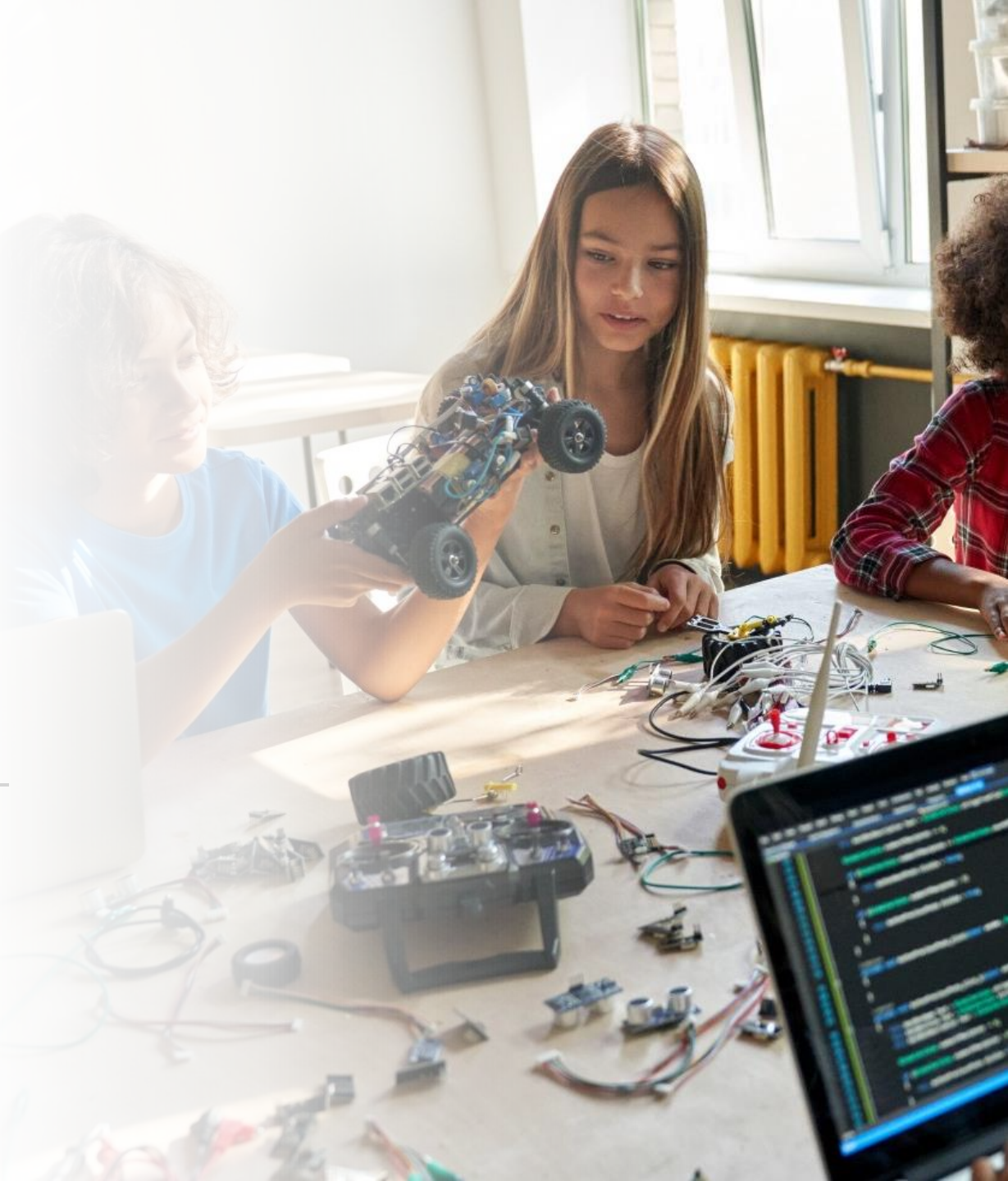
Integrating Cybersecurity,AI and IoT in STEM Curricula:A Framework for Future-Ready Education

