



Group 1

FOURTH INDUSTRIAL REVOLUTION



IR 4.0

Group 1

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Agenda



Introduction



Background



History of IR



Cause and opportunities



Global effects of IR



Technologies that are driving IR 4.0



What's next for IR 4.0



Conclusion for emerging technologies



IR 4.0

"IR 4.0 revolutionizes manufacturing through advanced technologies for a smarter and more efficient industrial ecosystem."

[Back to Agenda](#)



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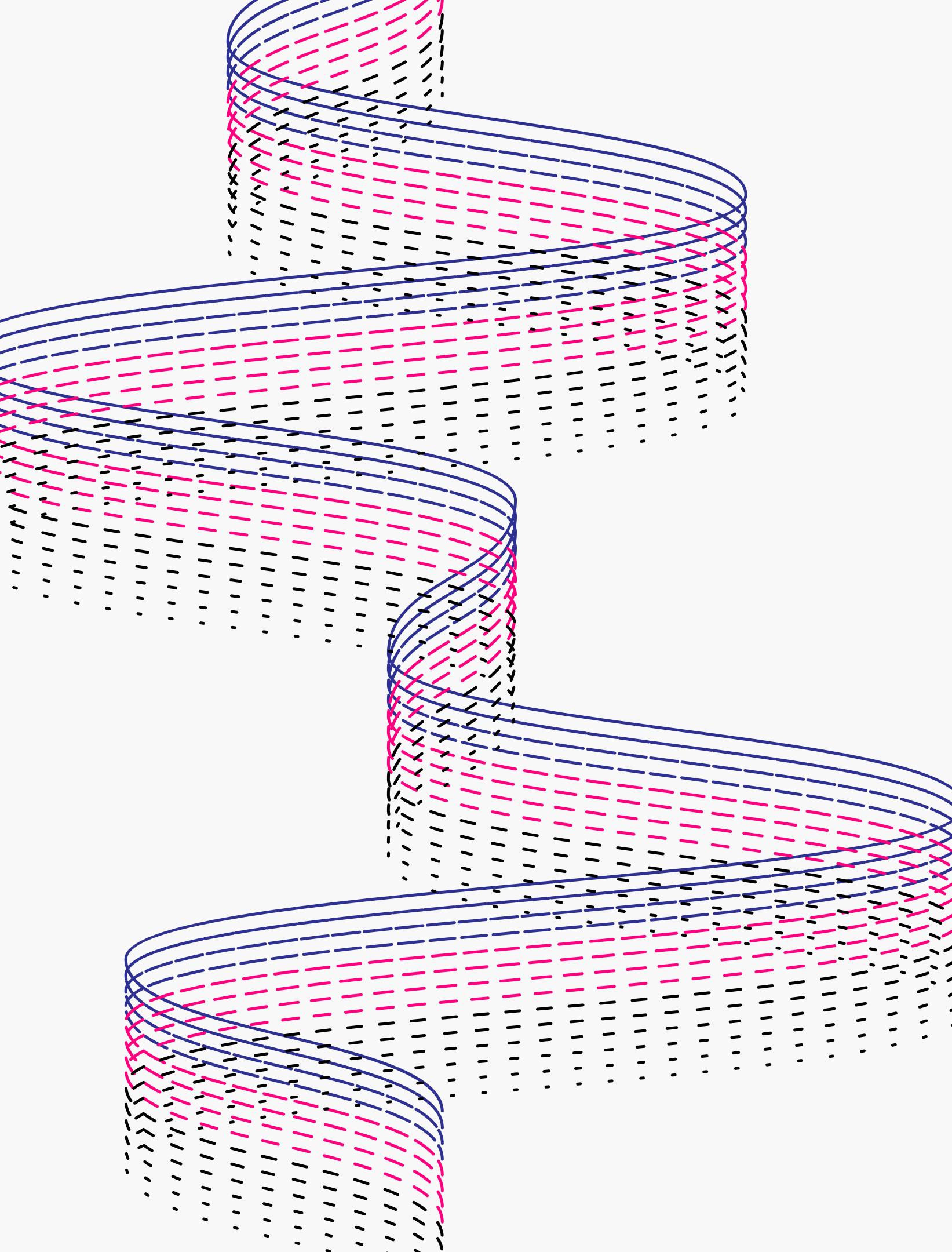
Traditional Challenges, Innovative Solutions: Embracing IR 4.0

”



[Back to Agenda](#)





HISTORY OF IR 4.0

Industrial Revolution 4.0 builds upon the previous three industrial revolutions and is characterized by the integration of digital technologies, automation, and data exchange in manufacturing and other industrial sectors.

[Back to Agenda](#)



History of IR 4.0

1

**First Industrial
Revolution**

2

**Second Industrial
Revolution**

3

**Third Industrial
Revolution**

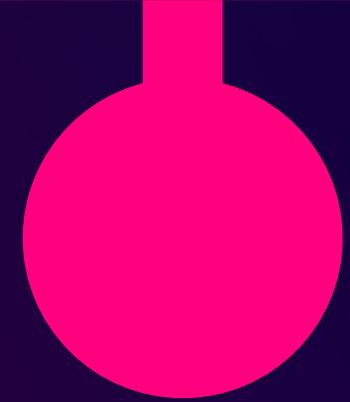
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**Industrial
Revolution 4.0**

[Back to Agenda](#)



