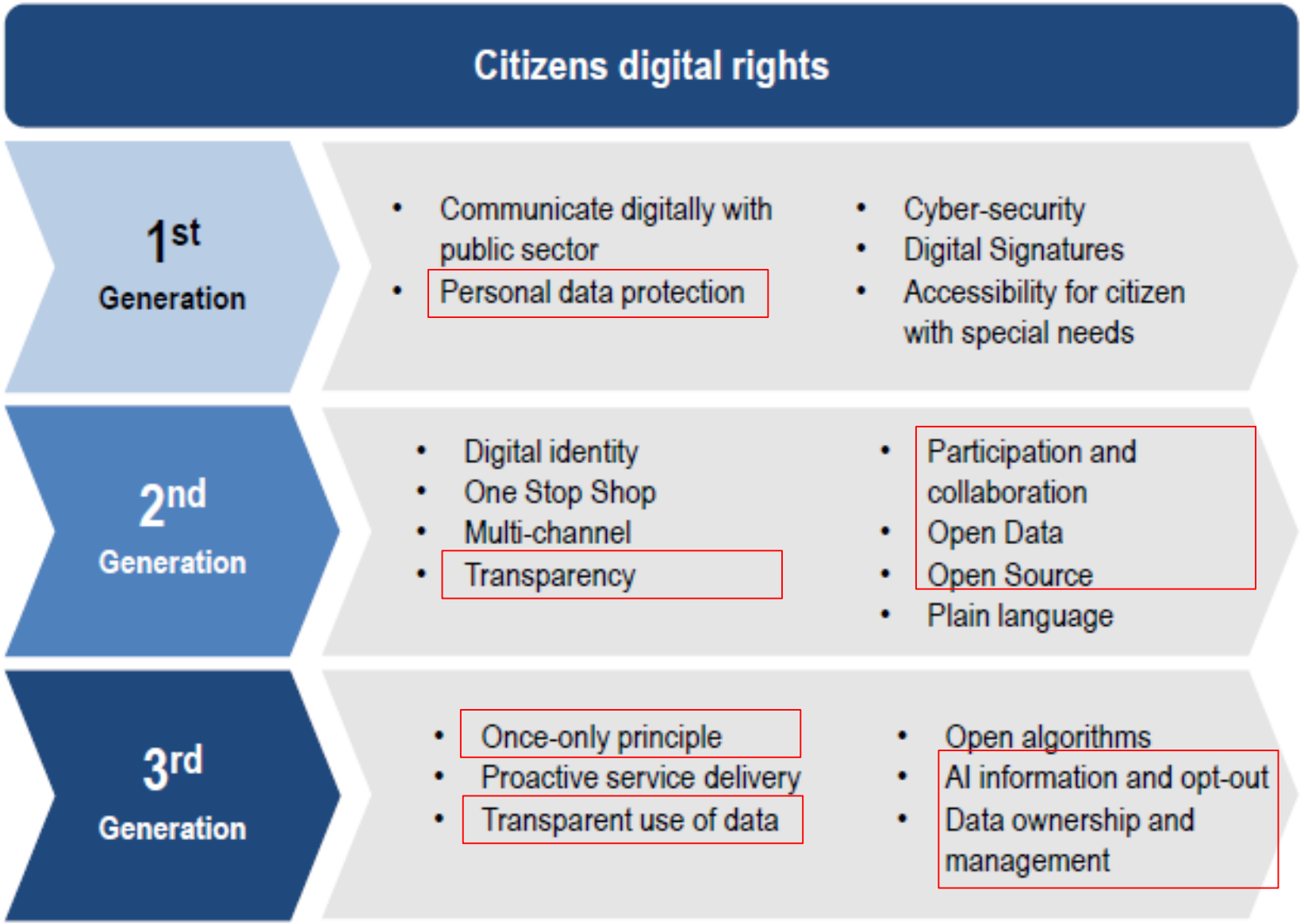
Confidential

Disclosure would have a ***significant negative impact at a public or private level***, shareable within certain government groups and ***subject to strict controls***

Very Confidential

Data disclosure would have an ***very high negative impact on National Security***, shareable across certain individuals under strict controls and clearance

Digital rights – Towards a citizen-driven transformation



Analysis of Governmental Approaches to Data Management

	Data Governance	Data Security	Data Privacy	Data Quality	Data Architecture	Integration & Interoper	Data Modelling & Design	Metadata management	Data Storage	RDM / MDM	Document & Content	Data Warehouse, BI & Analytics	Open Data
South Korea	5				5	5			5		4		5
Netherlands	3		4	4				4					
UK		4	4	5				2	3	1			4
Denmark					5			2					
USA	5		4	4	5	4		4	3		2		3
Australia		3	3	2	3						2	4	
Estonia	5										5		4
Germany					4		3	3					
Canada	4		4			3	2					2	4
Finland					3								4
Norway						2							3
Ireland	3												4
New Zealand	4									2			4
Mexico	3												5
Spain	4												4
Japan	4												5

