DATA GOVERNANCE AND MASTER DATA MANAGEMENT CONFERENCE EUROPE

11 - 14 March 2024 | London, UK

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ARTIFICIAL INTELLIGENCE EVOLUTION:

Navigating the Benefits and Risks for Industry Decision Makers

Presented by : Yaniv Naor

March 2024

A bit of background to the presentation

- This presentation is the 11th in the line of presentations that build the knowledge of how Master data Management, business analytics, software development and Artificial intelligence have evolved and how they influence decision making capabilities.

My Biography – Yaniv Naor Nahoum

My Passion:

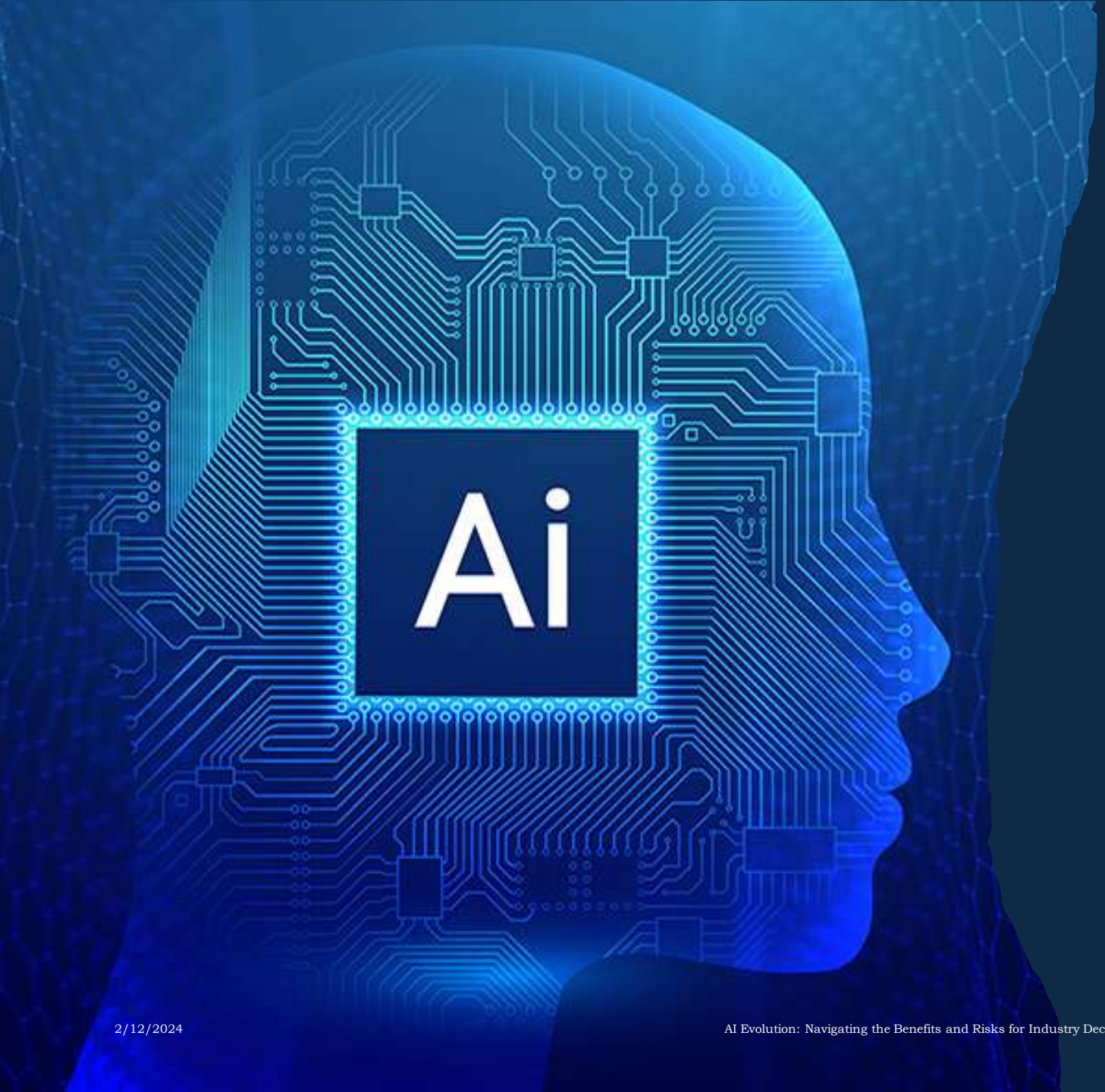
- I am a devoted data specialist and enthusiast with over 20 years of developing and implementing of global enterprise data management systems in the areas of Supply chain, logistics , HR ,ERP & CRM.
- I love Data ❤

Academic education:

- I hold a BSc in Industrial engineering , majoring in information technology,
- EMBA (executive masters) majoring in technology & entrepreneurship
- Currently a PhD. Student researching the impact of "**How does the modern data evolution influence business capabilities and decision making through the use of innovative data technologies"**

Carrier:

- I currently serve as a Director – Master Data Management lead at Sando
- In my most previous roles I served as Director of Data governance and Management at Knauf, HUGO BOSS Master Data Management busi lead , Senior manager in Deloitte and more.
- I have led various enterprise system integrations in the fields of enterpri data management , governance and solution architecture in various industries (pharmaceuticals , A&D (Aerospace and Defense) , consulting , fashion , retail).
- **I am honoured to present to you here today ☺**



Agenda

- **Introduction and Background**
  - History of data
  - Data management and Governance as a key driver for decision making
  - Programming evolution - Robotic Process automation and Low Code No code
- **Introduction to Artificial Intelligence**
  - Advantages & risks of Artificial Intelligence
  - The 7 types of Artificial Intelligence
- **Preparing for the Future**
  - Mitigating AI Risks
  - Ethical Considerations and the Regulatory Landscape
  - Addressing Public Perception and the Impact on Decision Making
- **Artificial Intelligence Future**
  - The Future of AI

