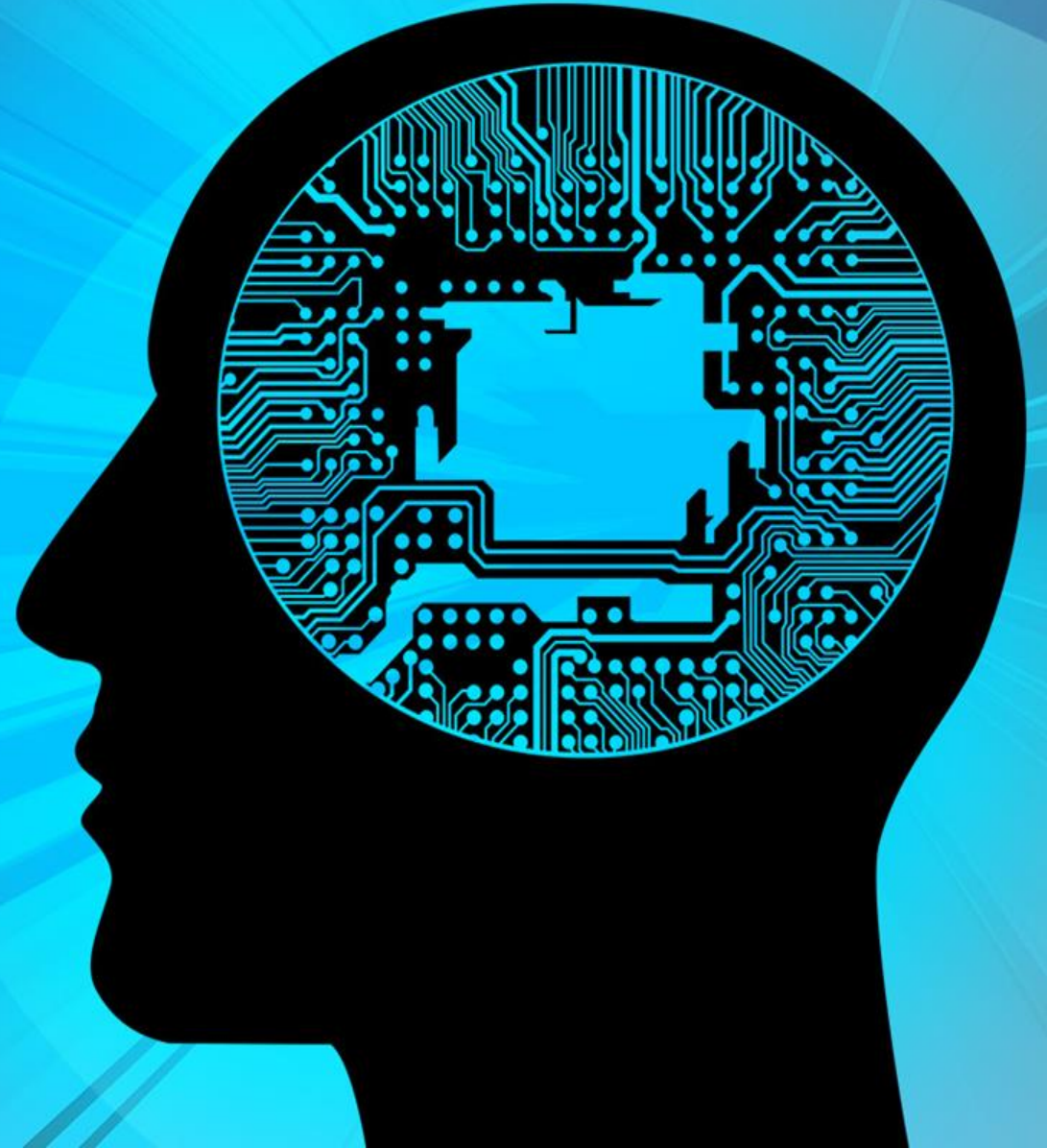


Digital Transformation Artificial Intelligence & New Trends in Business

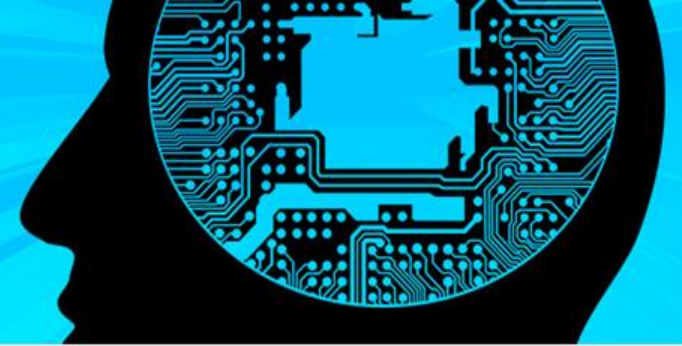
دور التحول الرقمي والذكاء الاصطناعي
في تغيير نماذج الأعمال

Eng. Belal Khaled Al-Hafnawi
Commissioner–Board Member, TRC, Jordan





SPEAKER BIO



Name: Belal Khaled Al-Hafnawi

Position: Commissioner – Member of the board of commissioners, TRC, Jordan

Contact +962790069999, [linkedin.com/in/belalhafnawi](https://www.linkedin.com/in/belalhafnawi) , www.facebook.com/belal.Hafnawi

Profile of presenter

- 19 Years of Solid Senior level experience of Technology Management, leadership, Strategy and Regulatory.
- Having experience in C-level consulting and advisory.
- Experienced with Multinational vendors & service Providers (Huawei, Motorola, Nokia, Samsung and STC)
- Having end to end experience in managing mobile networks.
- Focused on Management and leadership of technology.
- **Areas of Focus:** Regulatory, Management Consulting, Digital Transformation, Technology leadership, Entrepreneurship, strategic planning, Customer Experience, IoT , Artificial Intelligence , Cloud, Blockchain, 5G
- Executive certificate in Management and Leadership of technology (MIT)/United States in 2018;
- Certification in Internet of Things: Business Implications and Opportunities, MIT 2018
- Certification in Artificial Intelligence: Implications for Business Strategy, MIT 2018 .
- Certification in DIGITAL TRANSFORMATION:PLATFORM STRATEGIES FOR SUCCESS, MIT 2019
- Certification in strategic cost analysis for managers, MIT 2018
- Certification in Understanding and solving complex business problems, MIT 2018
- Bachelor's degree in Electrical Engineering, the University of Jordan,2002
- Master's degree in Telecommunications, the University of Jordan,2007

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1. Digital Transformation (Elements)
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 - Key Benefits for AI in Industry
5. Middle East Artificial Intelligence Status
6. Recommendations

