

## Artificial intelligence: breakthroughs with ChatGPT and GAN



### Key trends

#### ChatGPT

Useful in repetitive tasks, to get ideas, explore a field, use creatively, write code. Endless possibilities in simple tasks fed by many examples.

#### GAN

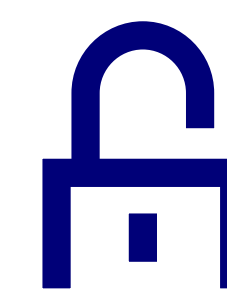
Generating images from textual descriptions (DALL-E, Midjourney, Stable Diffusion).

Prompt engineering refines the instructions to improve the result.

### Challenges

The content needs to be reviewed. Copyright issues. Algorithmic biases (racial, gender, etc.).

Ethical dilemmas and authorship. There are tools that detect AI-generated content (watermarking, text classification).



## Privacy and security. Vulnerabilities and data control

### Key trends

Open source and proprietary systems with vulnerabilities that have been exploitable for years (recently discovered).

Monitoring in business environments, for updates that are not current.

The importance of reviewing the (required) privileges of applications.

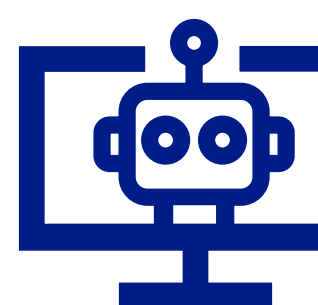
### Challenges

Periodic partial solutions, but no definitive solutions for some risks.

The case of Pegasus, malware (malicious software) used for espionage purposes.

Mobile app stores: problems with security checks. Privacy: companies that control many sectors of our digital lives (consumer data, health, etc.).

## Education: uses of AI, hybrid learning and the rise of STEAM curricula



### Key trends

Creative GAN and ChatGPT in education: Beneficial when used correctly. Useful for answers to frequently asked questions, preparation of materials, learning practices.

The rise of hybrid learning: Trust placed by institutions and students in the virtual model.

School curricula based on science, technology, engineering, art and mathematics (STEAM): Interdisciplinary base, fostering critical thinking, creativity and skills to bridge the digital divide

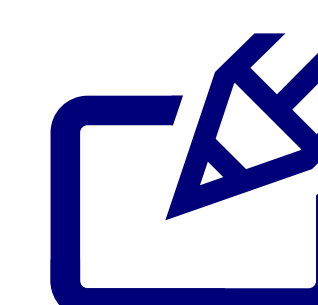
### Challenges

Risk of plagiarism and misuse. Solutions to current dilemmas are needed through teaching and awareness-raising among the student body.

Requires technological equipment and ICT training for teaching staff.

Need to combine them with humanities in order to provide children with a well-rounded education as citizens.

# Technology and education trends for 2023



## Digital art and culture

### Key trends

NFTs as a viable alternative for selling and promoting works and institutions. Museums and foundations sell pieces to collectors.

Returning to in-person activities.

Rise of immersive exhibitions; creation of companies (despite the initial cost, they are profitable).

### Challenges

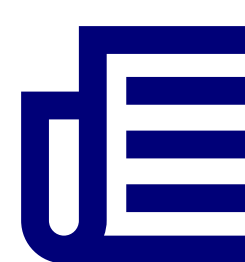
Dangers of quality versus the monetization of art.

Value associated with cryptocurrencies

Trend towards the disappearance of remote artistic activities and direct contact with creators online.

Investment in them has been multiplying since 2019. Risk: lack of serious and coherent content. Direct competition for 'traditional' spaces.

## Regulations for responsible AI



### Key trends

Responsible use of AI in companies and institutions is emerging as a result of stringent regulations (especially in the European Union).

The regulations aim to protect citizens and society as a whole.

It forces algorithms to be classified according to their risk (high, medium and low). There are also prohibited practices.

AI as a service affected. Providers encapsulating analytics and use cases must comply with regulations.

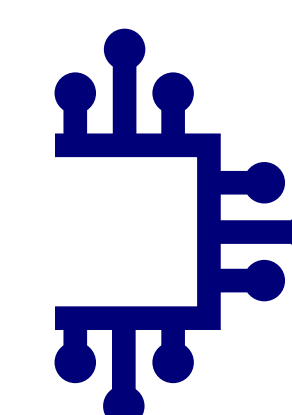
### Challenges

Most companies are not prepared to comply with regulations.

There is an increasing need for experts in AI law (including the digital content market).

Needs: Modify algorithmic behaviour. A complementary architecture (easier for companies that are able to invest).

It will affect how innovation with this type of technology will take place.



## Global fight in the chip industry, electric car improvements, nuclear fusion and risks of solar flares

### Key trends

The European Chips Act (manufacturing in Europe) is passed.

Volkswagen manufactures chips for the automotive industry. Major importance of chips for electric vehicles.

Electric car: changes in motorization to reduce prices, improve batteries and charging times.

The evolution of green hydrogen (advantages of fuel but without the emissions).

Nuclear fusion. Neither the fuel nor the waste is radioactive.

Miyake event – cosmic radiation every thousand years.

### Challenges

China and the US are leading the way in chip manufacturing.

The use of chips as a political weapon. Manufacturers prioritize chips for small devices over those for cars.

Problem: range and charging time. Impact on the power grid. Technologies that are difficult to export to countries outside the first world.

Not a short-term solution.

Solutions for shielding against cosmic radiation are being researched.