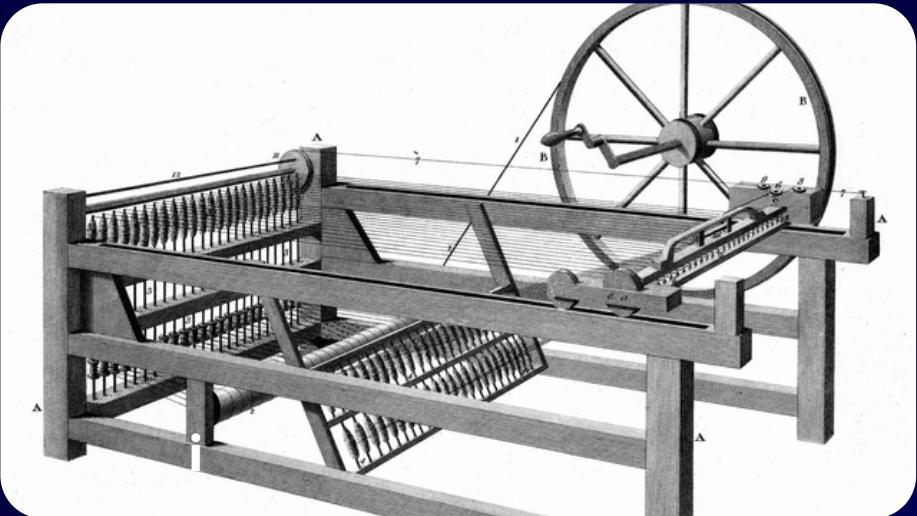
History of IR 4.0



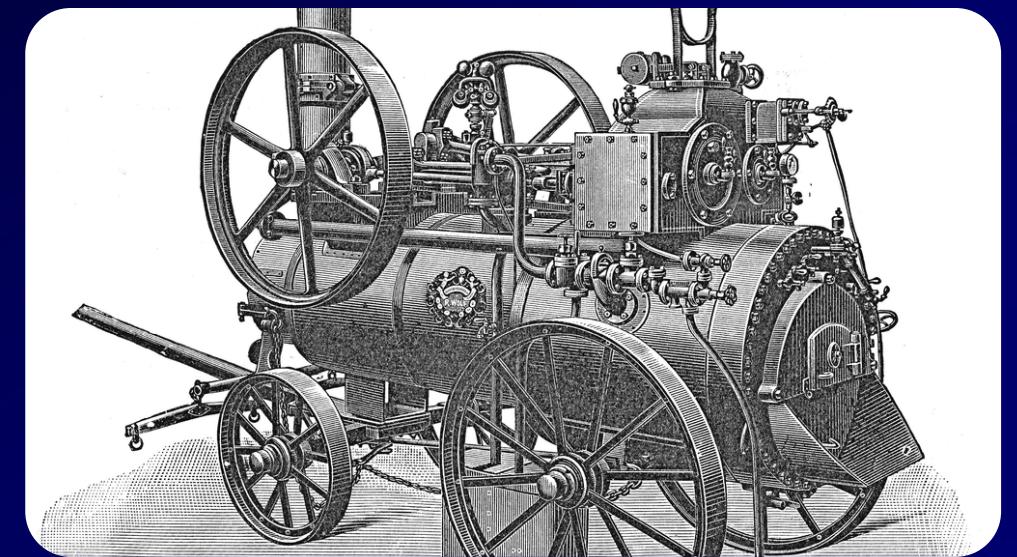
First Industrial Revolution

- The late 18th century's first industrial revolution introduced mechanized systems like steam engines and textile machinery, which transformed manual labor and enabled machine-based manufacturing.

Spinning Jenny



Steam Engine



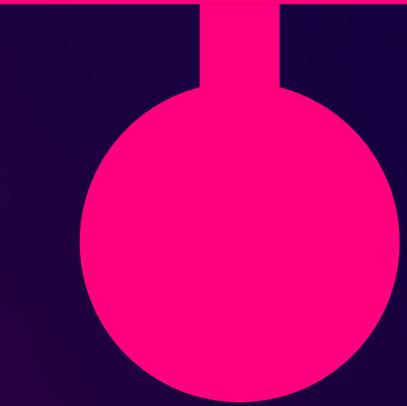
Steam Engine Train



[Back to Agenda](#)



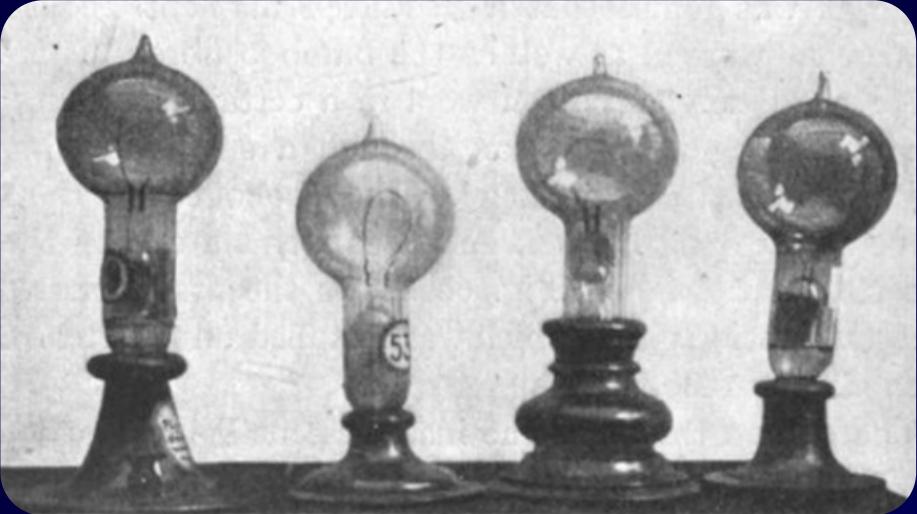
History of IR 4.0



Second Industrial Revolution

occurred in the late 19th and early 20th centuries. It was marked by significant technological advancements, including the development of electricity, mass production techniques, and the assembly line. These innovations revolutionized manufacturing and led to increased productivity and economic growth.

The light bulb



The Radio



The Internal Combustion Engine



[Back to Agenda](#)



History of IR 4.0

Third Industrial Revolution

often referred to as the digital revolution, began in the late 20th century with the rise of electronics, computers, and automation. Key developments included the widespread use of computers, the internet, and telecommunications. This revolution led to the automation of various industrial processes and the digitization of information.