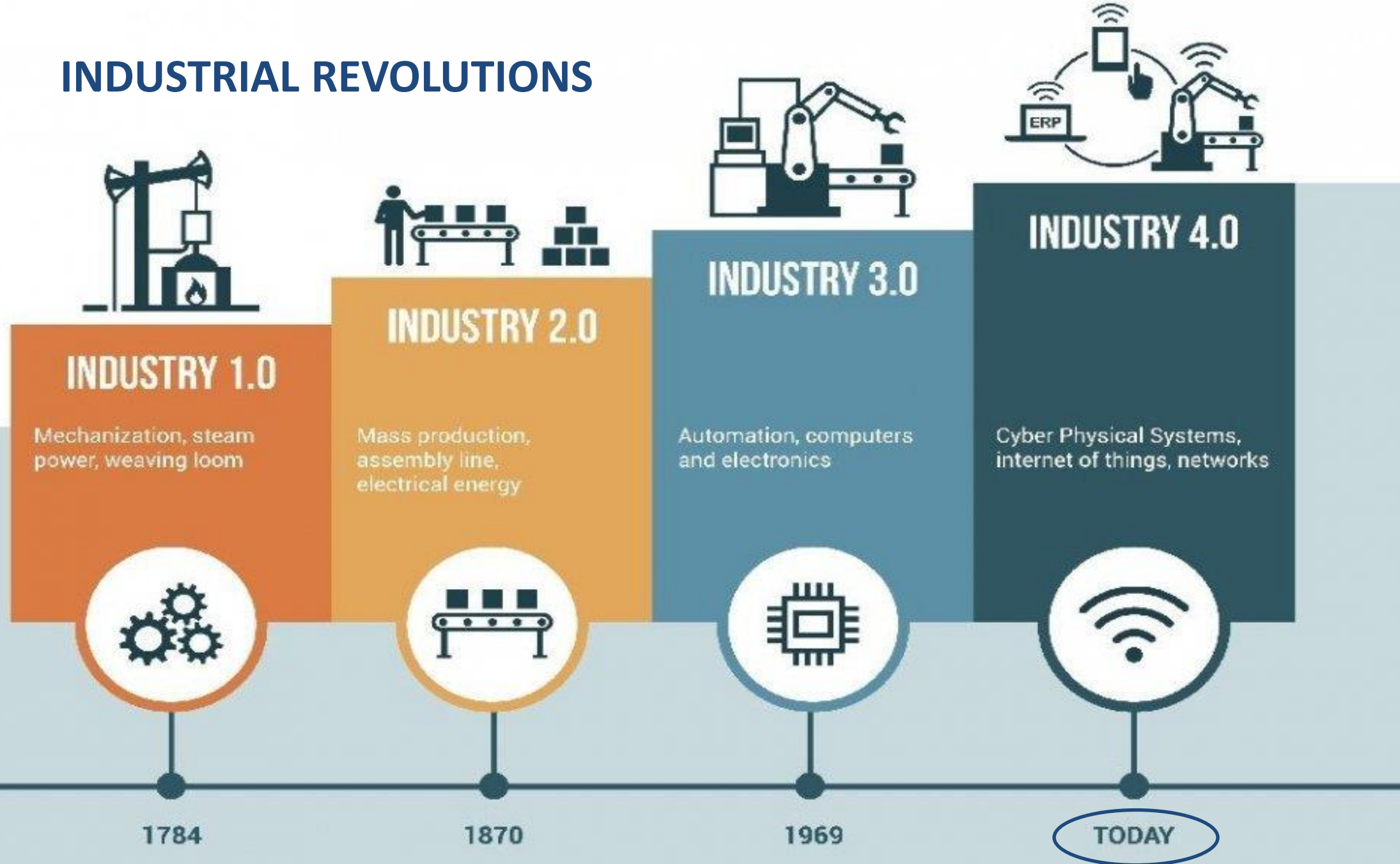


Agenda

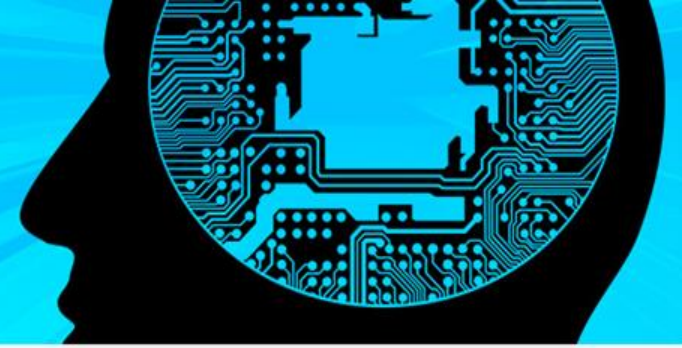
1. Digital Transformation (Elements) عناصر التحول الرقمي
2. Digital Transformation new Trends الاتجاهات الجديدة للتحول الرقمي
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INDUSTRIAL REVOLUTIONS



DIGITAL TRANSFORMATION (KEY ELEMENTS)



Transformation is fundamental change in business models, mindsets, governance, capabilities, Internal processes, and culture, so you need to establish the transformation vision, strategy and roadmap.

❑ **People:**

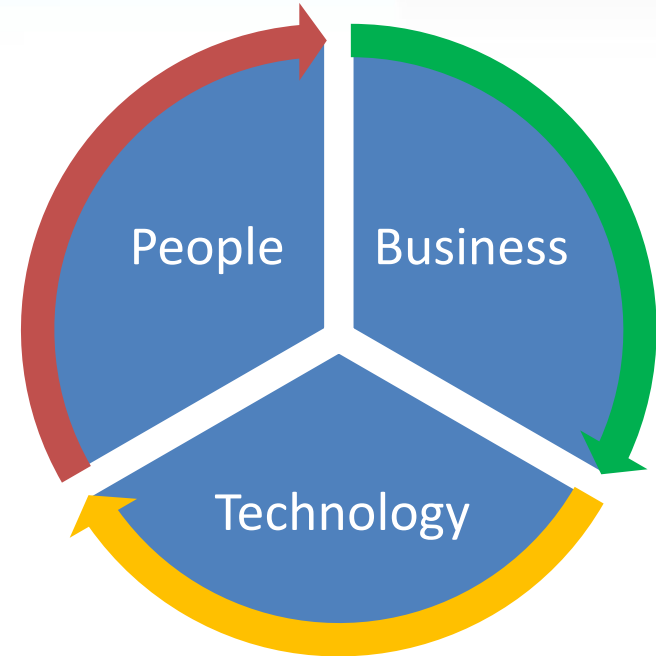
- Skills: soft skills, digital skills, communication skills.
- Organizational Structure: breaking down of departmental silos and create cross-functional teams,
- Culture: culture of innovation and continuous refinement insight-driven decision, enhance leadership. (ثقافة الابتكار والصقل المستمر)

❑ **Business:**

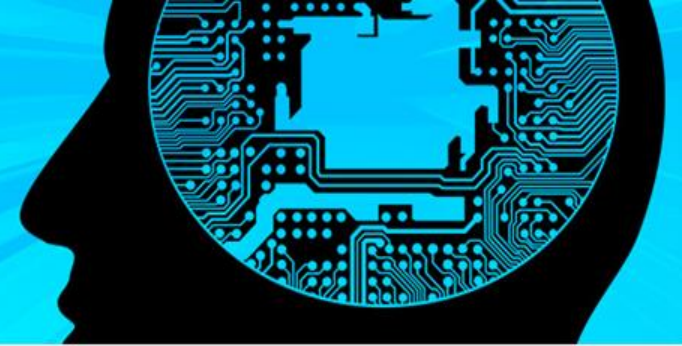
- Strategy and customer experience (الإستراتيجية وتجربة العميل)
- Internal processes
- Business models

❑ **Technology**

- Adopting emerging technologies allow organizations to differentiate and disrupt with new products and services.
- Cloud, Artificial intelligence, Advanced analytics, Data management, Customer intelligence, IoT, Big data, analytics



DIGITAL TRANSFORMATION (NEW TRENDS)



Internet of Things

- IDC expects global IoT spending rates in 2021 (CAGR) of 11.3%
- Gartner forecasts that connected things will reach 25 billion by 2021

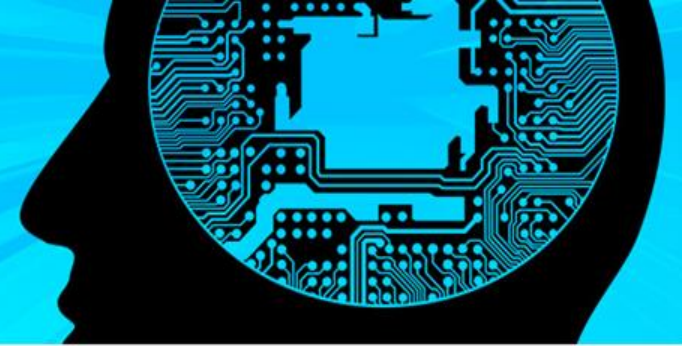
Artificial Intelligence

- Machine Learning, Natural Language processing (NLP), Robotics
- By 2023 forecasts that worldwide spending on AI systems will hit nearly \$98 billion.(IDC)

The Artificial Intelligence of Things (AI of things)

- Transforming IoT Data Into Business Value
- From Collecting Data to Collective Learning
- Greater efficiency and productivity

DIGITAL TRANSFORMATION (NEW TRENDS)



Cloud Computing

- SAAS,PAAS, IAAS ,DAAS) > virtual SMEs
- Worldwide Public Cloud Service Revenue Forecast 364\$ Billions by end of 2022 (Gartner)

Cybersecurity

- Improved Cybersecurity with AI and Machine Learning (ML)
- Cyber Security market to touch \$173.57 billion mark by 2022 (cybersecurity-insiders)
- The global cybersecurity market is growing to \$270B by 2026 (Forbes)

Big Data

- large quantities of data that businesses are generating daily
- By 2022, IDC expects worldwide BDA revenue will be \$274.3 billion. With (CAGR) of 13.2%.