5
4
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1

Analysis of Telecom Sector Approaches to Data Management

Country	Company/Group	Data Governance	Data Security	Data Privacy	Data Quality	Data Architecture	Integration & Interoper	Data Modelling	Metadata manag.	Data Storage	RDM & MDM	Document & Content	DWHouse, BI & Analytics	Open Data
Germany	Deutsche Telekom	4			5	**4**		3	3		4		4	4
UK	BT	4		5										
	Telefonica	4		3										
	OFCOM *													5
France	Orange											4		
Italy	Fastweb				4						4			
USA	Comcast								4					
Canada	Telus		4											
	Bell MTS - Manitoba Telecom Services						5							
Brazil	Ericom				4									
India	Relaince Jio	3	4	3	4						3			
Australia	Australia Telecum Regulatory *								**2**					
South Africa	MTN						4							
KSA	STC	3	**4**	3	4		3	3	3	2	4		4	

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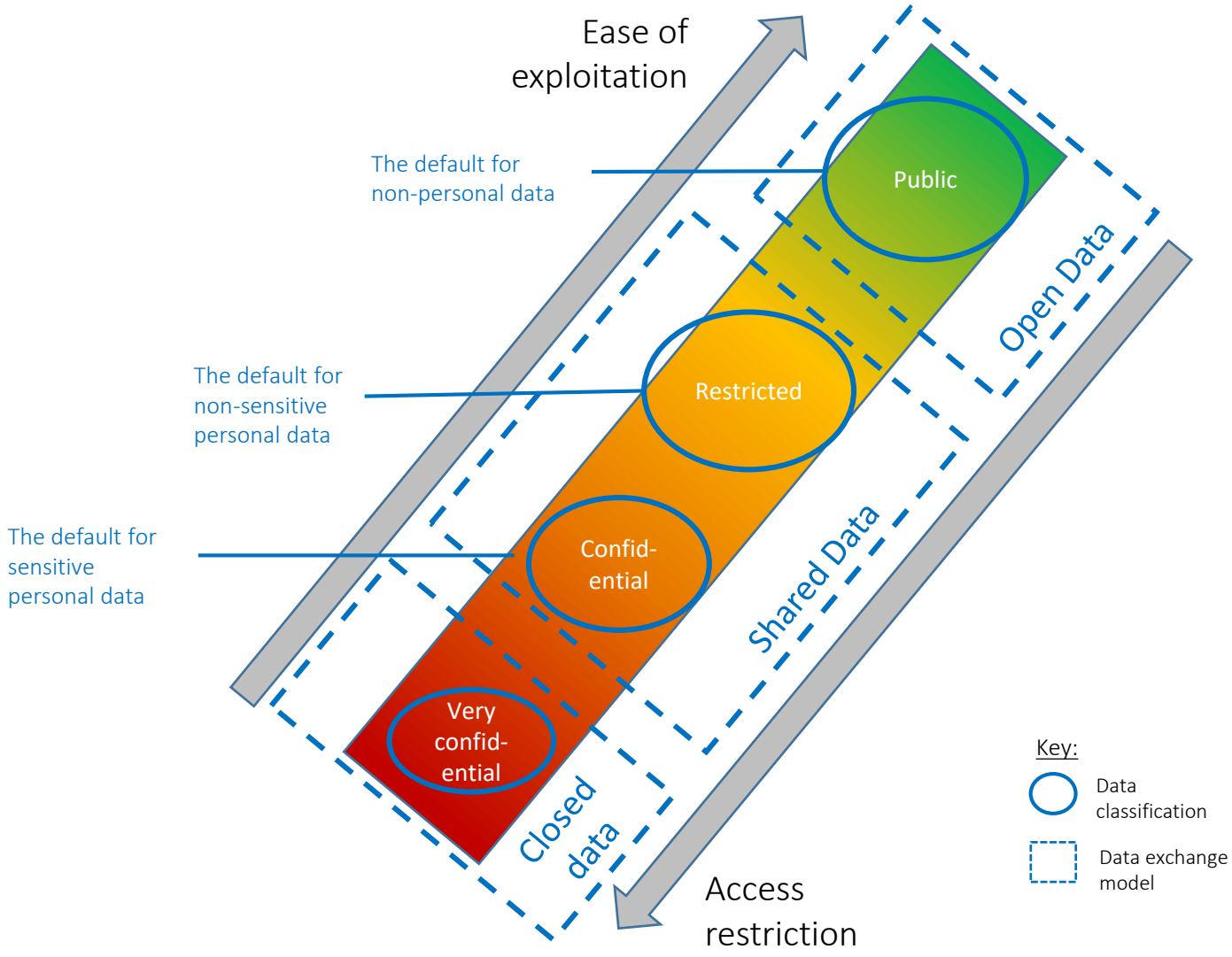
Model for Exchange of Classified Data



World Wide Data Classification Models

ORGANIZATION		CLASSIFICATION LEVELS				
UNDP		UNCLASSIFIED	CONFIDENTIAL			STRICTLY CONFIDENTIAL
ISO		PUBLIC	INTERNAL USE		RESTRICTED	CONFIDENTIAL
EU		OPEN	EU RESTRICTED	EU CONFIDENTIAL	EU SECRET	EU TOP SECRET
USA		PUBLIC	CONFIDENTIAL		SECRET	TOP SECRET
UK		OPEN*	OFFICIAL		SECRET	TOP SECRET
Canada		PUBLIC	PROTECTED	PROTECTED A	PROTECTED B	PROTECTED C
UAE		OPEN	CONFIDENTIAL		SENSITIVE	SECRET

Thanks for Listening!

Q&A