Mainframe Computing



Computer

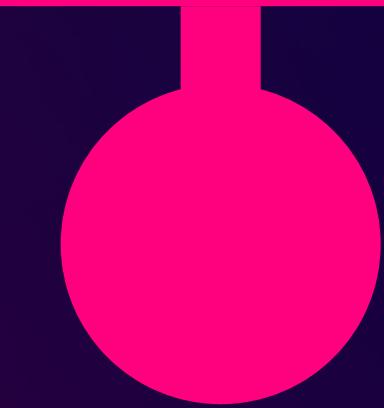


Mobile Phone



[Back to Agenda](#) >

History of IR 4.0



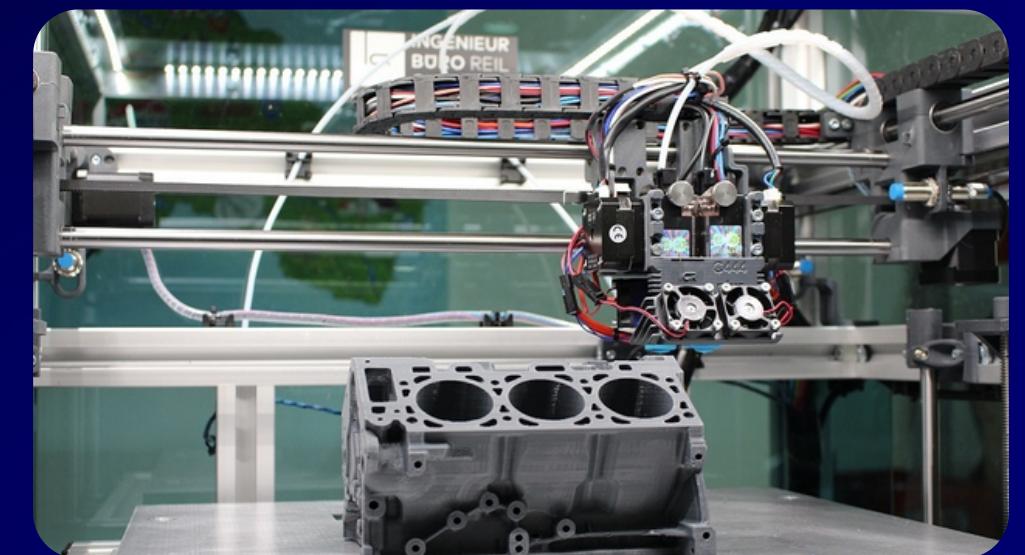
Fourth Industrial Revolution

- emerged in the early 21st century and is characterized by the fusion of physical, digital, and biological technologies. It encompasses several transformative technologies, including the Internet of Things (IoT), artificial intelligence (AI), big data analytics, cloud computing, robotics, additive manufacturing (3D printing), and advanced materials.

AI & Robotics



Additive Manufacturing



Augmented Reality



[Back to Agenda](#)



Background

Industry 4.0 arose in 2011 from a project under the German government's high-tech strategy, which endorses the computerization of manufacturing.



[Back to Agenda](#)