History of Data

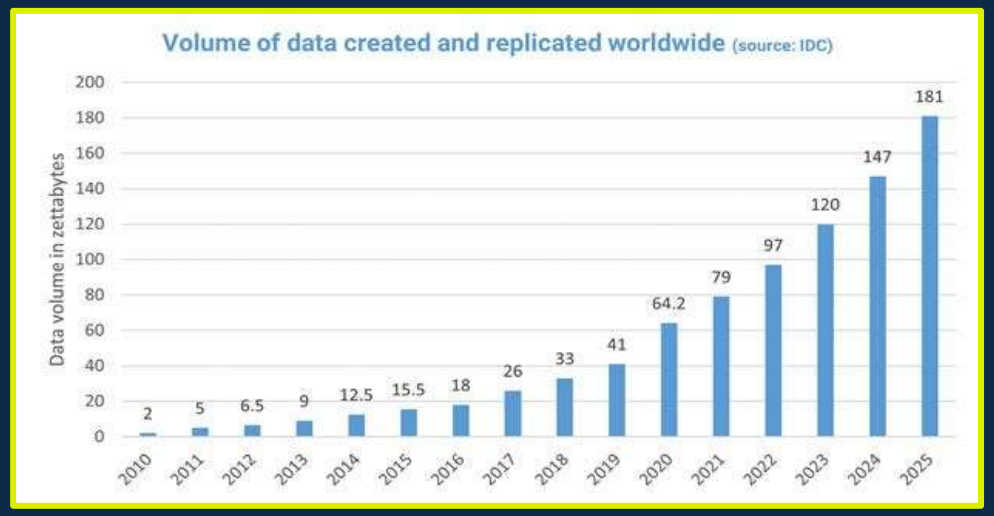
The Value of Data – should data be considered as an asset?

- **Can data be considered an asset if its not monetized ?**

In financial accounting, an asset is any resource owned or controlled by a business or an economic entity. It is anything that can be used to produce positive economic value.

IT ALL COMES DOWN TO: “HOW WE USE IT”

- Data has never been more important than it is now:
  - It holds massive potential for Enterprises, businesses & Individuales.
  - The expected outcome from data usage is increasing, Customization, Automation and personalization are on high demand but despite the exponential growing quantities of data available, its true value does not come easily.



History of Data

Major millstones in the evolution of data exploration

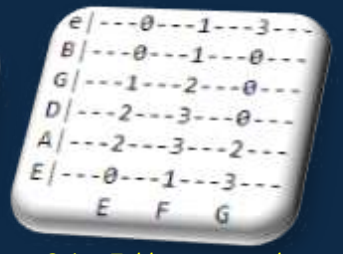
4000 BC

1st Manuall Data Processing

Cave drawing

1300

Tabulator was invented in Europe for notating music for organ



Guitar Tablature example

1760 -1840

1st Industrial revolution (UK,EU,USA)

Semyon Nikolaevich Korsakov introduces an innovation to possibility of using machinery to enhance natural intelligence

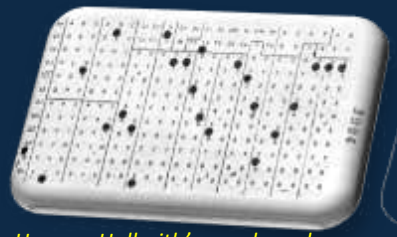
1805

Introduction of the "Punch Card"

Semyon Nikolaevich Korsakov introduces an innovative way to keep track of records – his innovation is rejected!

1889

Herman Hollerith received patent for a tabulator with punched cards



Herman Hollerith's punch card design used in the census of 1890 featured circular holes in 22 columns with 8 punch positions each

1961

Academic research started to revive the historical interest in older innovations

Publication was released about the need to store and analyze data based on a book by Semyon Nikolaevich Korsakov

1991

1st cloud computing introduced by SalesForce

History of Data

When was Artificial Intelligence discovered?

AI research and development have been carried out since the 1950s, although the concept of intelligent machines dates to ancient myths and folklore.

The birth of modern AI is often attributed to the Dartmouth Conference, held at Dartmouth College in 1956. At the conference, John McCarthy coined the term “Artificial Intelligence" and discussed the potential of using computers to simulate human intelligence.

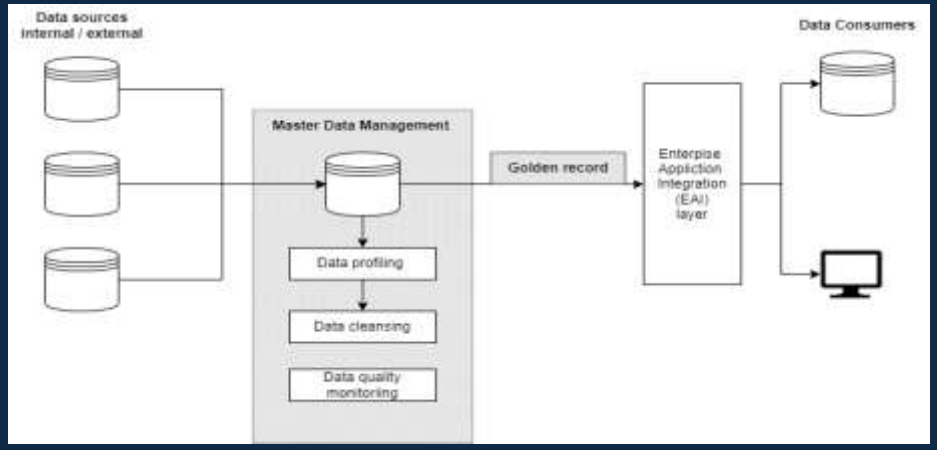
Data Management and Governance as a key driver for decision making.

Master Data management

Master Data Management focuses on the governance and management of an organization's critical data elements aims to create a trusted, reliable, and consistent view of this data across the organization. By ensuring data accuracy, completeness, and consistency.

Data Governance

Data Governance is a set of processes and practices that ensure appropriate data management throughout its lifecycle. It encompasses establishing policies, procedures, and responsibilities for data quality, accessibility, security, and compliance. Data governance provides guidelines and rules for data handling, usage, and decision-making



Data Management and Governance as a key driver for decision making.