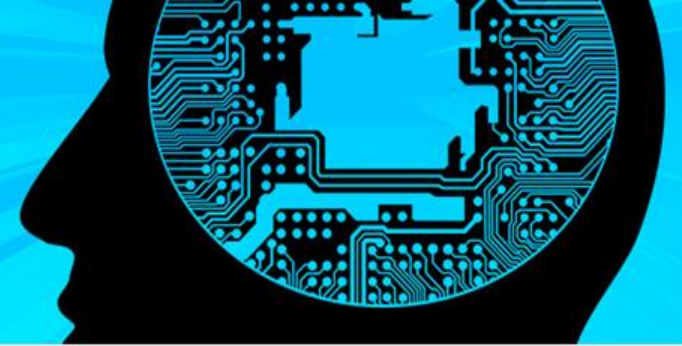
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MACHINE LEARNING

(تعلم الآلة)



(Why now?) Machine learning is not new. The current growth in AI and machine learning is tied to developments in three important areas:

❑ *Data availability: (توافر البيانات)*

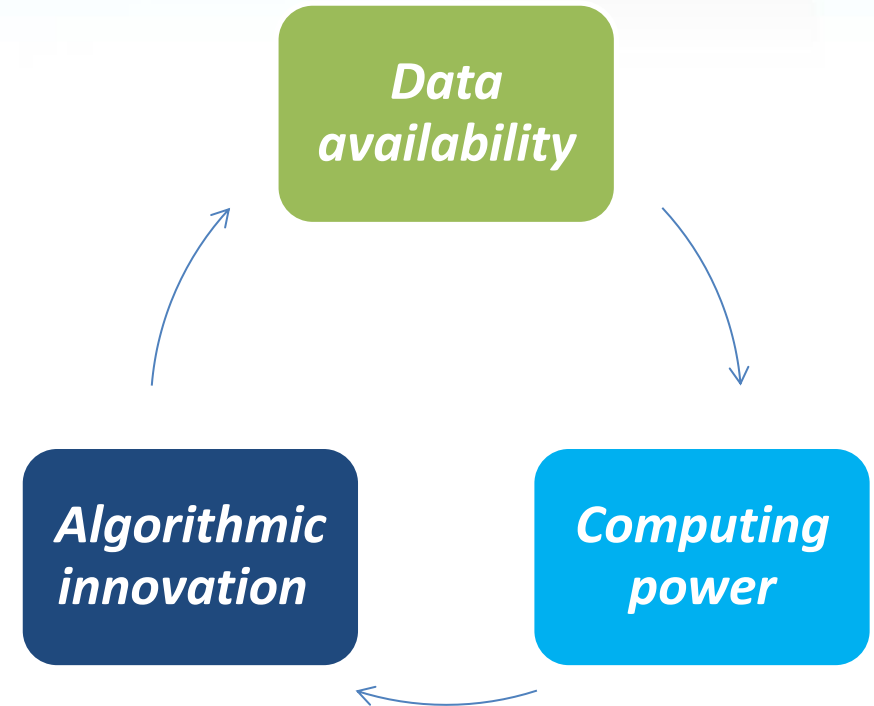
- Over 3 billion people are online
- An estimated 17 billion connected devices or sensors.
- decreasing costs of data storage,

❑ *Computing power: (القدرة الحاسوبية)*

- Powerful computers
- machine-learning techniques that process enormous amounts of data.

❑ *Algorithmic innovation (الابتكار الحسابي، التعلم العميق)*

- New machine learning techniques,
- neural networks – “deep learning”



NATURAL LANGUAGE PROCESSING (NLP)

(معالجة اللغة الطبيعية)

- ❑ *(NLP) is a subfield of linguistics and artificial intelligence sciences concerned with interactions between computers and (natural) human languages,*
- ❑ *In particular how to give machines the ability to process and analyze large amounts of natural language data and read, understand and derive meaning from it,*
- ❑ *There are widespread applications for this trend such as*
 - Email filtration,
 - Virtual assistants, or smart assistants (Siri, Alexa, Watson)
 - Predictive text, translate and autocorrect
 - Monitor brand sentiment on social media (Sentiment analysis تحليل المشاعر)
 - Chatbots



ROBOTICS (الروبوتات)

□ *Robotics:*

- Robotics is the intersection of science, engineering and technology that produces machines, called robots, that substitute for (or replicate) human actions.
- Robotics involves design, construction, operation, and use of robots
- The goal of robotics is to design intelligent machines that can help and assist humans in their day-to-day lives and keep everyone safe
- RPA: Robotics Process Automation

□ *Uses of Robots:*

- Manufacturing
- Logistics
- Home Assistants
- Travel
- Health care, Medical
-



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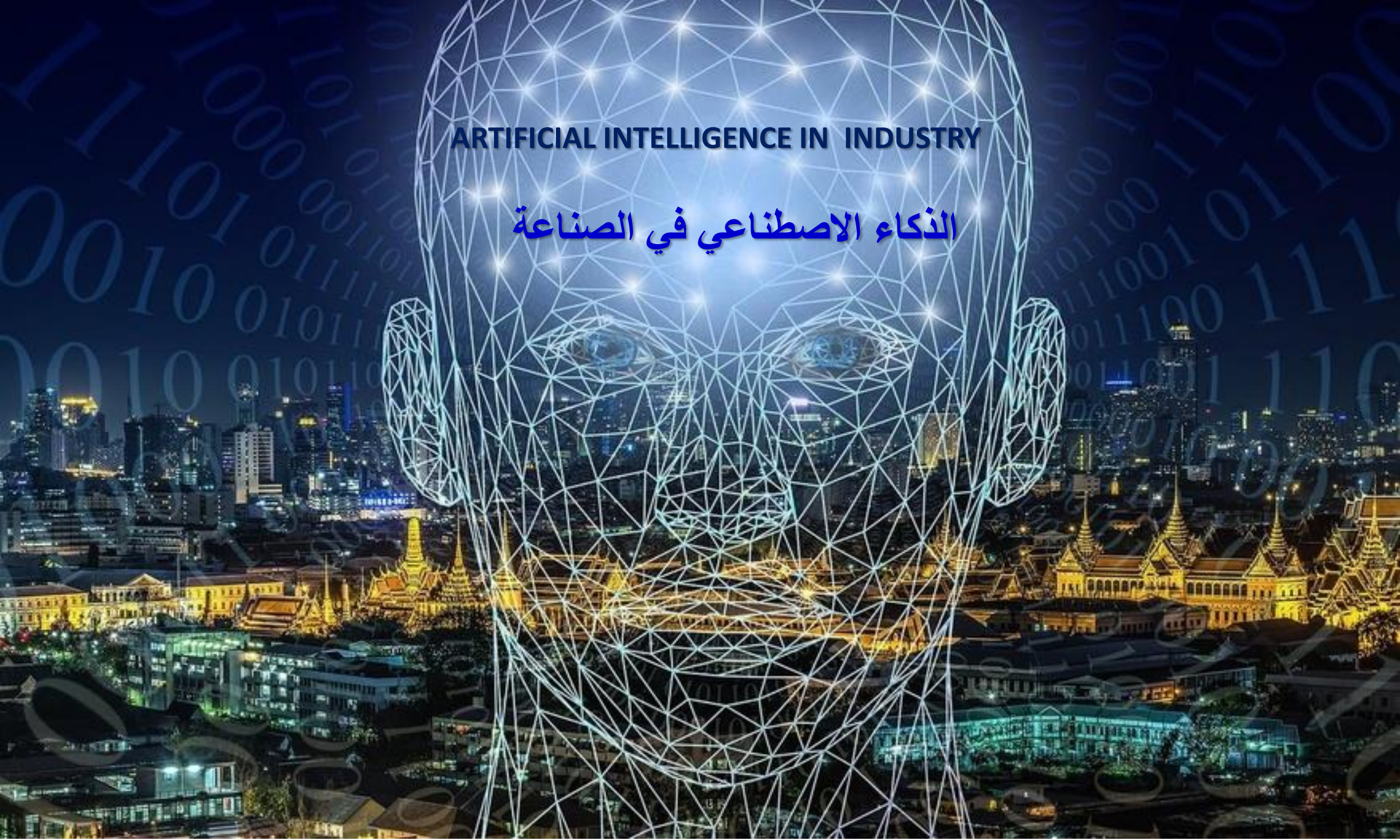
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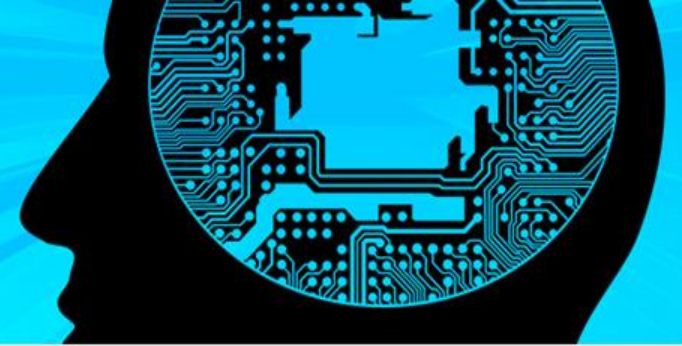
ARTIFICIAL INTELLIGENCE IN INDUSTRY