Ajala Olakunle Abayomi

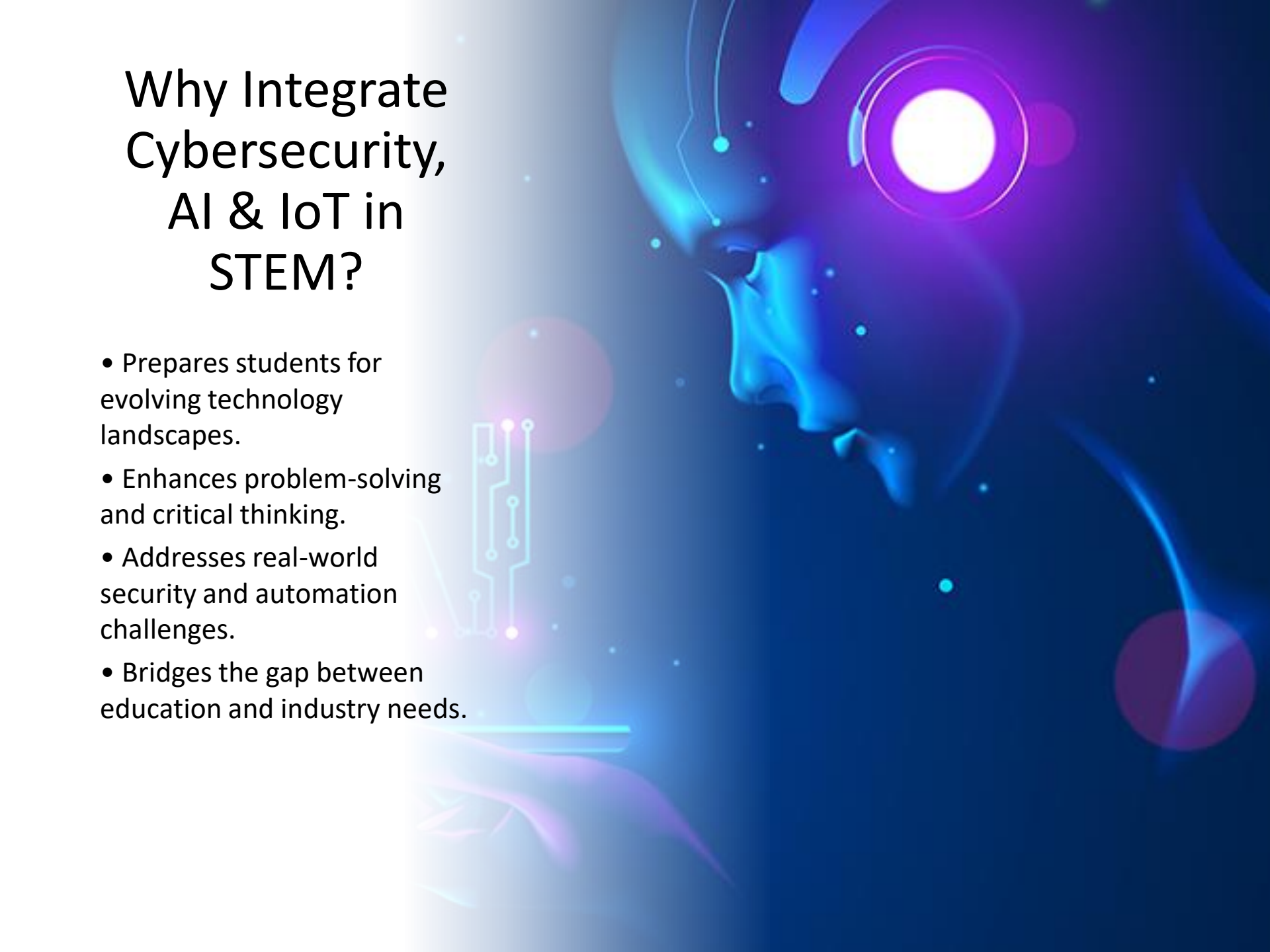
Conference Presentation



Introduction

- Cybersecurity, AI, and IoT are critical in modern education.
- STEM students need these skills to be future-ready.
- A framework integrating these technologies enhances hands-on learning and real-world applications.