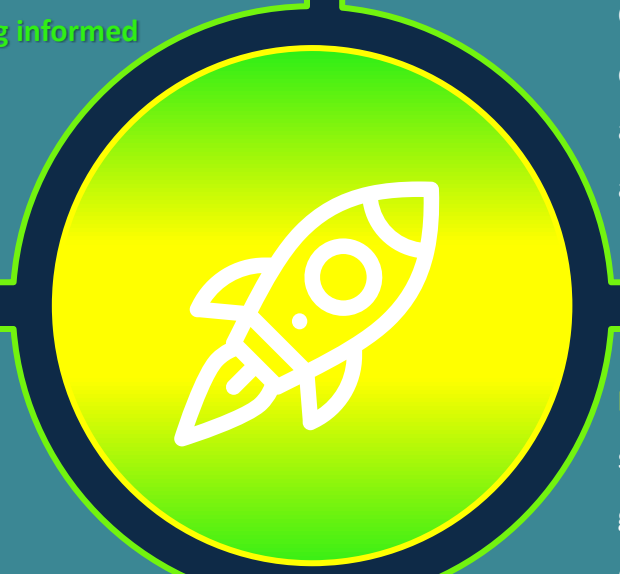
Together, MDM and DG contribute significantly to decision-making in the following ways:

MDM and DG strategies : ensure that data used for decision-making is accurate, complete, and consistent across different systems and departments. **This helps in making informed decisions**

based on reliable data.

Using the **Data Quality Management** (*DQM*) which follows a systematic approach of Data quality prevention & maintenance.

Continuous data quality monitoring incorporating data quality rules which are used to measure data accuracy, completeness, consistency, integrity, and other quality dimensions.



Compliance and Risk Management: Data governance helps **establish policies** and procedures to comply with regulatory requirements and manage data-related risks. Ensuring data privacy, security, and compliance supports ethical decision-making and protects the organization from potential legal and reputational risks.

Data-Driven Decision-Making: By establishing standardized processes for data quality, access, and governance, organizations enable data-driven decision-making.

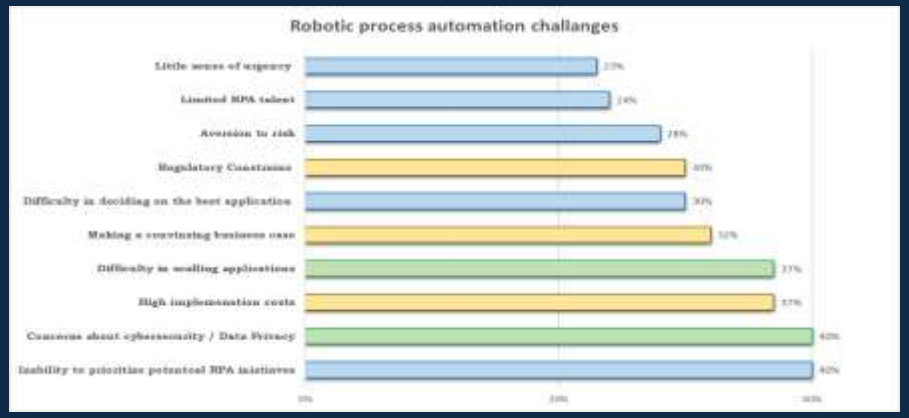
Reliable and consistent data empowers decision-makers to analyse trends, identify patterns, and make more accurate and informed decisions.

Programming evolution

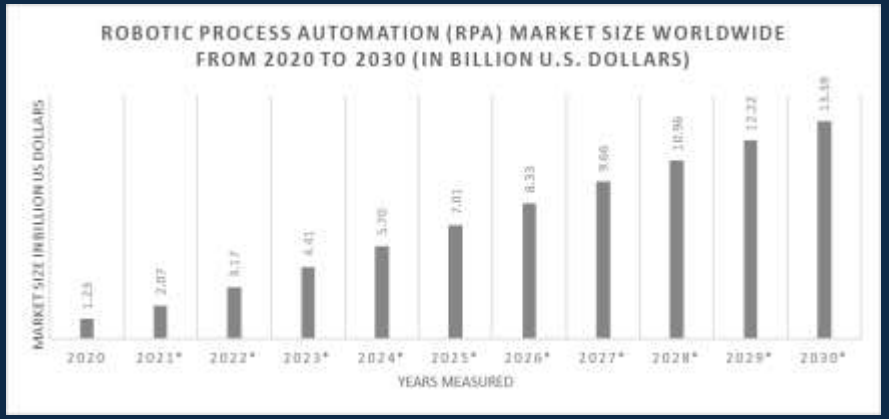
Robotic Process automation- Simplifying repetitive processes

Robotic process automation, usually addressed as RPA, refers to a technology which **automats repetitive rule-based tasks** that usually are performed by **humans** and today relies on digital data. RPA can be involved in almost every industry today including Finance, Manufacturing, insurance and many more, it can also be integrated into various sub domains such as HR, Marketing, and customer services.

Efficiency	Costs	Implementation effort
• **Higher transaction volume**	• Higher ROI, shorter payback period.	• Easy to configure (no or few programming skills needed)
• **Shorter throughput times**	• FTE savings	• Lower implementation complexity
• **Less delays and waiting times**	• Improved value creation	• Less implementation times
	• Reduced compliance / quality costs	
	• Reduced costs for equipment	
Customer satisfaction	**Availability**	**Quality**
• **Higher Job satisfaction and interesting tasks**	• Availability (24/7 throughout the whole year)	• Fewer errors and higher accuracy
• **Potential for process individualization**	• Independence from business hours, employees' illness, vacations	• Standardization and consistency of activities and data
• **Improved service quality**		• Reduced costs for equipment
Scalability and Flexibility	**Compliance**	Interoperability
• **Easy modification / re-configuration**	• Increased documentation/ transparency	• Easy system and data linkage
• **Adaptability to different environments**	• Improved auditability	
• **Various working modes (un-/attended)**	• Additional control (e.g., four-eyes principle)	
• **Easy up and down scaling**	• Consistency of activities and data	
• **Bot reusability**		