الذكاء الاصطناعي في الصناعة

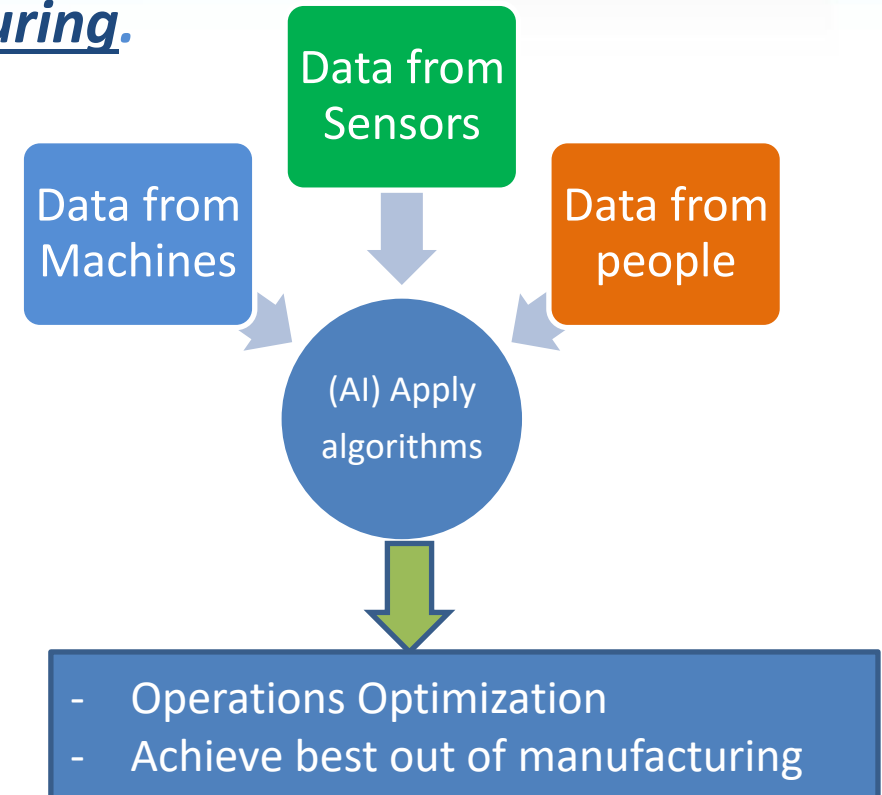
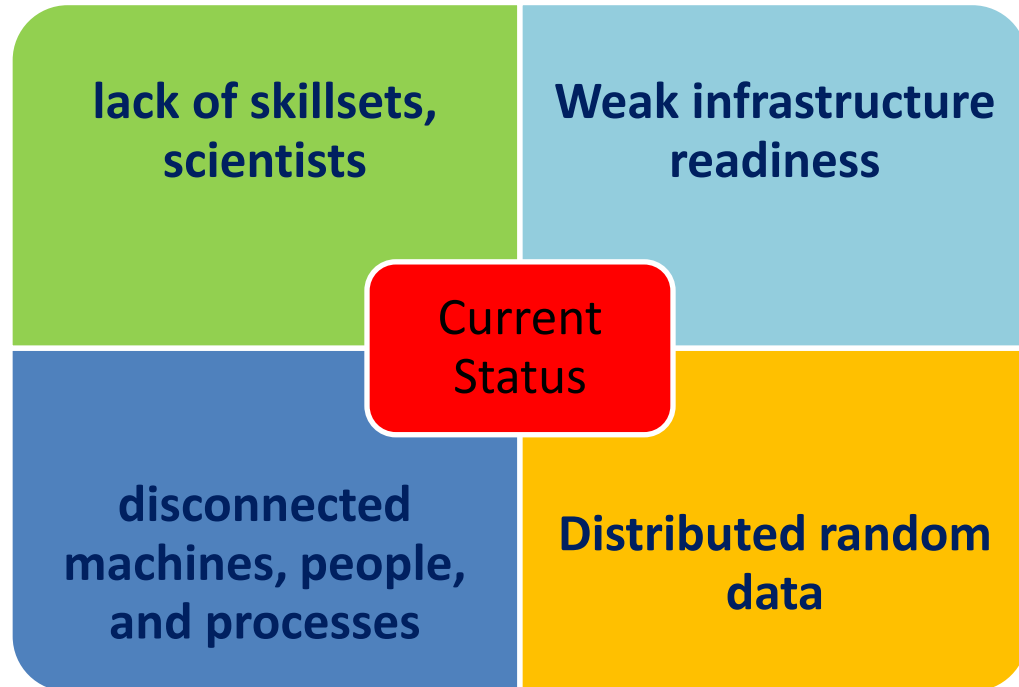


ARTIFICIAL INTELLIGENCE IN INDUSTRY

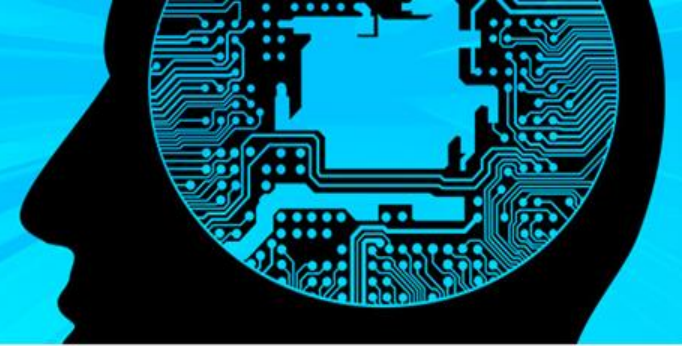
الذكاء الاصطناعي في الصناعة



- ❑ *Artificial intelligence can utilize a combination of data from sensors, machines, and people and then apply it to algorithms designed to optimize operations or achieve best out of manufacturing.*



ARTIFICIAL INTELLIGENCE IN INDUSTRY



❑ **Digital Factories (المصانع الرقمية)** , PwC report 2020: *Shaping the future of Manufacturing.*

➤ *Survey of 200 executives in Europe (mostly in Germany).*

➤ *Outcomes:*

9%

- of manufacturing organizations are leveraging Artificial Intelligence today

91%

- of industrial companies are investing in creating digital factories in the heart of Europe