Why Integrate Cybersecurity, AI & IoT in STEM?

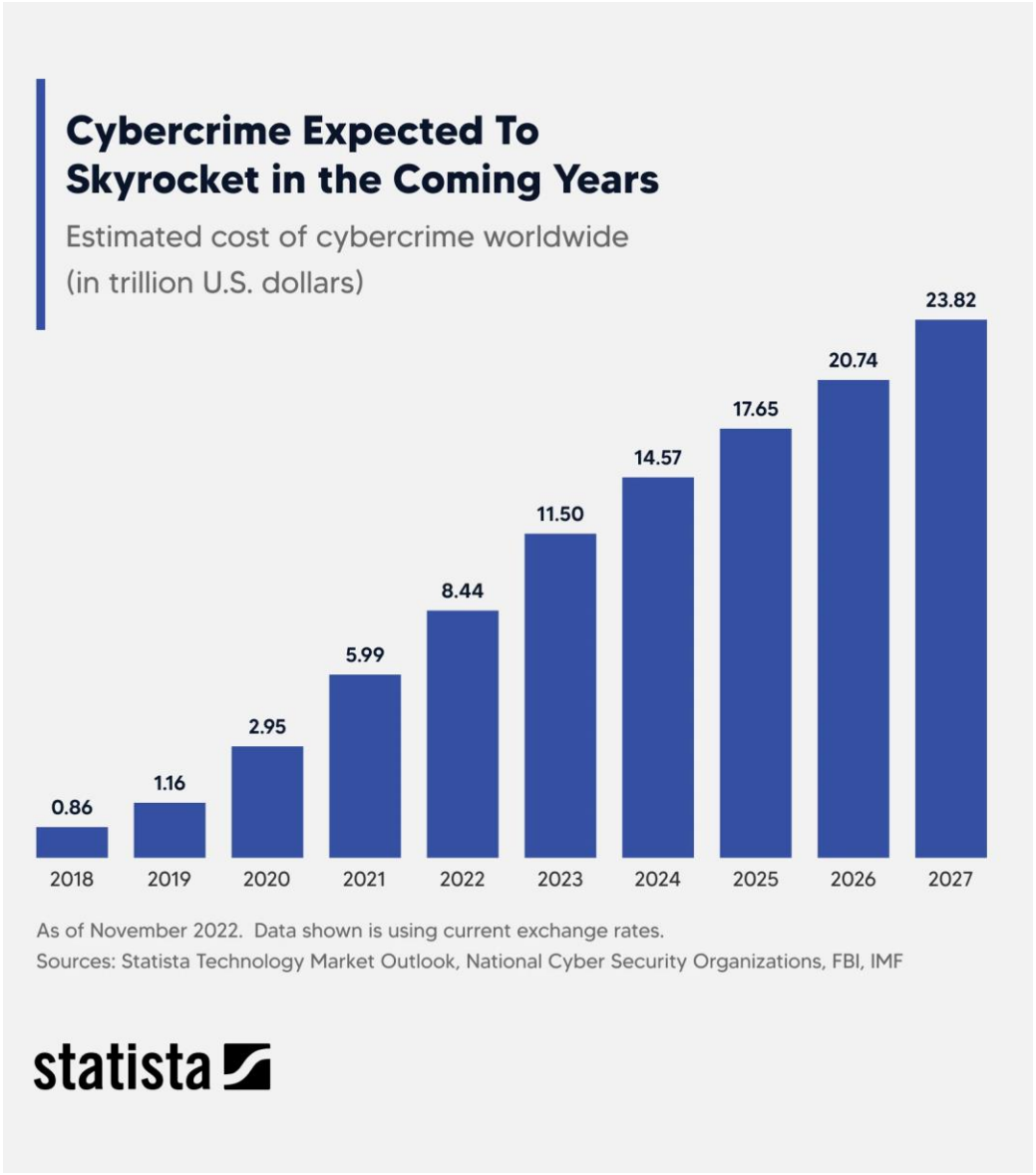


- Prepares students for evolving technology landscapes.
- Enhances problem-solving and critical thinking.
- Addresses real-world security and automation challenges.
- Bridges the gap between education and industry needs.