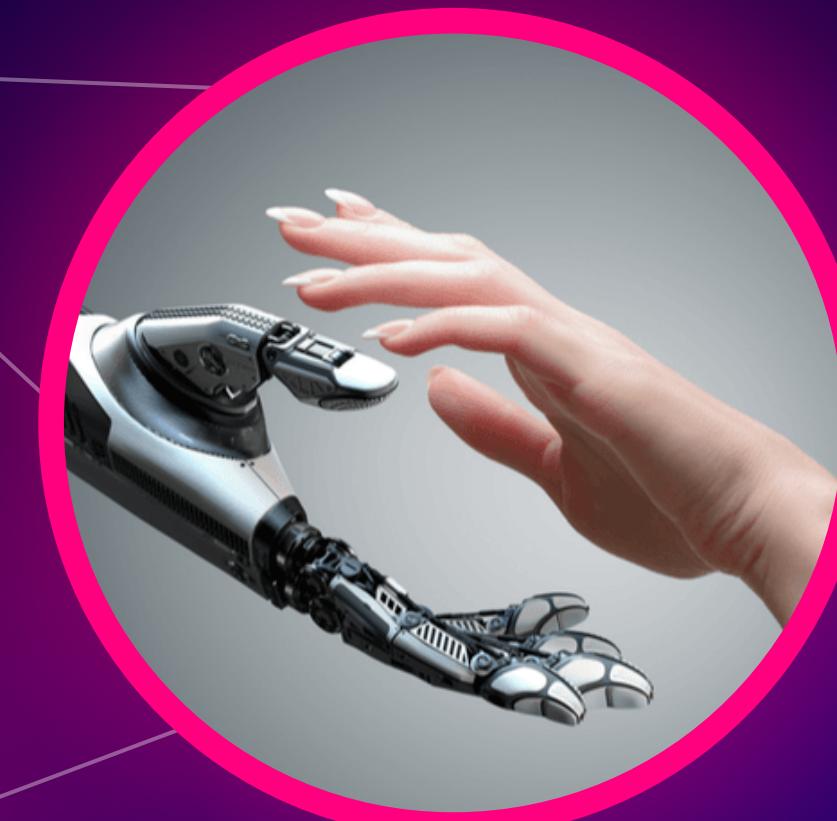
Background



Analytics &
Intelligence



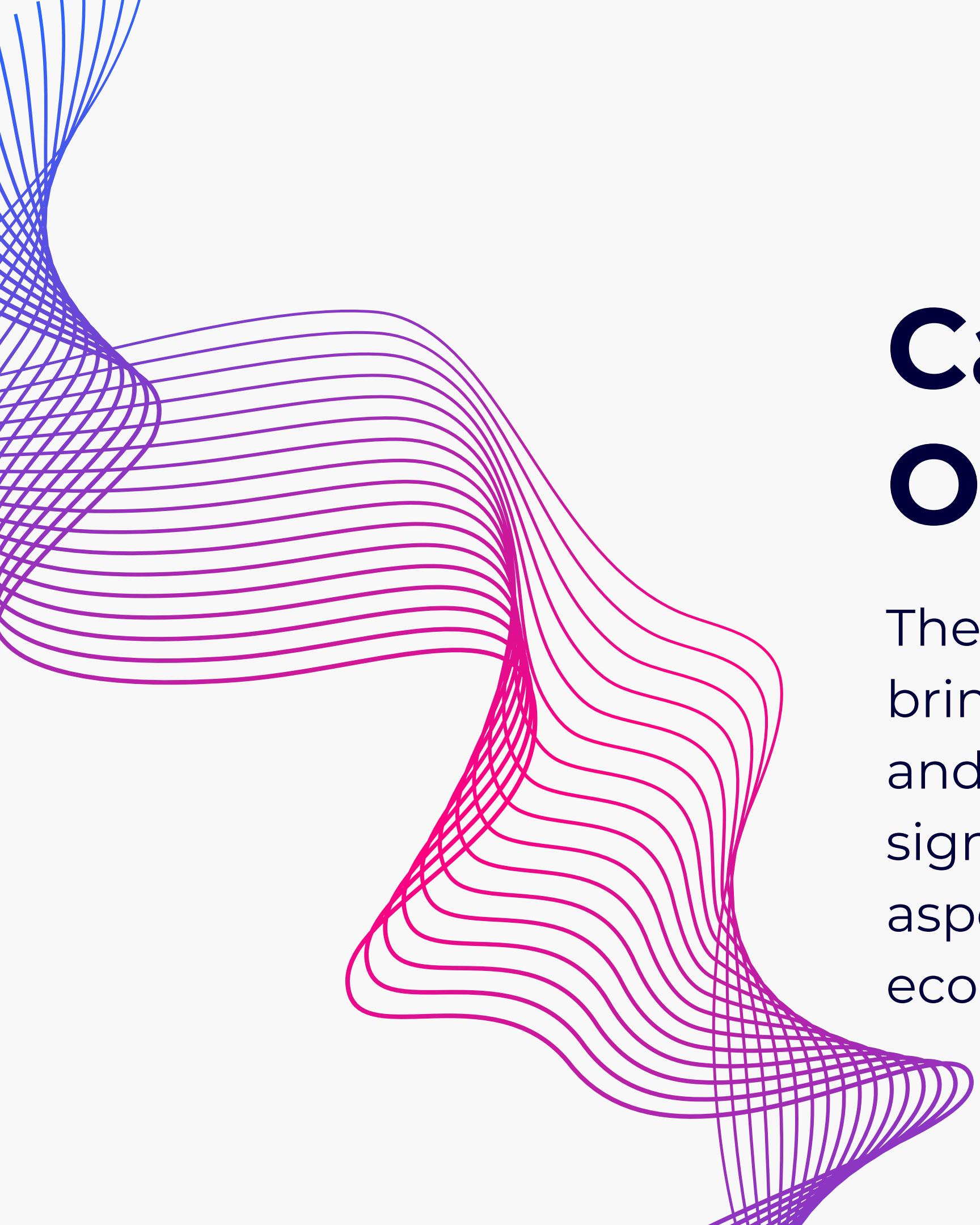
Connectivity



Human & Machine
Interaction

[Back to Agenda](#)





Cause & Opportunities

The Industrial Revolution 4.0 brings about numerous causes and opportunities that have a significant impact on various aspects of society and the economy.

[Back to Agenda](#)



CAUSES OF IR 4.0



ADVANCEMENTS IN DIGITAL
TECHNOLOGIES

CONNECTIVITY AND DATA EXCHANGE

AUTOMATION AND ROBOTICS

CUSTOMIZATION AND
PERSONALIZATION

[Back to Agenda](#)



OPPORTUNITIES OF IR 4.0



INCREASED PRODUCTIVITY AND EFFICIENCY

SMART MANUFACTURING AND SUPPLY CHAINS

INNOVATION AND NEW BUSINESS MODELS

JOB CREATION AND SKILL DEVELOPMENT

SUSTAINABLE AND ENVIRONMENTALLY FRIENDLY
PRACTICES

IMPROVED QUALITY OF LIFE

[Back to Agenda](#)



Global effects of IR 4.0

[Back to Agenda](#)



Global Effects of IR 4.0

In the Africa

Unsprung opportunities for Africa to adopt technologies and seeks to bridge the gap between physical and digital worlds, through collaboration of standardization experts, technology communities, stakeholders and regulatory agencies in assessing industry standards and policy harmonization that enhances trade



[Back to Agenda](#)

Global Effects of IR 4.0

In the Asian Countries

Among Asian Countries, China today leads the US in key technology sectors and is increasingly competitive in advance Microchip, Artificial Intelligence, and other next-generations technologies.



[Back to Agenda](#)



Global Effects of IR 4.0

In Europe and America

Leads the Industrial Revolutions in terms of globalization and technological advancement. This is in terms of digital economy, market leader and automation and entrepreneurship, and more likely ready for IR 5.0.

[Back to Agenda](#)



Global Effects of IR 4.0

In the Philippines

Investment in technology became a major role towards the ongoing shift to Industrial Revolution 4.0. to improve automate processes, efficiency and gain competitiveness in terms of IT-BPO Industry. More diffusion of the Internet of Things (IOT), usage of Artificial Intelligence (AI), Innovative Industries.



[Back to Agenda](#)