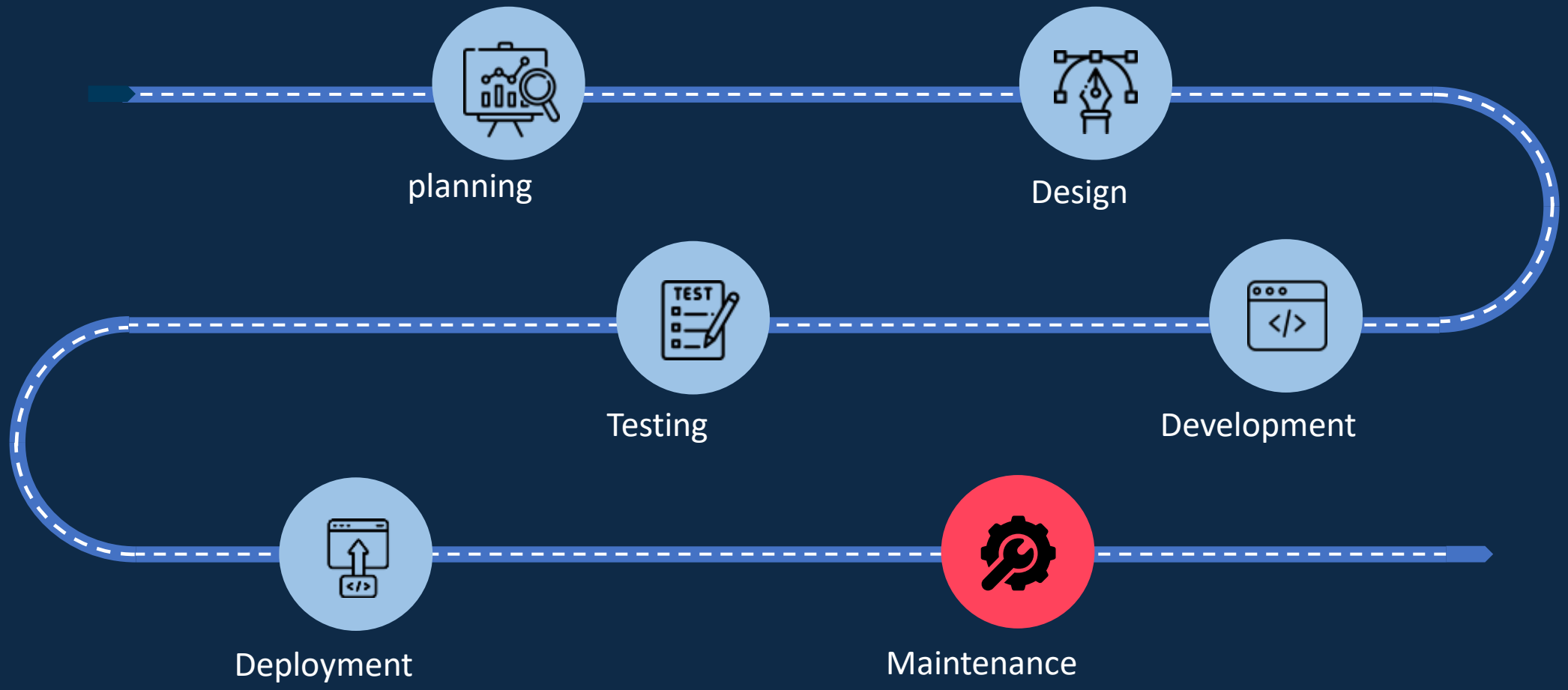
- Financial & Regulatory
- Technological
- Organizational



Robotic process automation (RPA) market size worldwide from 2020 - 2030

Programming evolution

Software development lifecycle



Programming evolution

Introduction to low code development

Low code is basically a software development method to build applications **without the need for deep coding..**

This method allows you to **customize** an application as per your unique needs in the form of something similar to flowcharts, using a visual interface

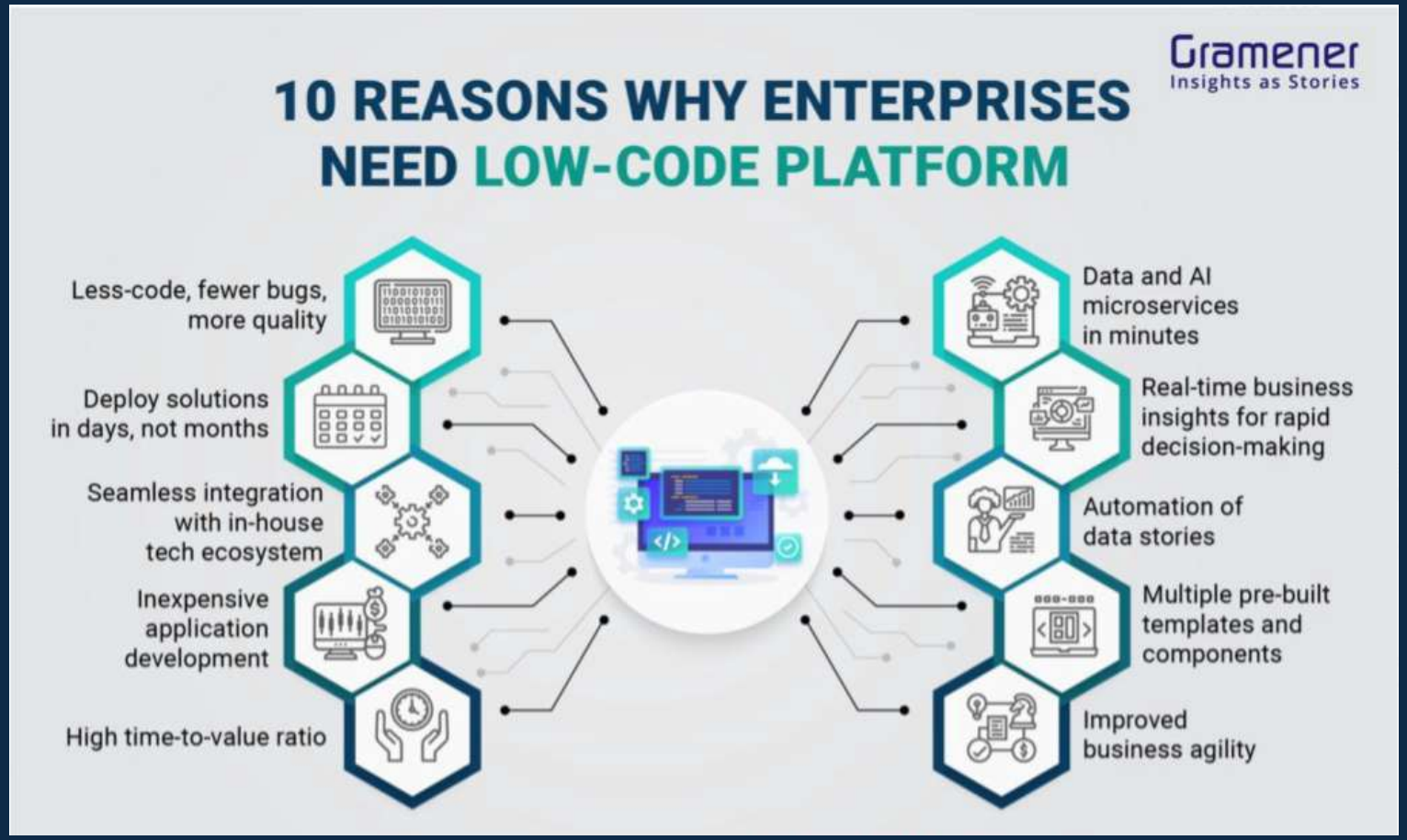
Gartner's latest statistics, leading global research and advisory firm,
predict a **23% growth** in the worldwide low code development market in 2022.