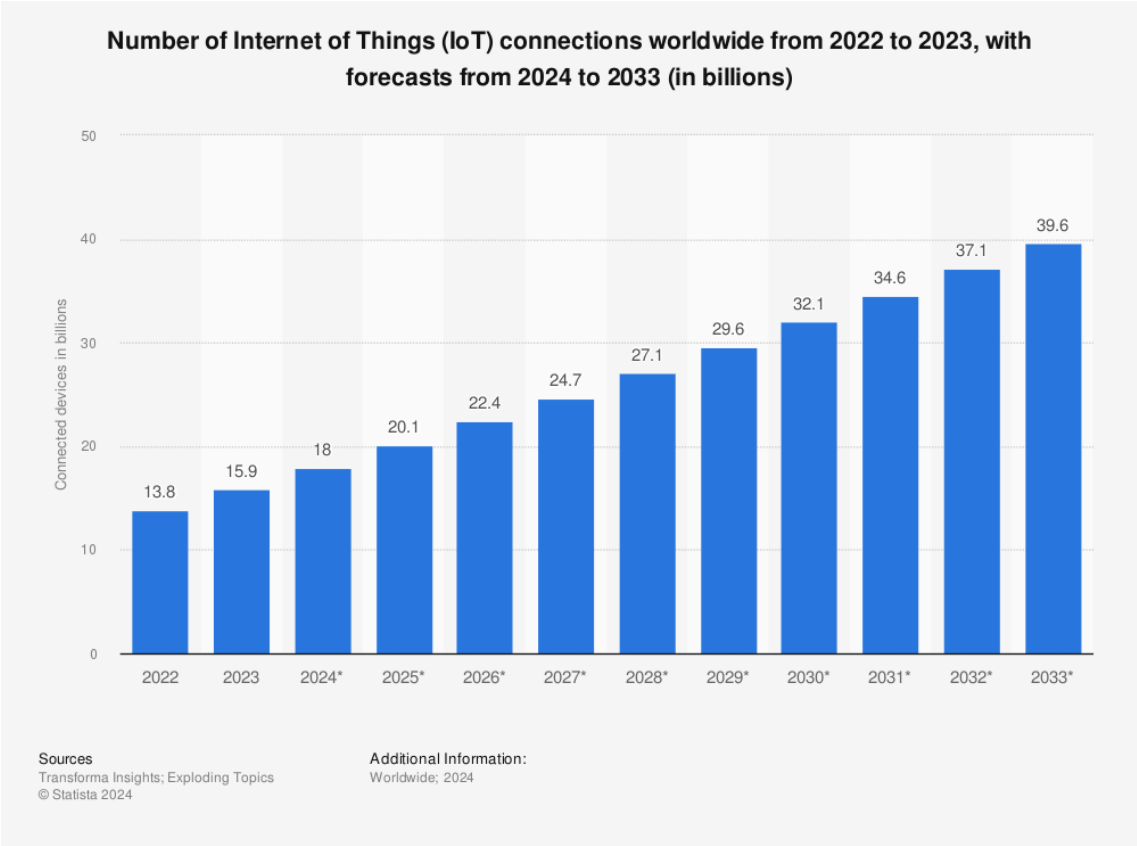
Key Components of the Framework

- Cybersecurity principles and best practices.
- AI applications in security and automation.
- IoT hands-on projects for practical learning.
- Interdisciplinary collaboration and project-based learning.