Technologies that are driving the IR 4.0

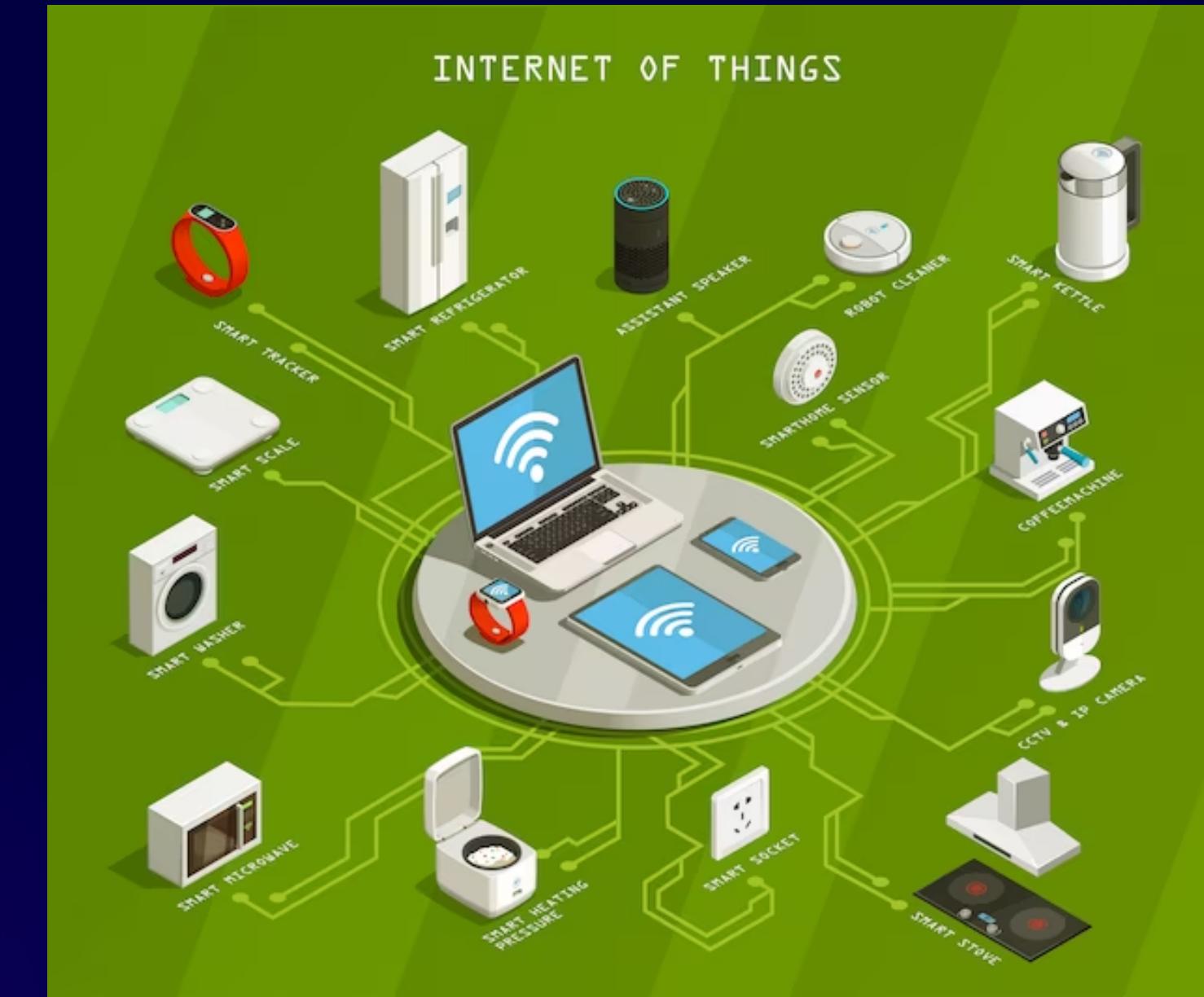
"The integration of advanced technology into the manufacturing process to create "smart factories"

[Back to Agenda](#)



Internet of Things (IoT)

"Connecting physical devices into sensors to the internet that allows these devices for communication and data exchange."



[Back to Agenda](#)



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[Back to Agenda](#)



Cloud Computing

"Refers to the different services through the internet such as storing, networking, accessing data and applications over the internet, allowing remote access and collaboration."



[Back to Agenda](#)



Types of Cloud Computing services

- Software-as-a-service (SaaS)
- Infrastructure-as-a-service (IaaS)
- Platform-as-a-service (PaaS)



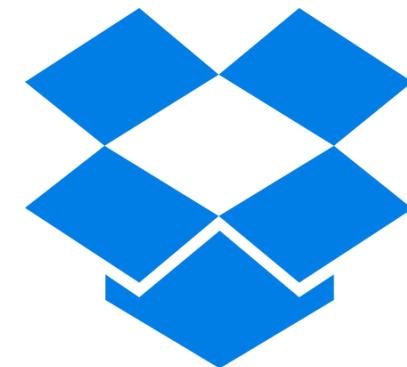
[Back to Agenda](#)



Software-as-a-service (SaaS)

Software applications are hosted on cloud servers and delivered to consumers via the internet.