Programming evolution

Introduction to low code development

The difference between low code and traditional development can be classified based on certain parameters

The infographic below gives a glimpse of it.



Development evolution Low Code No Code

Low code No Code integration in the industry

Business Evolution towards decision making

From BPM to AI and data analytics

Business Process Management

BPM is the practice of optimizing end to end business processes and it contains:
project management,
workflow automation
documentation management
communication management

Robotic Process Management

Automation of reputative tasks that are typically performed by humans such as:
Data entry
File processing tasks
legacy system integrations

Process Orchestration

Refers to coordinating, synchronizing, monitoring and managing multiple automated tasks to create a dynamic workflows.

Artificial Intelligence & Data analytics

Refers to coordinating, synchronizing, monitoring and
managing multiple automated tasks to create a dynamic workflows.

Data Driven

Process Driven

User Driven

Introduction to Artificial Intelligence (AI)

DEFINITION OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) refers to the development and implementation of computer systems or algorithms that possess the ability to simulate human intelligence, learn from experience, and perform tasks autonomously, aiming to enhance decision-making processes within industries.

IMPACT ON THE INDUSTRY

The evolution of artificial intelligence (AI) poses significant **ADVANTAGES** and **RISKS** for industry decision-makers, as it has the potential to **LEVERAGE** or **DISRUPT** traditional business models, change workforce dynamics, and require substantial investments in technology infrastructure.

Advantages & risks of Artificial Intelligence

Advantages

Increased Efficiency
AI systems are capable of performing tasks at a faster pace and with greater accuracy than humans.

Cost Reduction
AI systems significantly benefit industry decision makers by reducing operational expenses and increasing overall profitability.

Improved Decision Making
One advantage of artificial intelligence in the evolution of technology is its ability to enhance decision-making processes for industry decision makers, leading to improved efficiency and accuracy in their choices.

Risks

Job Displacement
Risk faced by industry decision makers as artificial intelligence evolves, posing challenges such as the replacement of human workers with automated systems.

Ethical Considerations
The need to address ethical considerations in relation to the evolution of artificial intelligence and its potential risks on the industry.

Security and Privacy Risks
AI presents significant security and privacy risks, such as potential data breaches, unauthorized access to sensitive information, and the misuse of AI technology by malicious hackers.

The 7 Types of Artificial Intelligence

CAPABILITY-BASED TYPES OF ARTIFICIAL INTELLIGENCE

- **Artificial Narrow Intelligence (ANI):** AI designed to use one cognitive capability, they are **unable** to independently learn skills beyond their design. They often utilize machine learning and neural network algorithms to complete these specified tasks. Natural language processing (NLP) is a type of narrow intelligence because it can recognize and respond to voice commands but cannot perform other tasks beyond that . alexa Bixby
- **Artificial General Intelligence (AGI):** AI designed to learn, think and perform at similar levels to humans. The goal is to be able to create machines that can perform multifunctional tasks and act as lifelike, equally intelligent assistants to humans in everyday life. This capability is still a work in progress, but the groundwork can be built from technologies such as supercomputers, quantum hardware and generative AI models like ChatGPT
- **Artificial Superintelligence (ASI):** AI able to **surpass** the knowledge and capabilities of humans – truly science fiction… It's **theorized** that once AI it will soon learn at such a fast rate that its knowledge and capabilities will become stronger than of humankind. It would act as the backbone technology of completely self-aware AI and other individualistic robots. This concept is usually named by the media as "AI takeover" (as seen in the movies),but at this point of time this is all still a speculation (is it ?).

The 7 Types of Artificial Intelligence

FUNCTIONALITY-BASED TYPES OF ARTIFICIAL INTELLIGENCE

Functionality concerns how an AI applies its learning capabilities to process data, respond to stimulation and interact with its environment. four functionality types.

- **Reactive Machines:** AI capable of responding to external stimulation in real time but its unable to build memory or store information for future, This makes them useful for performing basic autonomous functions, such as filtering spam from your email inbox (rule based) or recommending movies based on your most recent NETFLIX searches. The most famous reactive AI machine was built by IBM and was able to read real-time cues to beat Russian chess grandmaster Garry Kasparov in a 1997 chess match – it was called "DEEP BLUE".

- **Limited Memory:** AI that can store knowledge and use it to learn and train for future tasks, its applied in a broad range of scenarios, from smaller scale applications, such as chatbots , to self-driving cars.

- **Theory of Mind:** AI that can sense and respond to **human emotions** (unlike Alexa), It could bring plenty of positive changes to the tech world, but it also poses its own risks, as it would take a long time for AI machines to perfect learning the emotions and could potentially make big errors while in the learning stage.(this is an important social cognitive skill).

- **Self-aware:** AI that can recognize others' emotions, plus has sense of self and human-level intelligence; the final stage of AI. when artificial intelligence develops self-awareness, is referred to as the **AI point of singularity**. It's thought that once that point is reached, AI machines will be beyond our control.