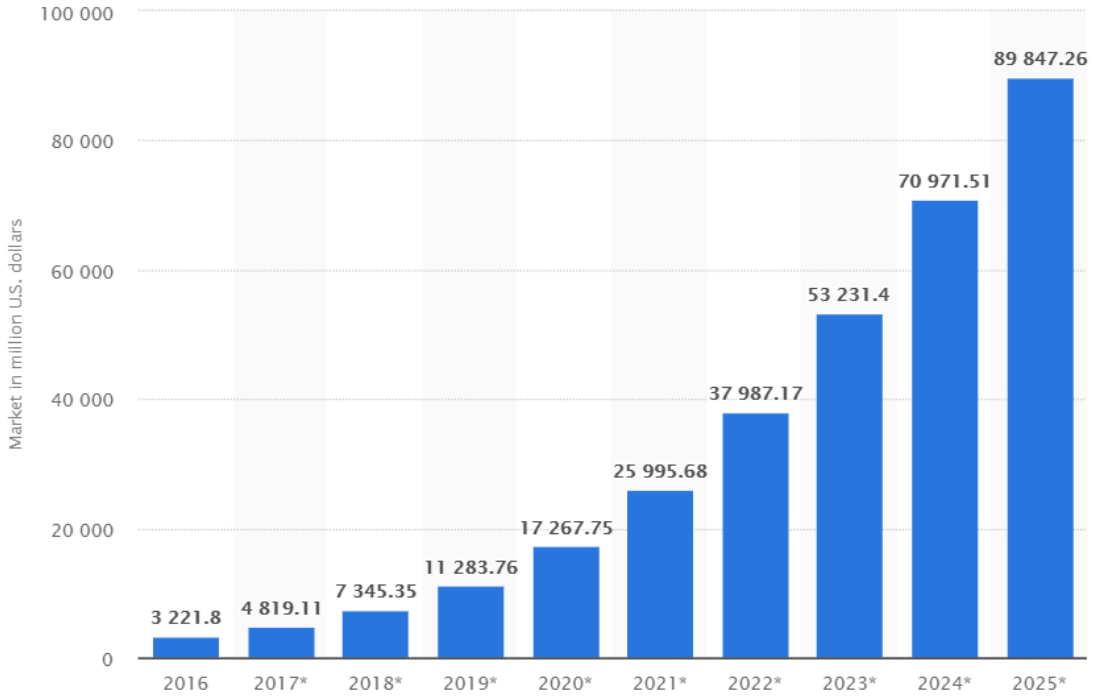
CYBERSECURITY GROWTH



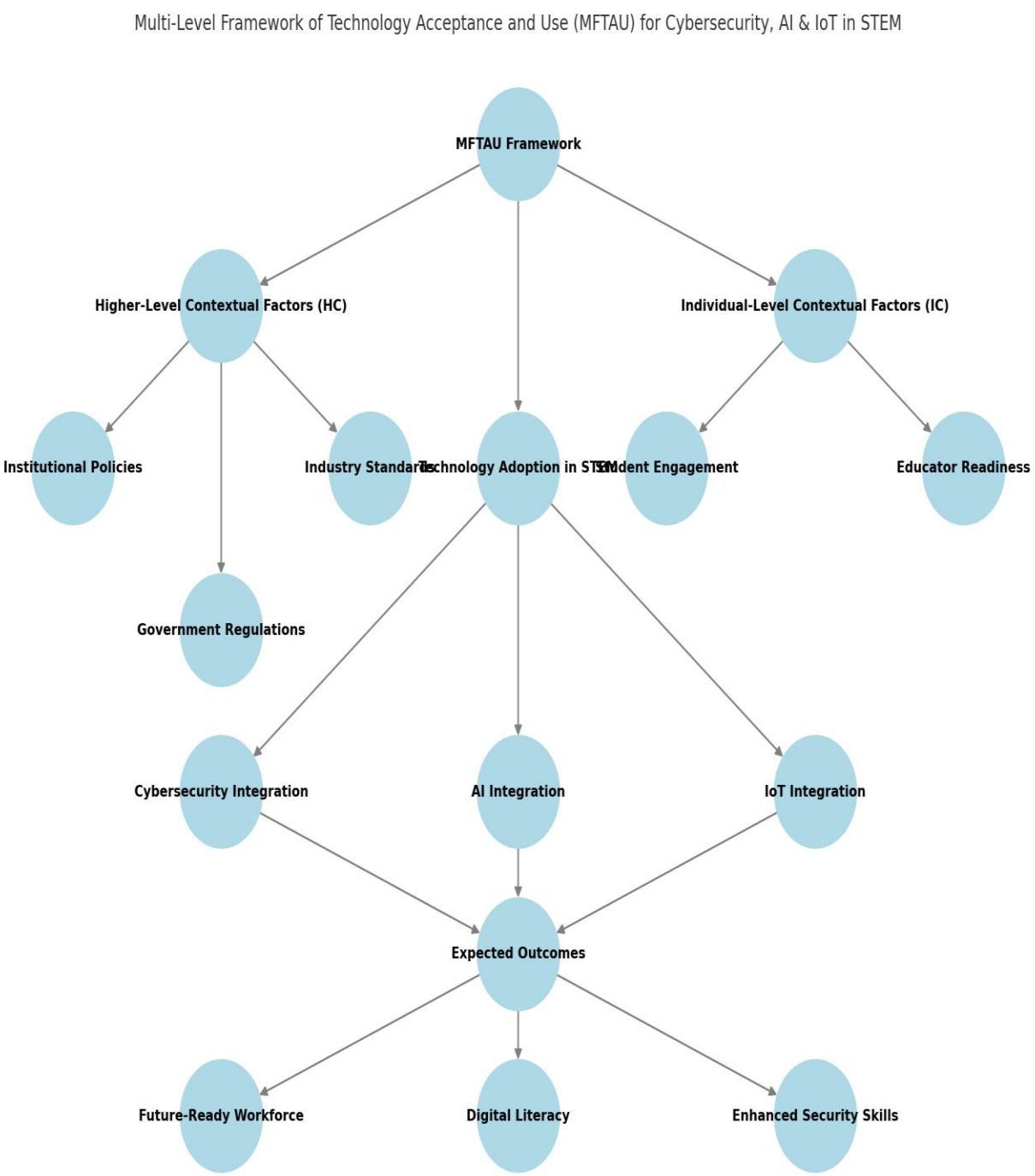
INTERNET oF THINGS GROWTH