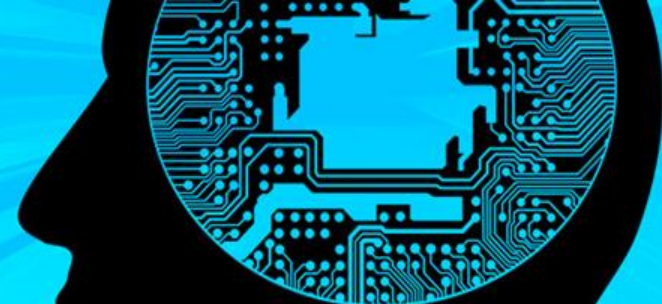
98%

- expect to increase efficiency with digital technologies

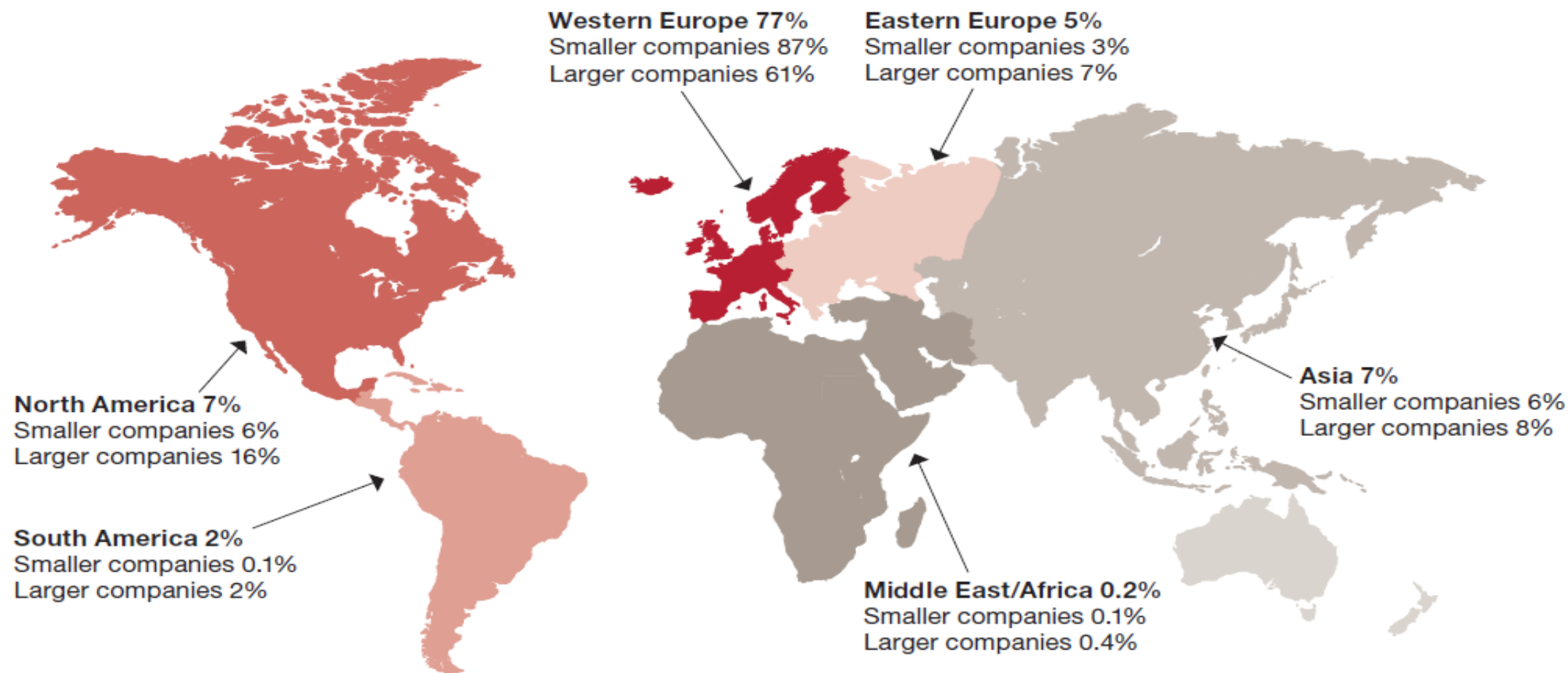
90%

- believe that digitization offers their companies more opportunities than risks

DIGITAL FACTORIES (WORLDWIDE, 2020)



European companies are focusing most strongly on digital factory investments in their home markets



DIGITAL FACTORIES

- ❑ *Digital factories are transforming manufacturing by implementing innovative technologies to digitize the production as well as the supply chain.*



1.Strategy



2.Benefits



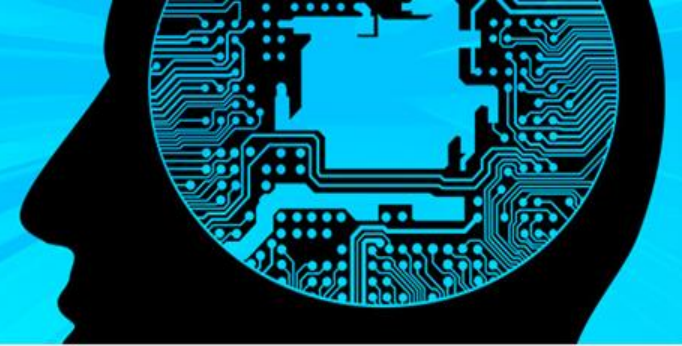
3.People (Resources)



4.Technology

*Digital Factories
4 Key Elements:*

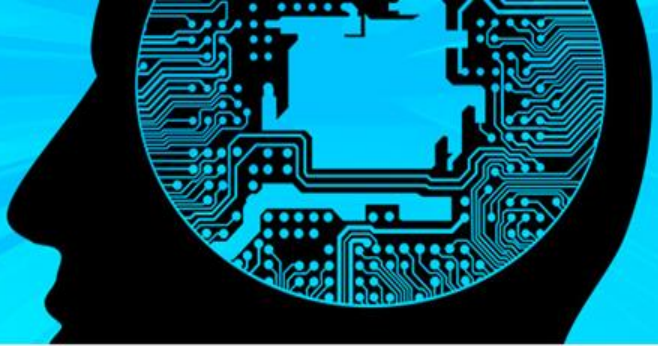
DIGITAL FACTORIES: KEY ELEMENTS



1. Strategy

- **Customer Centricity is the key for survival:**
 - Be closer with customer.
 - React to changing and dynamic requirement of customer.
 - “Tailor made” products
- **Regional manufacturing**
 - Reduce transportation and logistics costs (Almarai - Saudi Arabia example, 3 regions)
 - React to customer wishes faster, with greater flexibility (Asian Paints)
 - Single web sites for subsidiary companies
 - Single point for customer interface
 - Same quality for products
- **Customer (Channels)**
 - voice, web, mobile channels, Chabots, social media, 360° channels.

DIGITAL FACTORIES: KEY ELEMENTS



2.

Benefits

- No quick payback
- Digital factories investments are strategic.
- Investments on average are 6% of Annual income.
- ROI period 3-6 years
- Efficiency gain of at least of 12% for digital factory.
- Digitization offers more opportunities than risks for companies.

3.

People

- Hiring new employees with the necessary qualifications
- On-going continuing education for older employees.
- Top management must lead the digital transformation.
- Salaries in digital factories will increase due to required high skillset

DIGITAL FACTORIES: KEY ELEMENTS

4. Technology

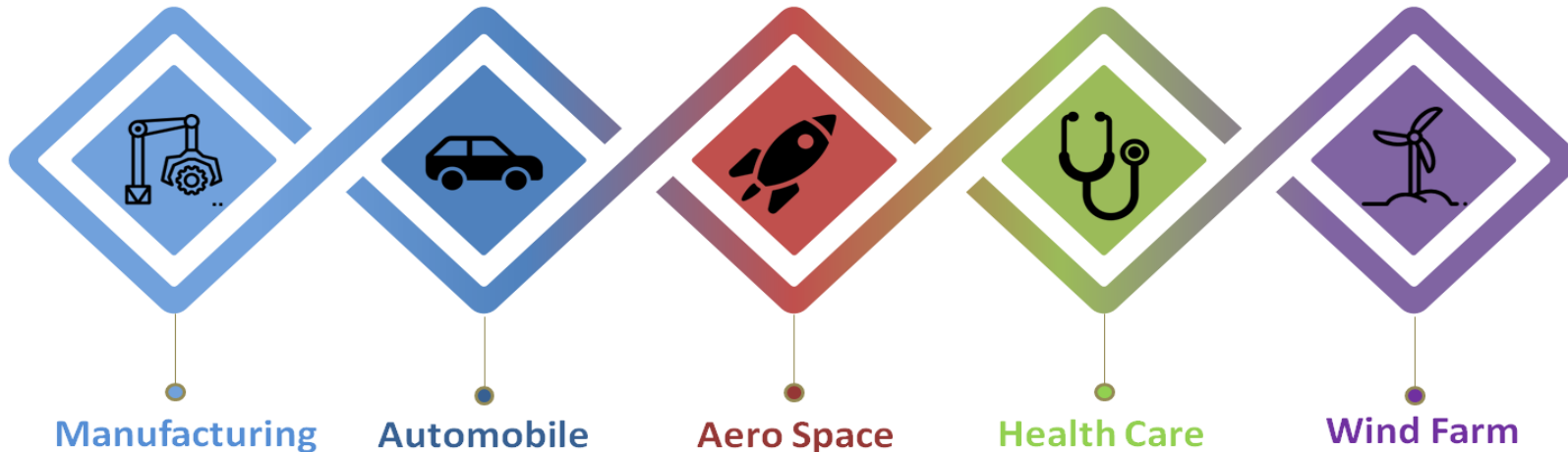
- AI is being employed across several lines and layers of operations, from workforce planning to product design, thus improving efficiency, product quality and employee safety
- Digital Twins
- Robots (CoBots)
- RPA
- Augmented Reality
- Big data process/quality optimization
- Autonomous digital factory