How shall we prepare for the Future ?

MITIGATING ARTIFICIAL INTELLIGENCE RISKS

01

Regulatory Frameworks

Establish guidelines and rules to ensure responsible development, deployment, and use of AI technologies while mitigating potential risks

02

Upskilling and Reskilling Workforce

Upskilling and reskilling the workforce is crucial to mitigate the risks posed by the evolution of artificial intelligence

03

Collaboration between Humans and AI

Focuses on mitigating potential risks & harnessing the strengths of both parties to make informed choices that maximize efficiency, innovation, and long-term sustainability.

04

Mitigating AI Risks

Focuses on:

- **Transparency and Explainability *** (understand how AI algorithms make decisions and ensure clear communication between humans and machines
- **Algorithmic Bias -** unintentional discrimination or unfairness in decision-making processes driven by artificial intelligence systems, which poses a significant risk for industry decision-makers
- **Monitoring and Auditing -** continually assess and ensure the ethical, unbiased, and safe implementation of artificial intelligence throughout its evolution

Explainability (also referred to as “interpretability”) is the concept that a machine learning model and its output can be explained in a way that “makes sense” to a human being at an acceptable level

Ethical Considerations and the Regulatory Landscape

ETHICAL CONSIDERATIONS

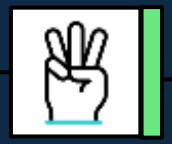
"principles and guidelines that guide decision-making and behaviour to ensure fairness, integrity, and the avoidance of harm when dealing with technology and its potential impacts on individuals or groups."

Fairness, Equality & Discrimination

Technology has the potential to **continue unfair treatment** and prejudice against certain individuals or groups.

Data Privacy and Data Protection

These considerations ensure that personal information is **handled responsibly** and securely within the regulatory landscape.



Accountability and Responsibility

are key ethical considerations when discussing the evolution of artificial intelligence and its potential risks for industry decision makers**, as they must be held accountable** for the decisions made by AI systems and take responsibility for any negative consequences that may arise.

REGULATORY LANDSCAPE

"refers to the legal environment and requirements that companies must adhere to in their operations, including complying with state, federal, and international laws and regulations relevant to each industry and type of business."

Existing Regulations and the Need for Updated Policies

Outline the current legal frameworks and guidelines that govern the use and implementation of AI technologies, The need for updated policies under the regulatory landscape arises due to the evolving nature of artificial intelligence.

International Collaboration

Involves cooperation between **countries** to establish comprehensive regulations that address potential dangers associated with AI, ensuring industry decision-makers adhere to ethical standards and prioritize safety measures.

Ethical Considerations and the Regulatory Landscape

ETHICAL CONSIDERATIONS

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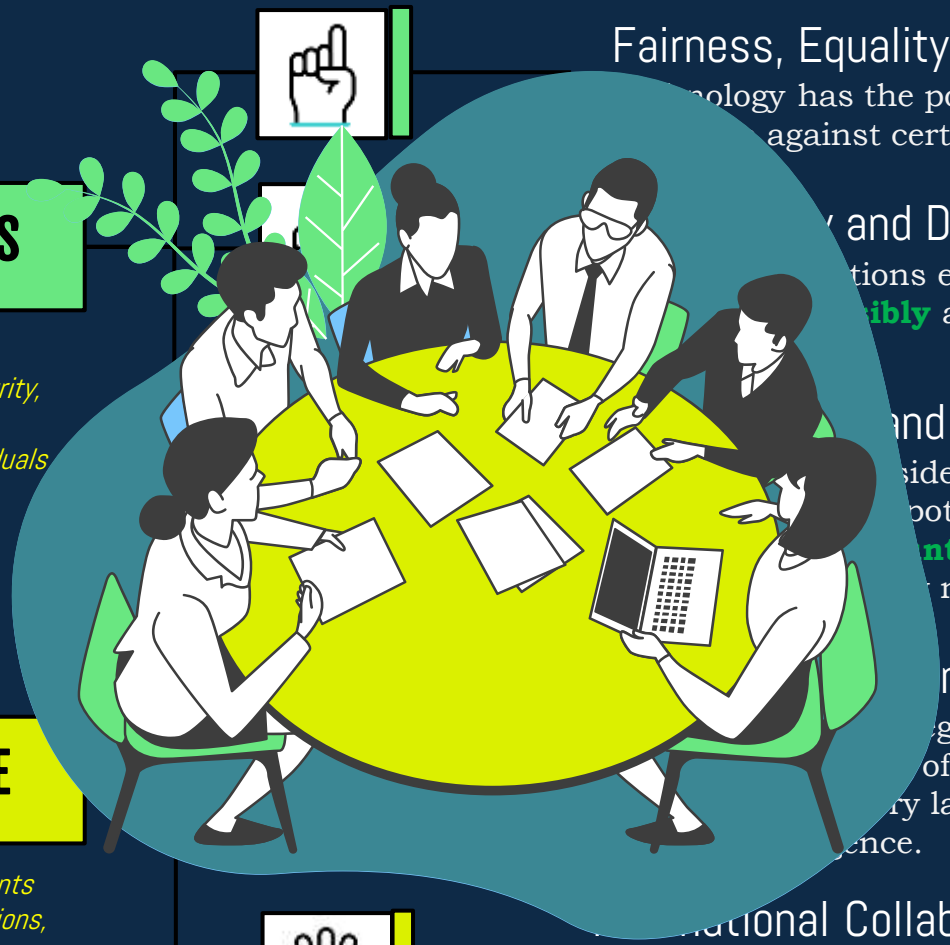