Google Workspace

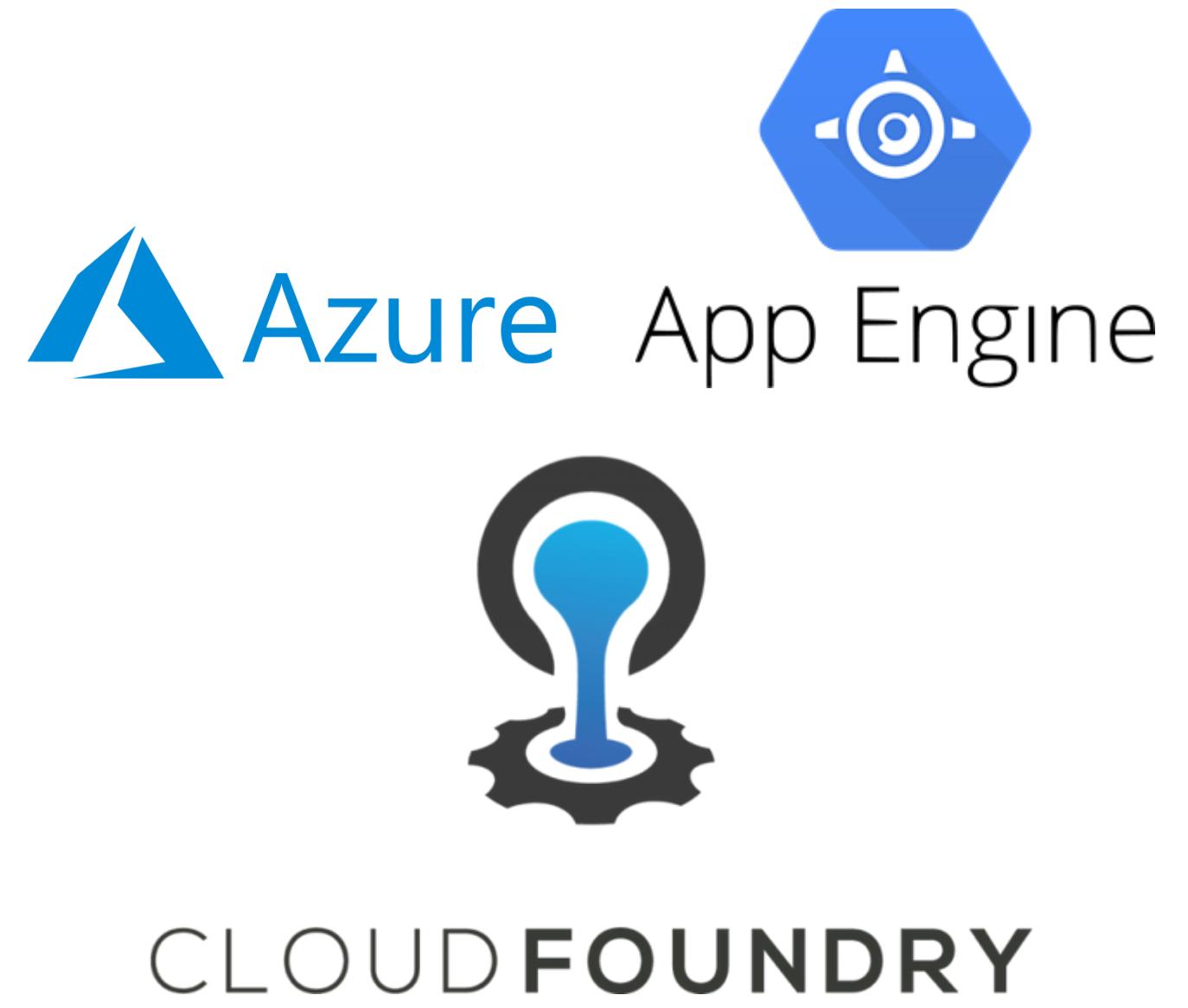


[Back to Agenda](#)



Platform-as-a-service (PaaS)

Clients rent virtualized computer resources from a cloud service provider, such as servers, storage, and networking.



[Back to Agenda](#)



Infrastructure-as-service (IaaS)

Cloud service provider offers customers a platform for developing, deploying, and managing applications without requiring them to worry about the underlying infrastructure.



[Back to Agenda](#)



Artificial Intelligence

The development of robots that are capable of performing tasks that typically require human intelligence.



[Back to Agenda](#)



Types of **Artificial** Intelligence

Artificial Narrow intelligence

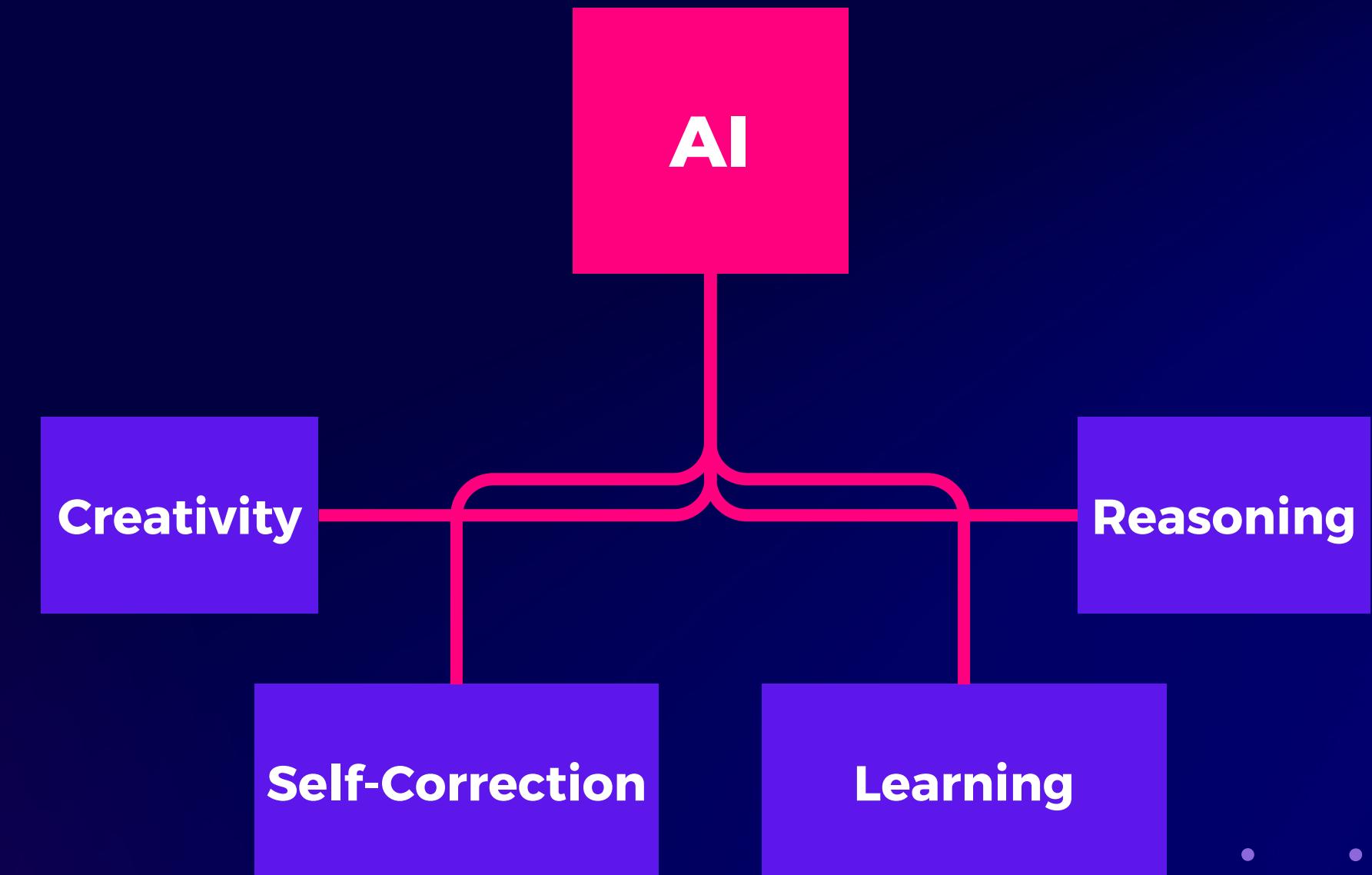
Artificial General intelligence

Artificial Superintelligence

[Back to Agenda](#)