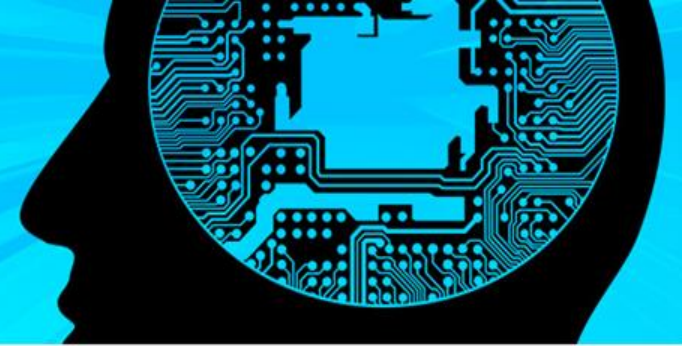
DIGITAL FACTORIES: KEY ELEMENTS (TECHNOLOGY)

□ *Digital Twin: (التوأم الرقمي)*

- It is a virtual representation of a real-world product or asset.
- Manufacturers can use digital twins before its physical counterpart is manufactured.
- After manufacturing data is collected from the virtual twin and improve the original product based on collected data
- Examples: 1.Aircraft Engine : General Electric 2. Race Cars: William Cars, Formula 1
3. heavy Vessels/Ships Samsung/Hyundai 4. Wind Turbines 5. Space Ships



DIGITAL FACTORIES: KEY ELEMENTS (TECHNOLOGY)



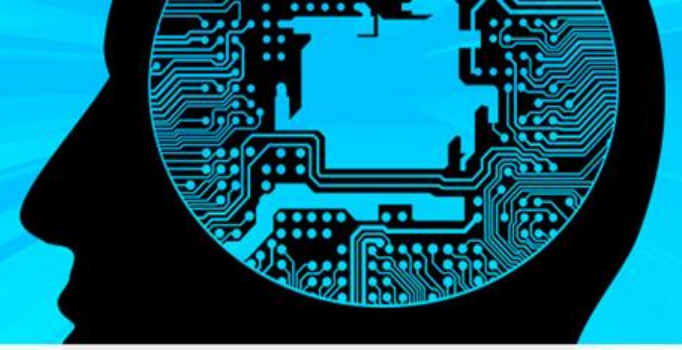
❑ *Industrial Robots (CoBots* الروبوتات التعاونية):

- General Motors introduced the first industrial robot in 1961 (limited scope, only a single task at a time.)
- Instead of competing against human workers, Robots could be friendly helpers to make workers life easier rather than stealing their livelihoods.
- Collaborative robots (CoBots): Robots are designed specifically to work together with humans, and can take instructions from humans.

❑ *Computer Vision, Augmented Reality* (الرؤية الحاسوبية، الواقع المعزز)

- Artificial intelligence has two advantages over humans when it comes to visual inspection: speed and accuracy in checking product deficiencies.
- AI can identify microscopic defects that human inspectors might miss at a rate they cannot hope to match

KEY BENEFITS FOR AI IN INDUSTRY



□ *Efficiency advantage:* (الكفاءة والفعالية)

- Automate manual processes, less waste and more focus on revenue-generating activities.

□ *Productivity advantage* (زيادة الانتاجية)

- work remotely, focus is on leveraging collaboration technology and tools to maximize workforce productivity.

□ *Safer working environments* (بيئات عمل أكثر أمانًا)

- CoBots can help to create safer working environments by performing more dangerous and physical tasks, leaving workers free to work on more complex tasks and avoid injury.

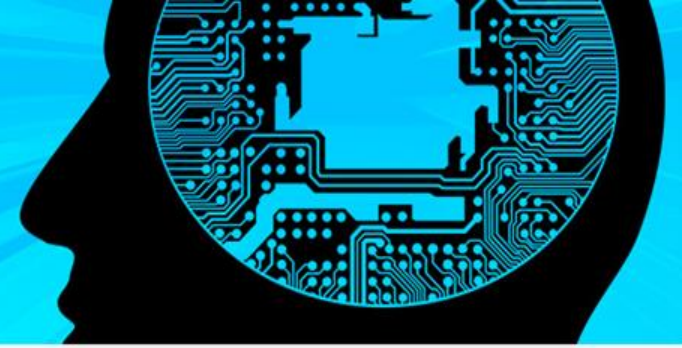
□ *Customer advantage:* (ميزة الاهتمام بطلبات واهتمامات العميل)

- To mine customer data to monitor for shifts in demand and uncover emerging customer needs.

□ *Agility advantage* (الرشاقة والمرونة في التغيير)

- Data-driven insight to make decisions faster and act on them faster. Flexibility to adapt or change course at any point.

KEY BENEFITS FOR AI IN INDUSTRY



❑ *Predictive Analytics* (التحليلات التنبؤية)

- Derive insights into product quality or predictions about future product failures.
- using sensors to track the condition and performance of equipment

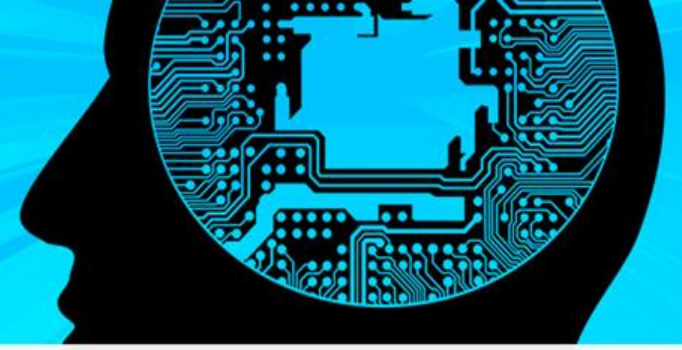
❑ *Predictive maintenance* (الصيانة الوقائية)

- To predict, using AI algorithms, machine incidents and breakdowns, to anticipate when manufacturing equipment is likely to fail,
- Predictive maintenance can evolve into machine learning systems , to analyze vast amounts of data to predict future malfunctions

❑ *Product innovation* (ابتكار المنتجات)

- creating new design solutions that would otherwise be impossible or inconceivable.
- This form of “co-creation” between humans and technology.
- Airbus example.

KEY BENEFITS FOR AI IN INDUSTRY

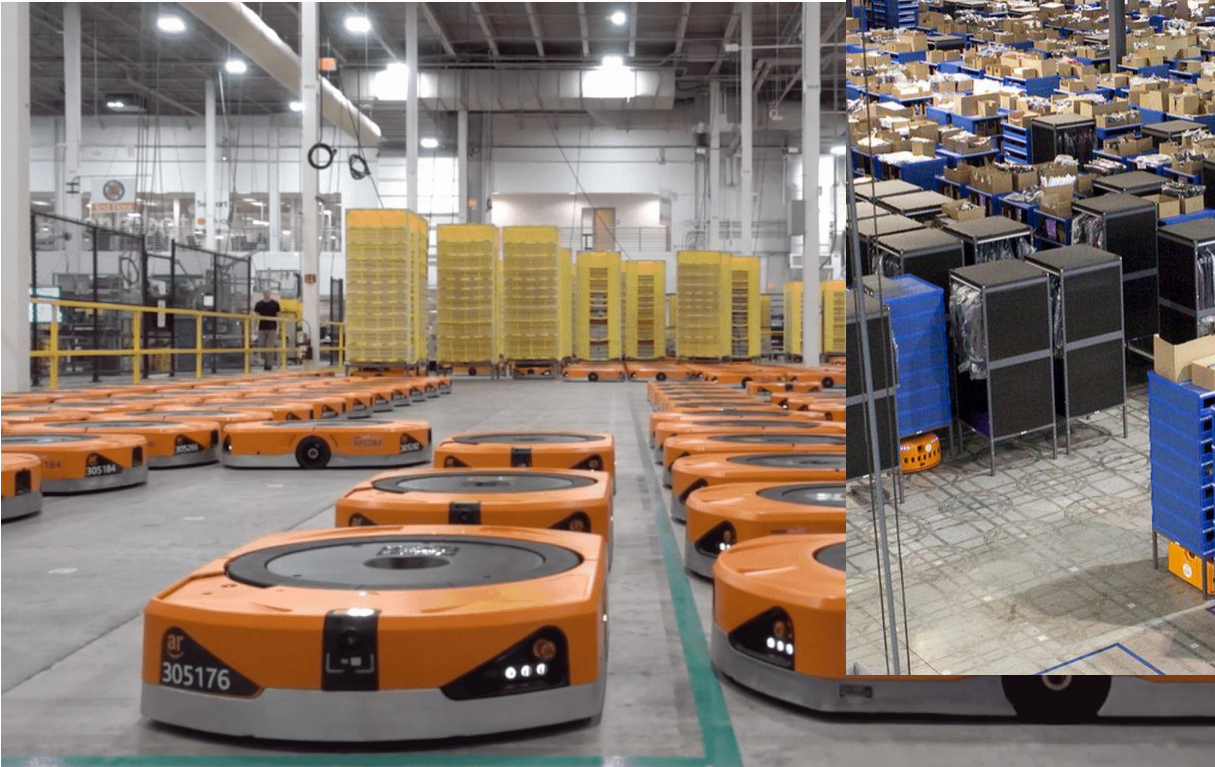
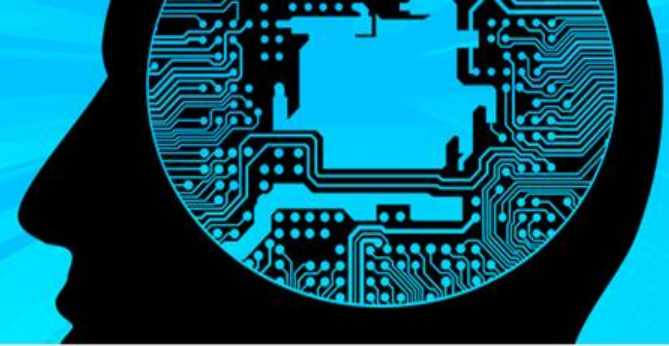