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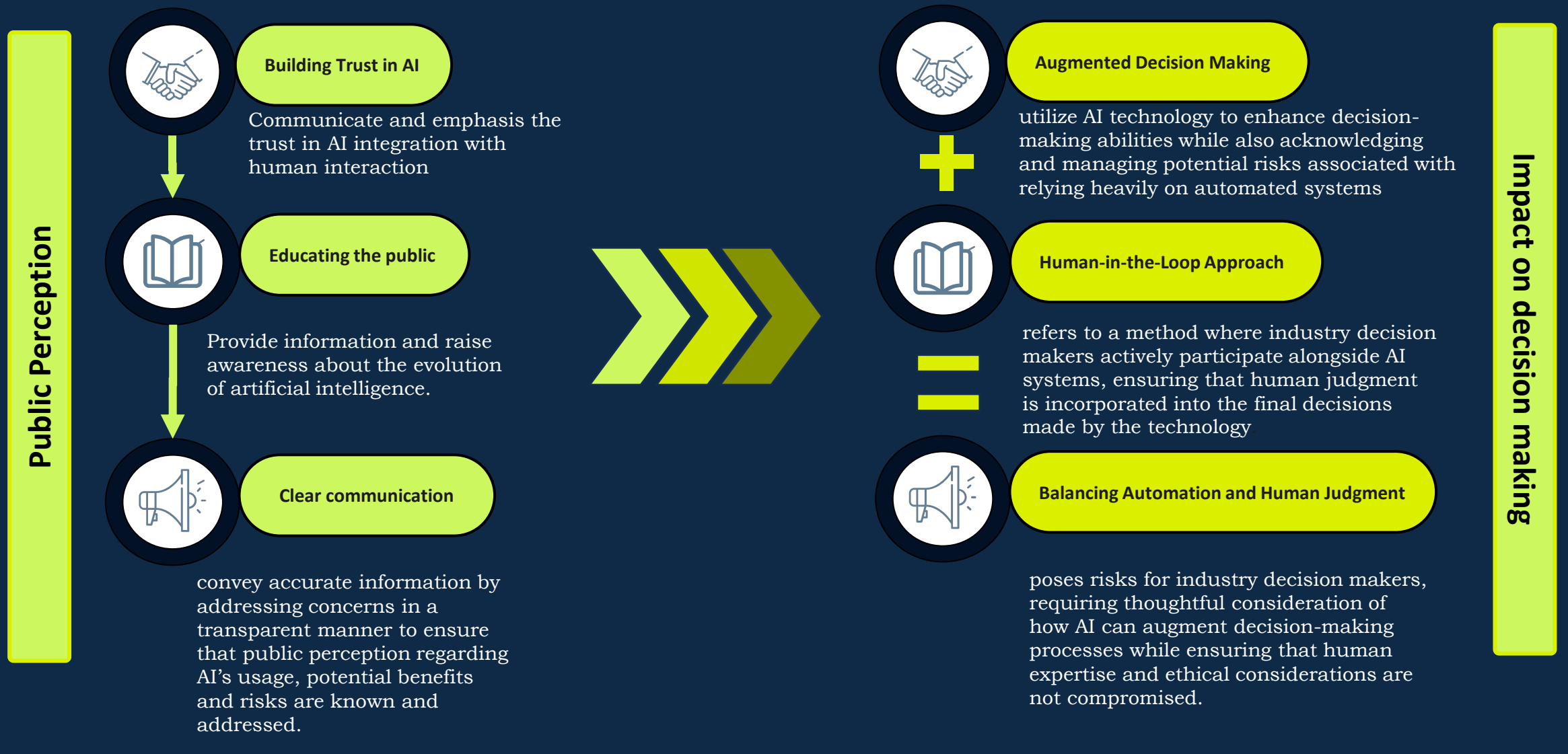
IT'S THE CORPORATE RESPONSIBILITY TO ENSURE **ARTIFICIAL INTELLEGNCE GOVERNANCE**

Addressing Public Perception and the Impact on Decision Making

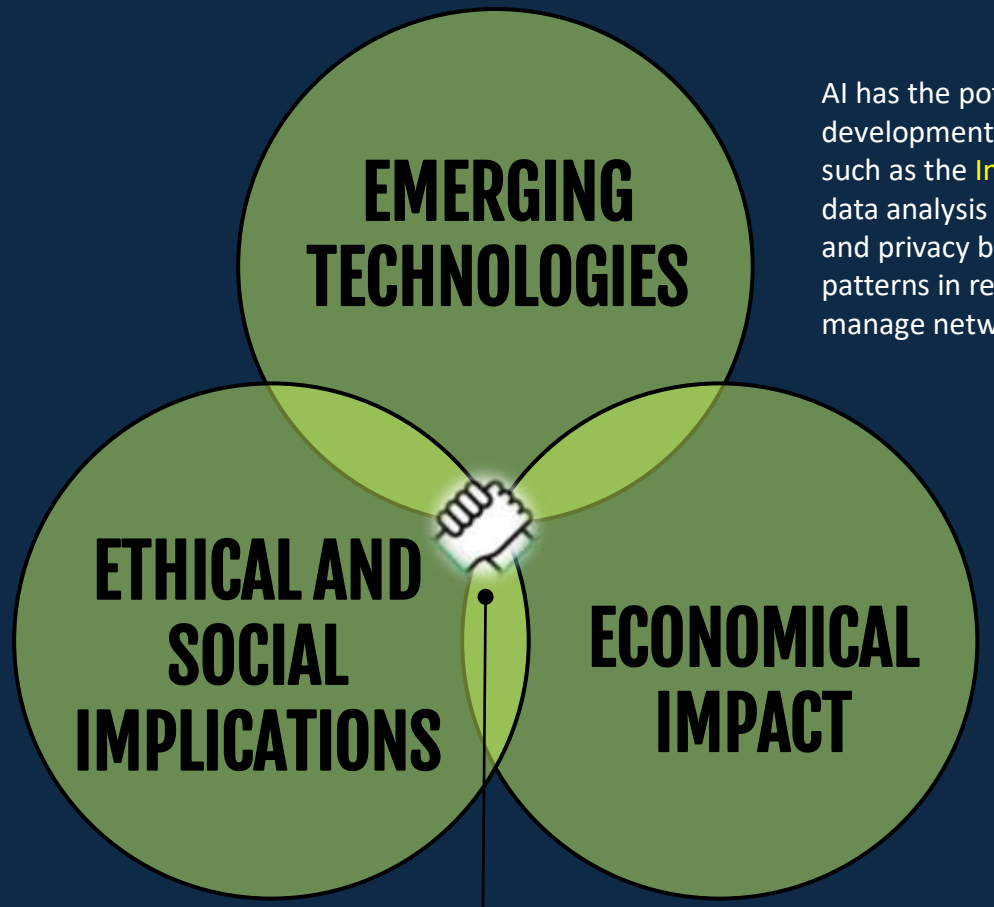


Artificial Intelligence Futuristic Impact on Decision Making

AI has raised and would continue to raise concerns about:

- Privacy and surveillance
- Bais and Fairness
- Job displacement
- Transparency and accountability
- Impact on Human AI interaction

Addressing these ethical and social implications requires collaboration among policymakers, industry leaders (as yourselves 🧐), researchers, and civil society organizations.