Artificial Intelligence focuses on **Four** **Major Cognitive Skills**

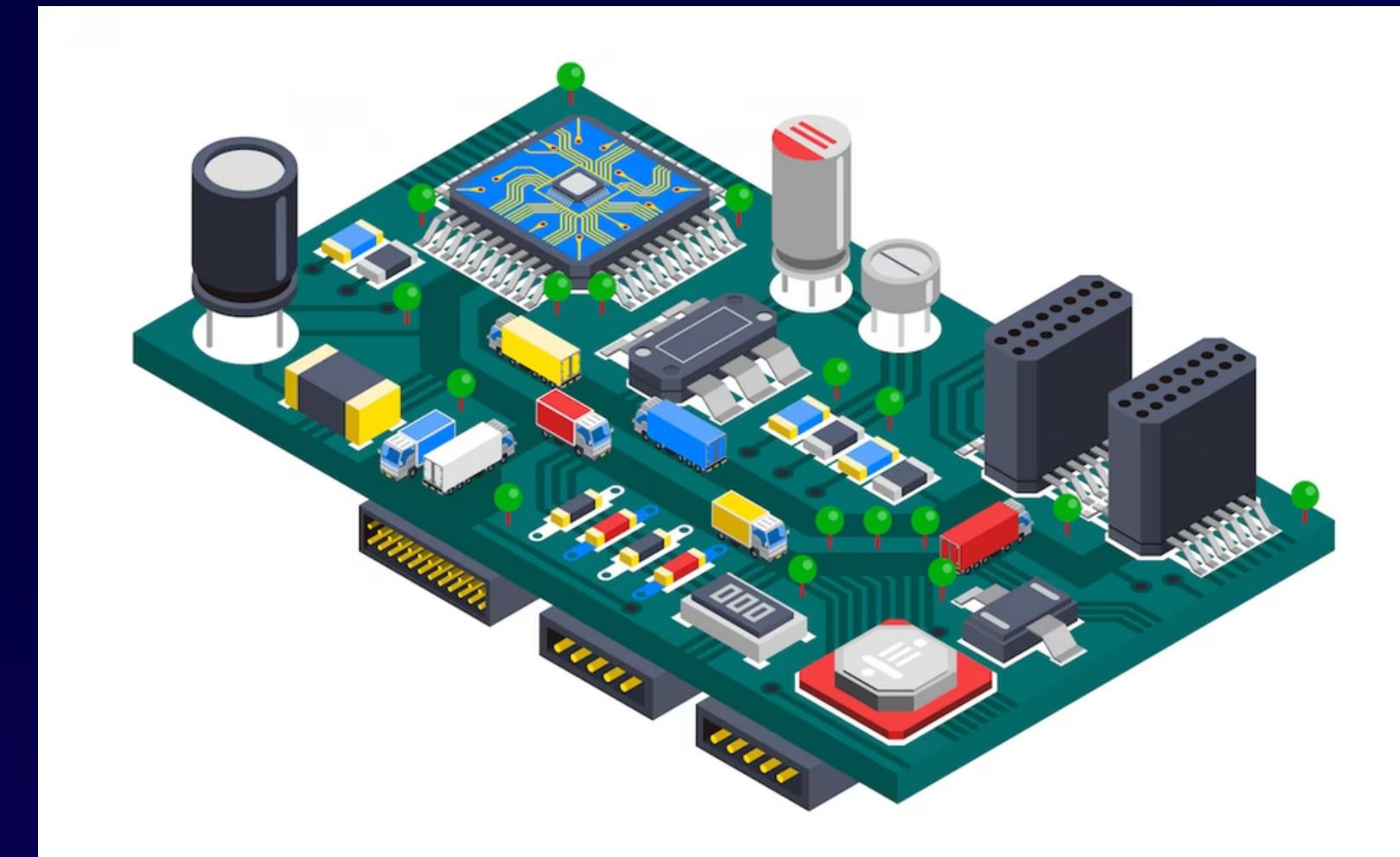


[Back to Agenda](#)



Embedded Systems

A computer hardware system that includes software that is designed to execute a certain task. It can be a stand-alone system or a component of a bigger system.



[Back to Agenda](#)



Four types of Embedded Systems



Real-time embedded systems

Stand alone embedded systems

Networked embedded systems

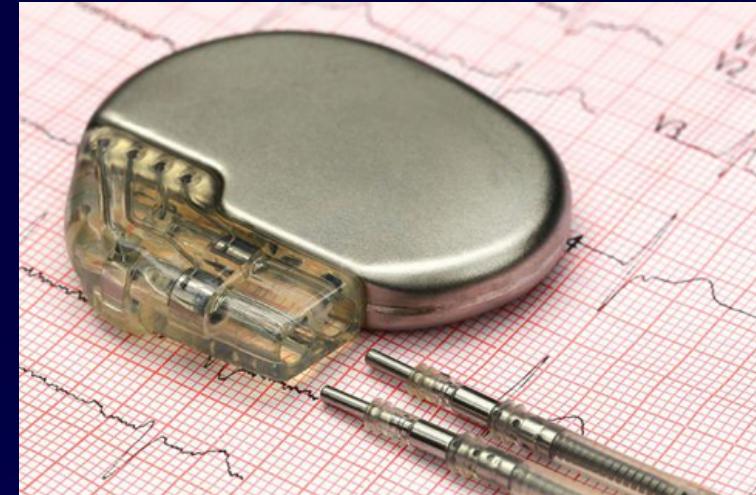
Mobile embedded systems

[Back to Agenda](#)



Embedded Systems

A computer hardware system that includes software that is designed to execute a certain task. It can be a stand-alone system or a component of a bigger system.



[Back to Agenda](#)



Augmented Reality(AR)

Is an interactive technology that uses software, apps and hardware to enhance real world experience by overlaying computer-generated material and information to it.

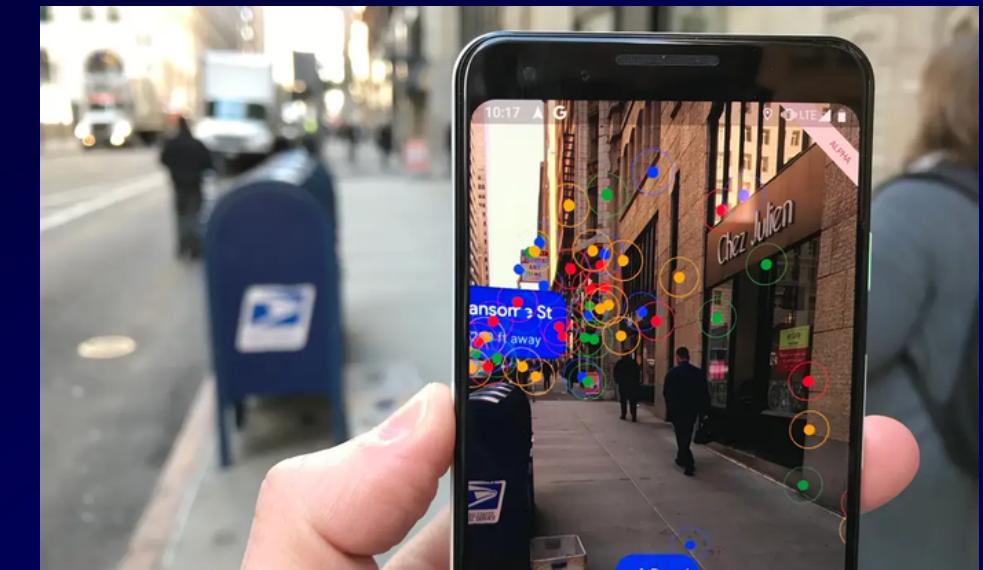


[Back to Agenda](#)