AI GROWTH

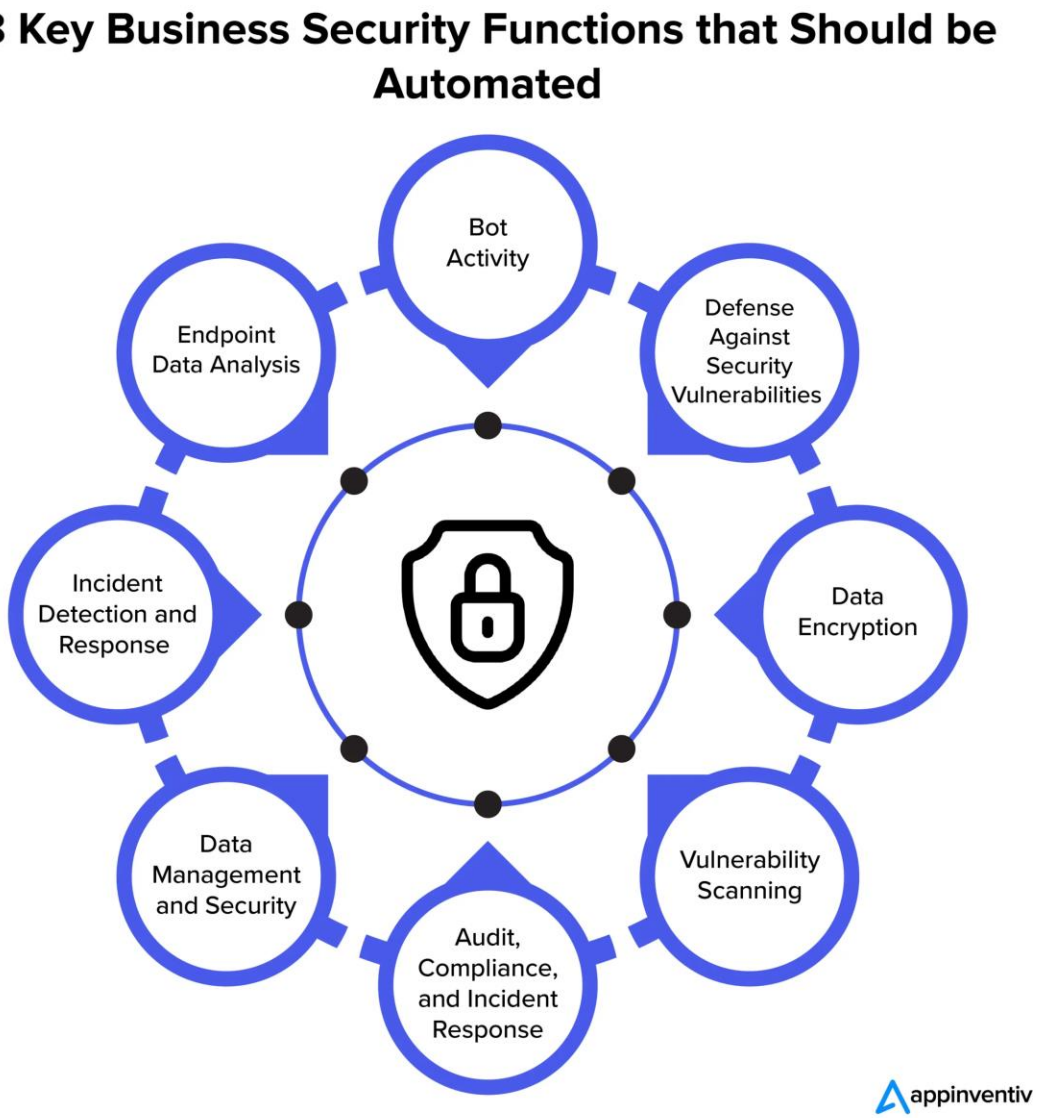

Market in million U.S. dollars
100 000
80 000
60 000
40 000
20 000
0
3 221.8
4 819.11
7 345.35
11 283.76
17 267.75
25 995.68
37 987.17
53 231.4
70 971.51
89 847.26
2016
2017*
2018*
2019*
2020*
2021*
2022*
2023*
2024*
2025*