Together we would define the Sweet spot

AI has the potential to significantly accelerate the development and advancement of emerging technologies, such as the Internet of Things (IoT) – faster and automated data analysis / Development, blockchain - enhance security and privacy by monitoring data and identifying unusual patterns in real-time and 5G - optimize network performance, manage network traffic, and enhance end-user experiences

The potential impact of artificial intelligence (AI) on the economy is significant. According to a study by McKinsey, the adoption and absorption of AI could result in additional global economic activity of around $13 trillion by 2030, which is equivalent to approximately 16 % higher cumulative GDP compared to today.
It is worth noting that the economic impact of AI extends beyond just economic growth. It also influences factors such as job creation, labour markets, trade, and productivity.

How does the modern data evolution impact business capabilities through the use of innovative data technologies

Dear participant / Conference guest.

As a PhD. Student who thesis research is titled as "**How does the modern data evolution impact business capabilities through the use of innovative data technologies**",

I would like to seize your experience in the industry to understand how Moden data evolution is impacting business capabilities within your organisation.

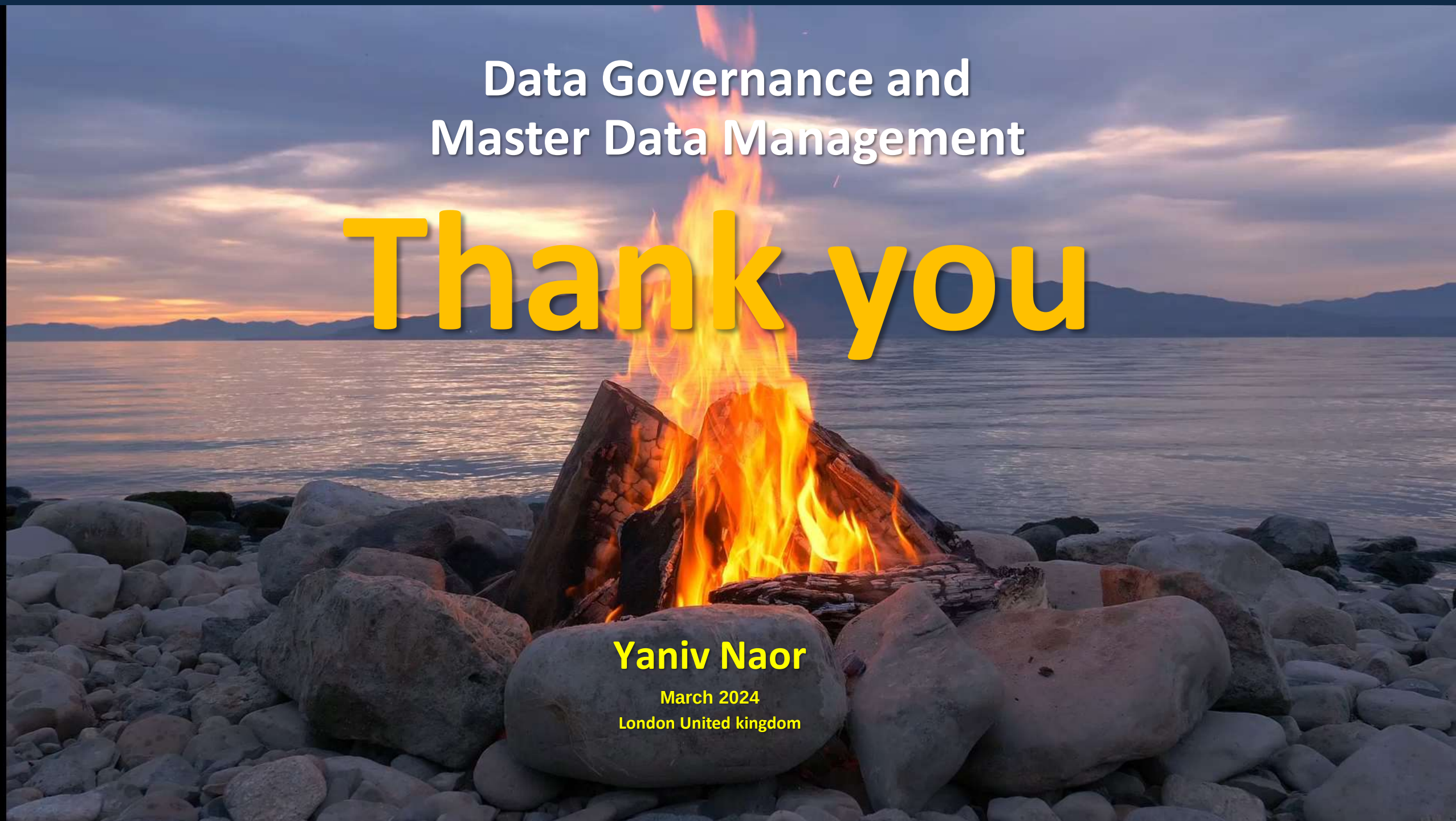
Throughout this questionnaire we would try to answer the following research questions:

1. What are the trends in using Artificial Intelligence in modern industry?
2. What is the impact of Artificial Intelligence and machine learning on the industrial revolution?
3. Determine if Artificial Intelligence can overcome human decision-making.

This questionnaire is GDPR compliant, meaning that your answers would be used for analytical / research purposes only, the questionnaire would be anonymous and could not track back to you in any way.

The outcome summary of the questionnaire and further analysis would be presented in my PhD thesis.
Thank you for your support in helping me conduct my research.

Yaniv Naor - the researcher.


Data Governance and
Master Data Management
Thank you
Yaniv Naor
March 2024
London United kingdom

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