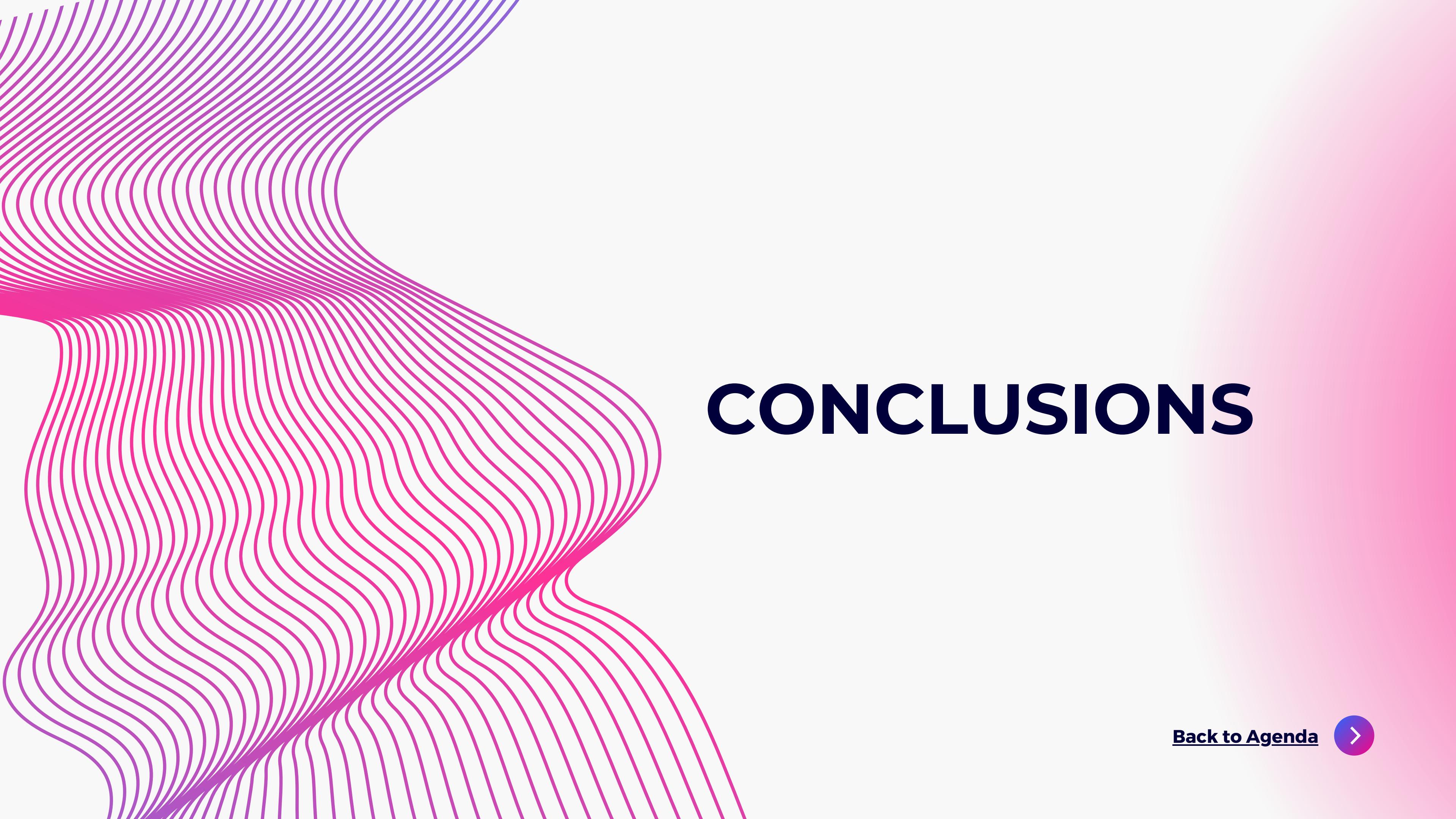
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[Back to Agenda](#)

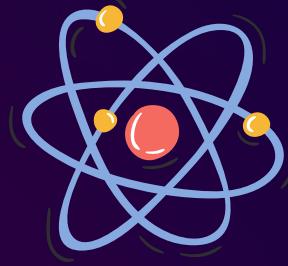




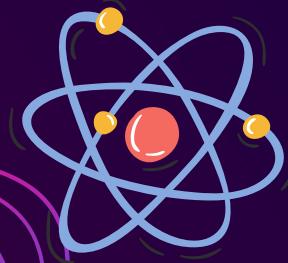
CONCLUSIONS

[Back to Agenda](#)

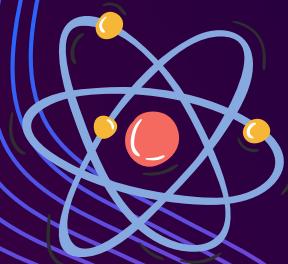




Emerging technologies are transforming the world in profound ways, ushering in a new era of possibilities and challenges.



These technologies also have the potential to address global challenges, such as sustainability, healthcare, and energy efficiency.



Ethical considerations, privacy concerns, cybersecurity risks, and the impact on employment and society must be carefully addressed.



WHAT WILL BE NEXT FOR IR4?

“New technologies that combine physical, digital and biological worlds. Impacting all disciplines, economies and industries”

- Prof. K. Schwab.



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Thank You!

For Listening!