- ❑ *Simplified supply chains/Inventory Management* (سلاسل التوريد المبسطة / إدارة المخزون)
 - Companies are spending 6,500 hours per year on average on manual processes related to supply chain management
 - Manufacturers Use AI to identify patterns of demand for various products (market intelligence).
 - AI can reduce the costs of maintaining inventory

Amazon example:

- Machine learning solutions can promote inventory planning activities as they are good at dealing with demand forecasting and supply planning. These tools enable businesses to manage inventory levels better so that cash-in-stock and out-of-stock scenarios are less likely to happen.

AMAZON EXAMPLE:



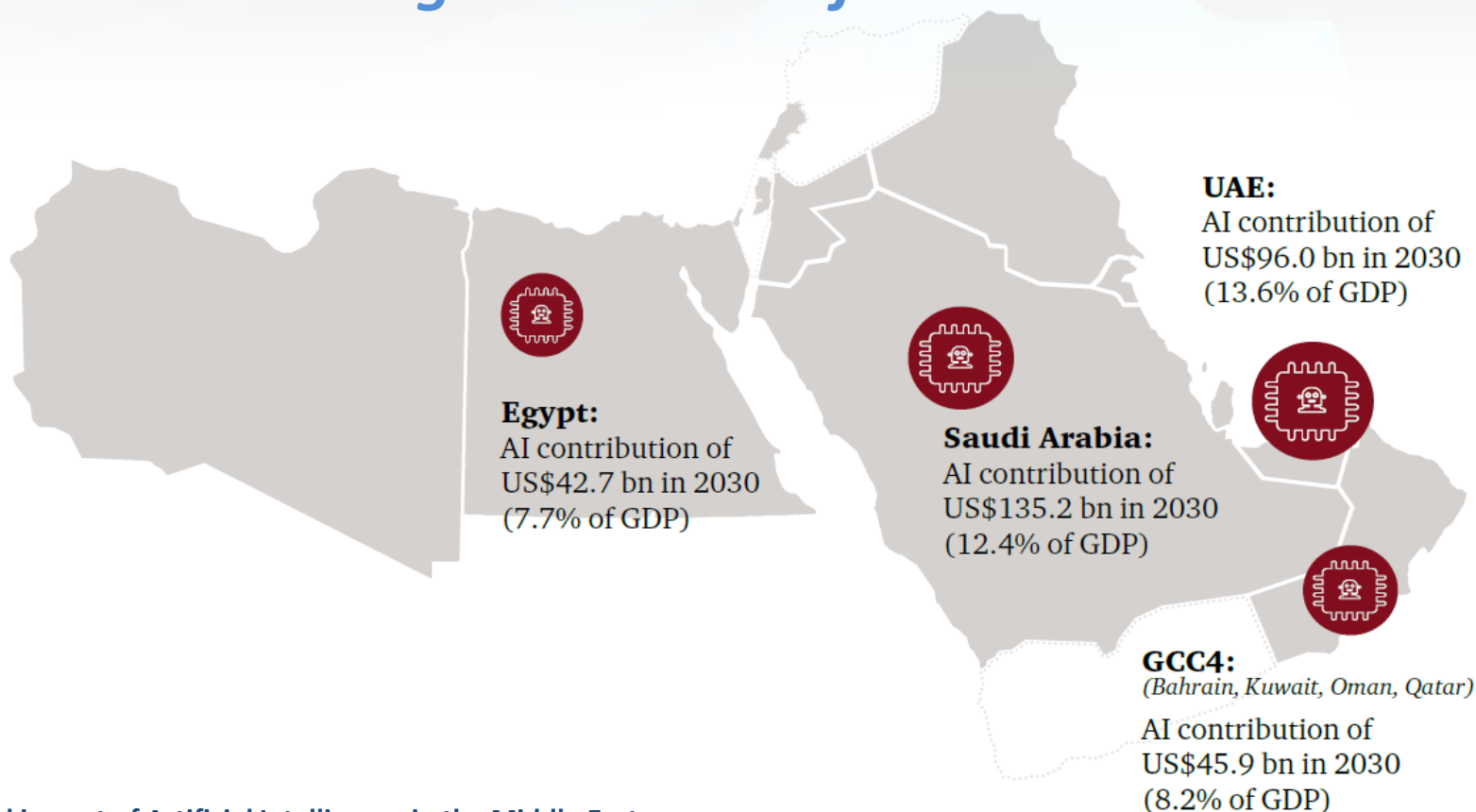
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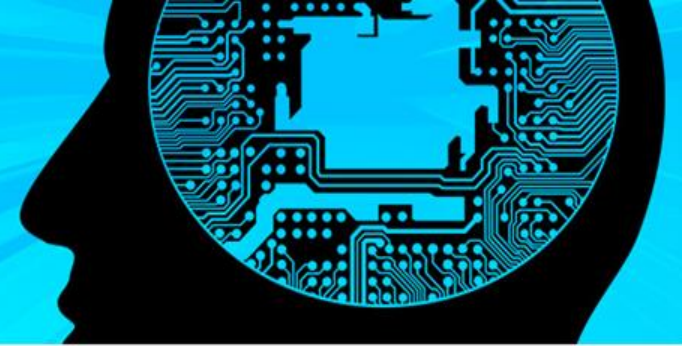


MIDDLE EAST ARTIFICIAL INTELLIGENCE STATUS

□ Which countries will gain the most from AI?



ENABLING MIDDLE EAST AI LEADERSHIP

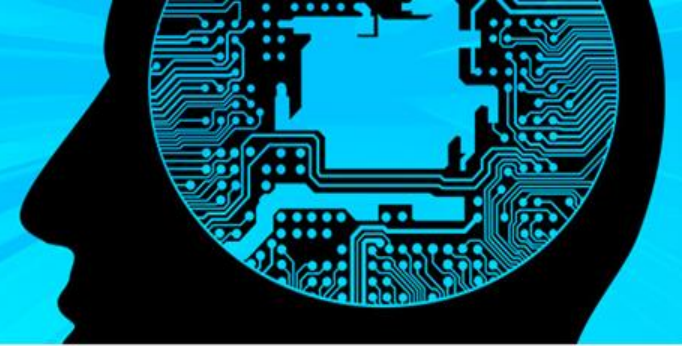


Phase 1: Envision

- Build an 18-to-24-month AI strategy with a clear set of initiatives
- A long-term AI vision must be considered to realize ROI
- ⑩ Prepare your organizational culture to adapt to a “fail fast” mentality

(الرؤيا والتصور)