MULTI-LEVEL FRAMEWORK OF TECHNOLOGY ACCEPTANCE AND USE

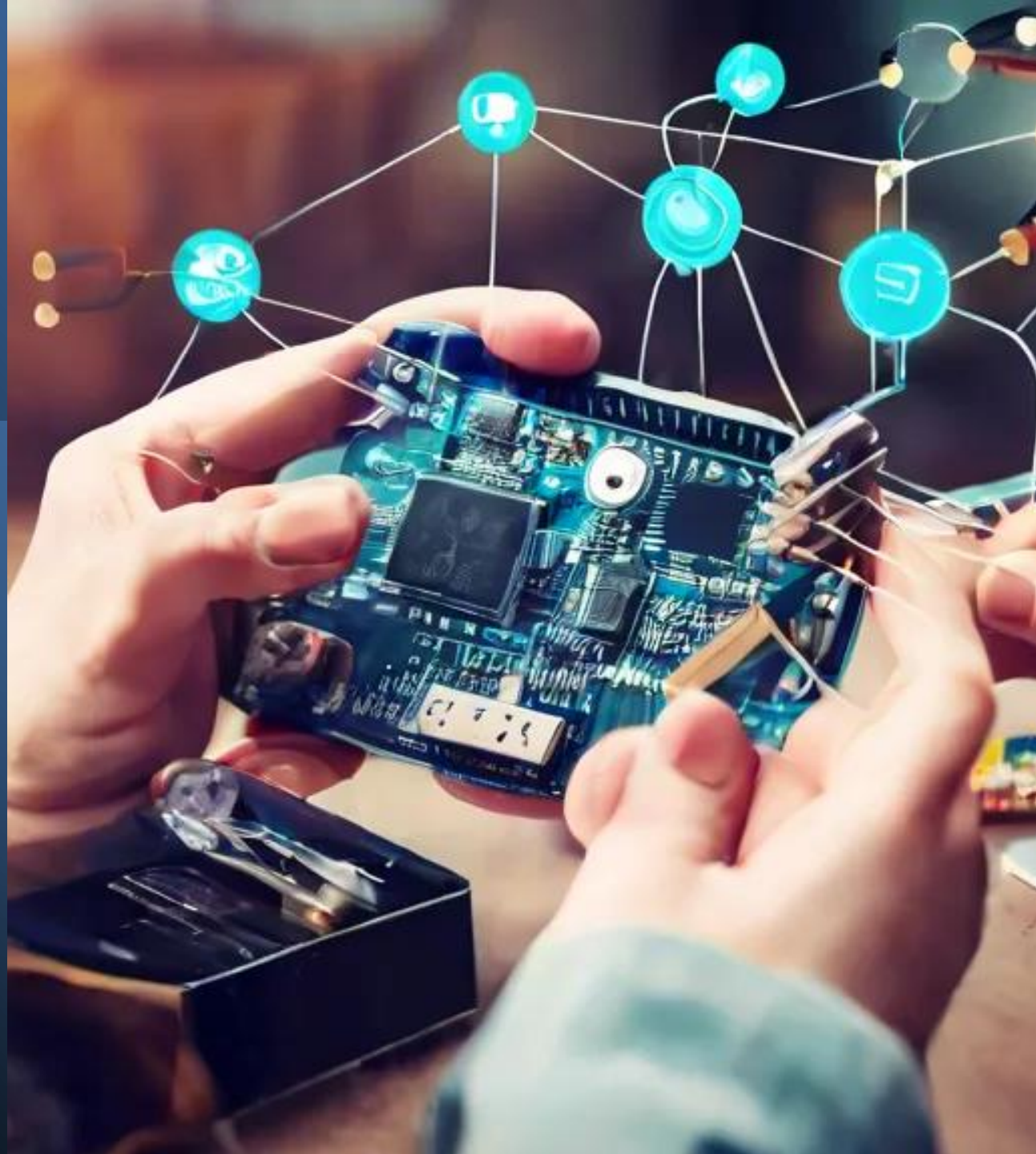


Cybersecurity principles and best practices.

AI applications in security and automation.



IoT hands-on projects for practical learning.



Interdisciplinary collaboration and project-based learning.

Implementation Strategies

- Develop structured curricula with real-world case studies.
- Introduce hands-on labs and cybersecurity simulations.
- Collaborate with industry experts for mentorship.
- Train educators in emerging technologies.

Challenges & Solutions

- Limited expertise → Educator training programs.
- Resource constraints → Industry partnerships.
- Rapid tech evolution → Continuous curriculum updates.
- Student engagement → Hands-on and interactive learning.

Future Implications

- STEM graduates with Cybersecurity, AI and IoT expertise will be in demand.
- A tech-savvy workforce can drive innovation and security.
- Continuous adaptation is key to preparing students for evolving industries.

Conclusion

- Integrating Cybersecurity, AI & IoT in STEM is essential.
- Prepares students for the digital workforce.
- Encourages innovation and security awareness.
- Collaboration among educators, industry, and policymakers is key.

Thank You!

Any question?

Email: ajalaolakunleabayomi@gmail.com,
daniel.ajala@myemail.indwes.edu,