ENABLING MIDDLE EAST AI LEADERSHIP

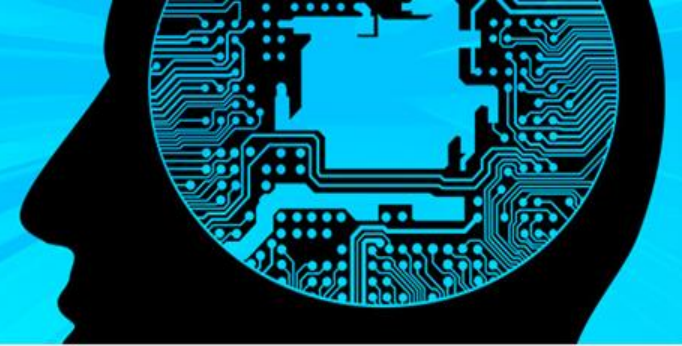


Phase 2: **Ideate**

- Conduct thorough, periodic assessments of the AI market, target users, needs, and more
- Create common AI use cases and applications,
- Align individual AI initiative business cases with the broader reinvention case
- Define future experiences, design your future business and technical architecture

(التفكير والتقييم)

ENABLING MIDDLE EAST AI LEADERSHIP



Phase 3: Execute

- Design and execute AI pilots with agility and with limited risk
- Use a lean governance model to periodically review progress and value,
- Use iterative approach to prototyping, building, testing, and launching new AI capabilities
- ⑩ Monitor AI business case value, provide feedback, then make decisions to either terminate or scale AI

(التخطيط والتنفيذ)

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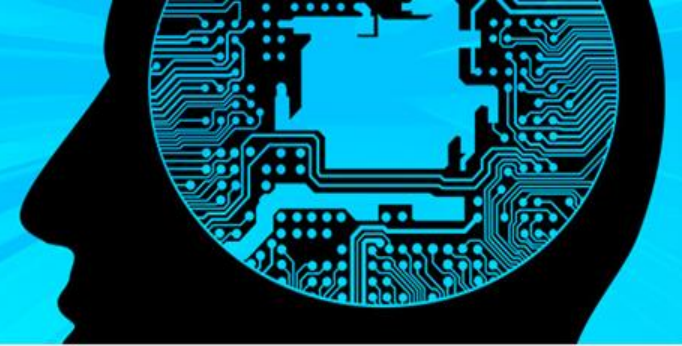
6. Recommendations (For companies, individuals and governments)



1.RECOMMENDATIONS FOR COMPANIES

- ❑ *Perform strategic workforce planning* (عمل تخطيط استراتيجي للقوى العاملة)
 - Evaluate future demand on the basis of strategic direction
 - Determine the gaps for certain jobs and specific skills
- ❑ *Upskill and reskill existing workforces* (صقل وإعادة بناء المهارات)
 - Rapid shifts in skill requirements
- ❑ *Create a lifelong learning culture* (خلق ثقافة التعلم مدى الحياة)
 - Companies need to build constant learning into their business models (digital economy)
- ❑ *Rethink talent recruitment and retention strategies* (إعادة التفكير في استراتيجيات توظيف المواهب والاحتفاظ بها)
 - companies need to shift the recruitment focus from hiring for skill to hiring for will.
 - Companies need to find new ways of retaining their talent and equipping them with the skills
- ❑ *Companies need to invest in corporate academies, training partnerships, and constant upskilling and reskilling of their existing workforces.* (الاستثمار في أكاديميات الشركات ، وشراكات التدريب)
 - transform HR functions and processes to hire and retain talent with the new skills in demand.

2. RECOMMENDATIONS FOR INDIVIDUALS



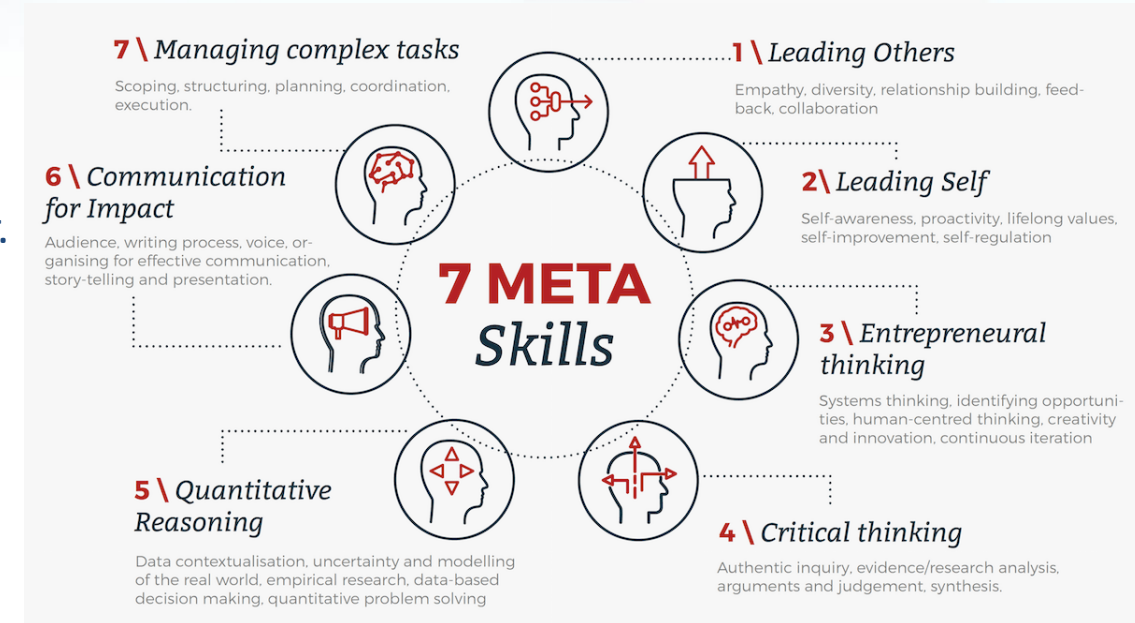
- ❑ *individuals have to take greater responsibility for their own professional development, whether that means through upskilling or reskilling:*
 - Make lifelong learning the new normal (Whether through programs offered by employers or through private channels).
 - Individuals should also invest not only in digital skills but also in Meta-skills, which will serve them well regardless of shifts in the market
- ❑ *Individuals have to Become more flexible when developing a career path*
 - Frequent career changes, and lateral moves into similar job positions will become increasingly necessary.
 - workers should remain flexible throughout their careers, looking for positions where their existing skill sets can be applied successfully.
 - To update their skill sets according to where their own interests match the market's needs.

2. RECOMMENDATIONS FOR INDIVIDUALS

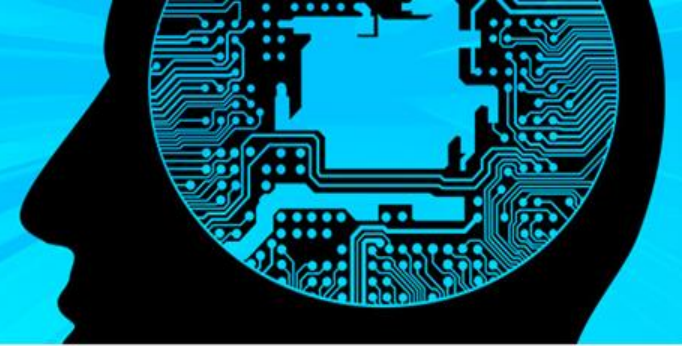
A **meta-skill** is a high order **skill** that allows you to engage with functional expertise more effectively. It's a catalyst for learning and building new **skills** faster.

Skills are temporary; **meta-skills** are permanent.

المهارة الفوقية هي مهارة عالية المستوى تسمح لك بالتفاعل مع الخبرة الوظيفية بشكل أكثر فعالية.



3. RECOMMENDATIONS FOR GOVERNMENTS



❑ *Governments should prepare to meet the demands of the digital age, they must understand the challenges that lie ahead.*

➤ **Transformation Leadership (قيادة التحول)**

- build a digital collaboration ecosystem
- Regulation of digital Technologies

➤ **Workforce strategies: (استراتيجيات القوى العاملة)**

- Make use of sophisticated analytical models to predict supply and demand in the labor market
- focus on managing the transition to a future workforce so that the economic and social friction associated with the mismatch of supply and demand is minimized.

➤ **Education strategies: (استراتيجيات التعليم)**

- Update the education system; To reduce the mismatch in skills
- Create more flexible institutions that can anticipate the future needs and refocus on metaskills.

Countries that leverage education to create attractive locations for companies will gain a competitive edge over their static neighbors (Estonia, Singapore, ...)

Thanks

