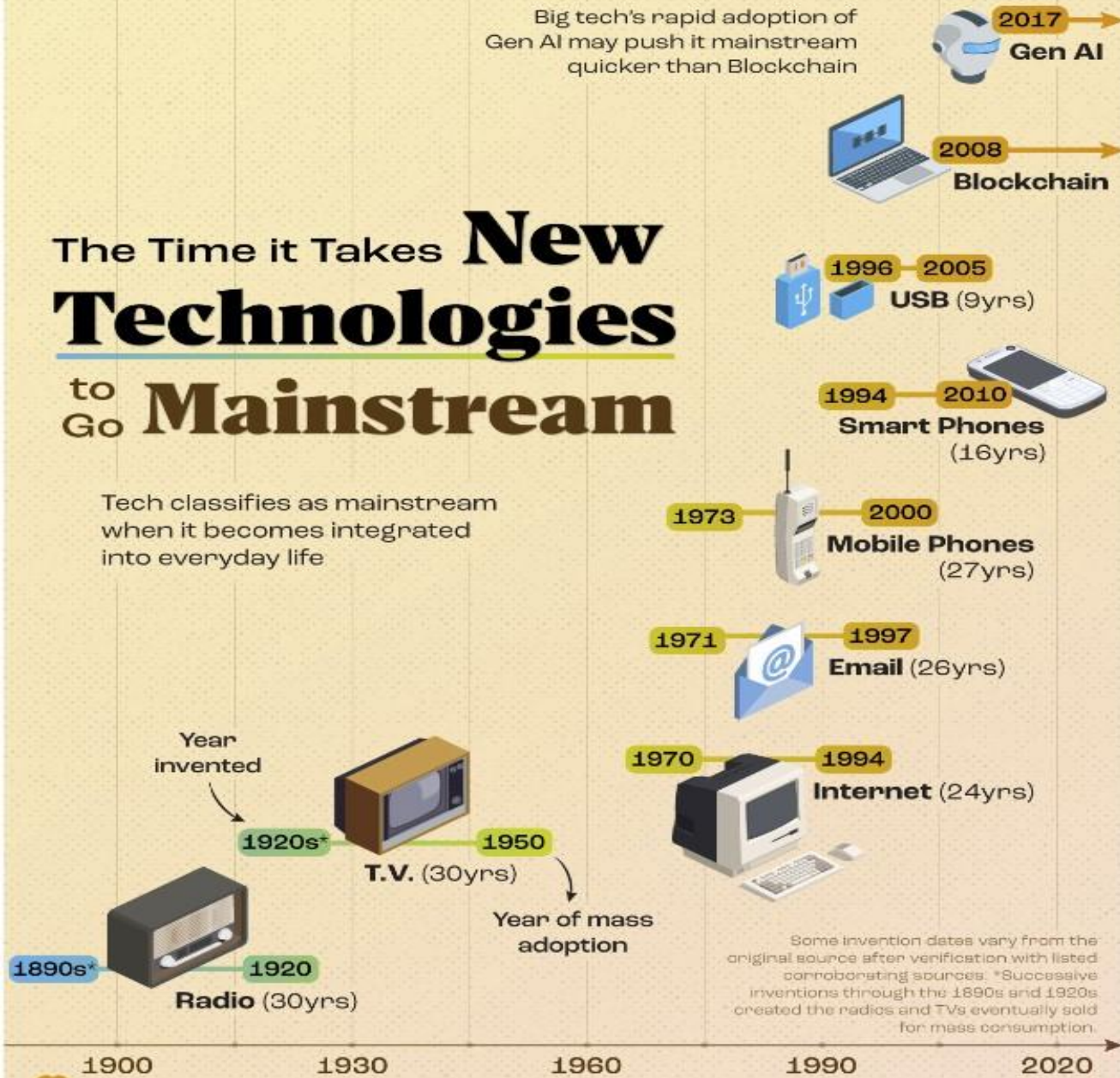


The Time it Takes **New Technologies** to Go **Mainstream**

Tech classifies as mainstream when it becomes integrated into everyday life

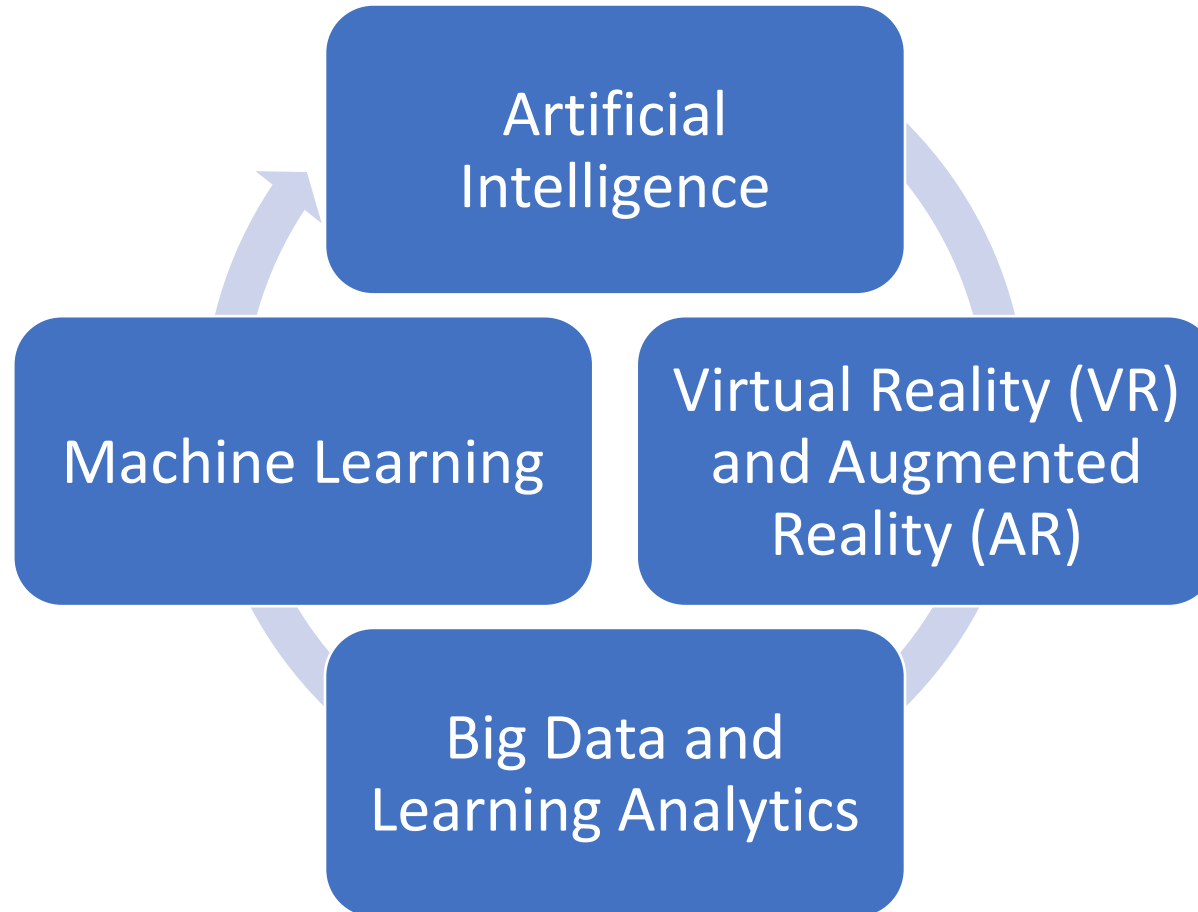
Big tech's rapid adoption of Gen AI may push it mainstream quicker than Blockchain



Navigating the Ethical Maze: Emerging Technologies and Pedagogies in Higher Education

Dr. Harika Rao
Associate Dean
Lynn University

Overview of the Emerging Technologies



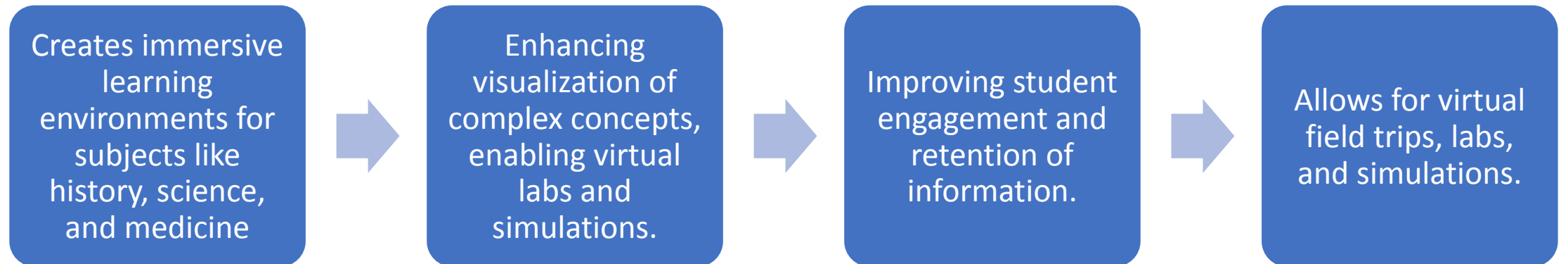
Artificial Intelligence (AI) and Machine Learning

Being used for personalized learning, adaptive learning systems, automated grading, predictive analytics for student success, and intelligent tutoring systems.

Transforming administrative tasks, student support services, and teaching methodologies.

Can be used for automated grading, intelligent tutoring systems, and predictive analytics to identify at-risk students

Virtual Reality (VR) and Augmented Reality (AR)



Big Data and Learning Analytics

Analyzing student data to improve learning outcomes and institutional effectiveness.

Enabling data-driven decision making in education.

Improving the alignment with assessment and accreditation compliance

Food for Thought: Integration of Emerging Technologies











Personalized, engaging, and effective educational experiences while also preparing students for a technology-driven future workforce.

However, thoughtful implementation that considers pedagogical needs is crucial for realizing their full potential in higher education.

Complex Landscape of Higher Education



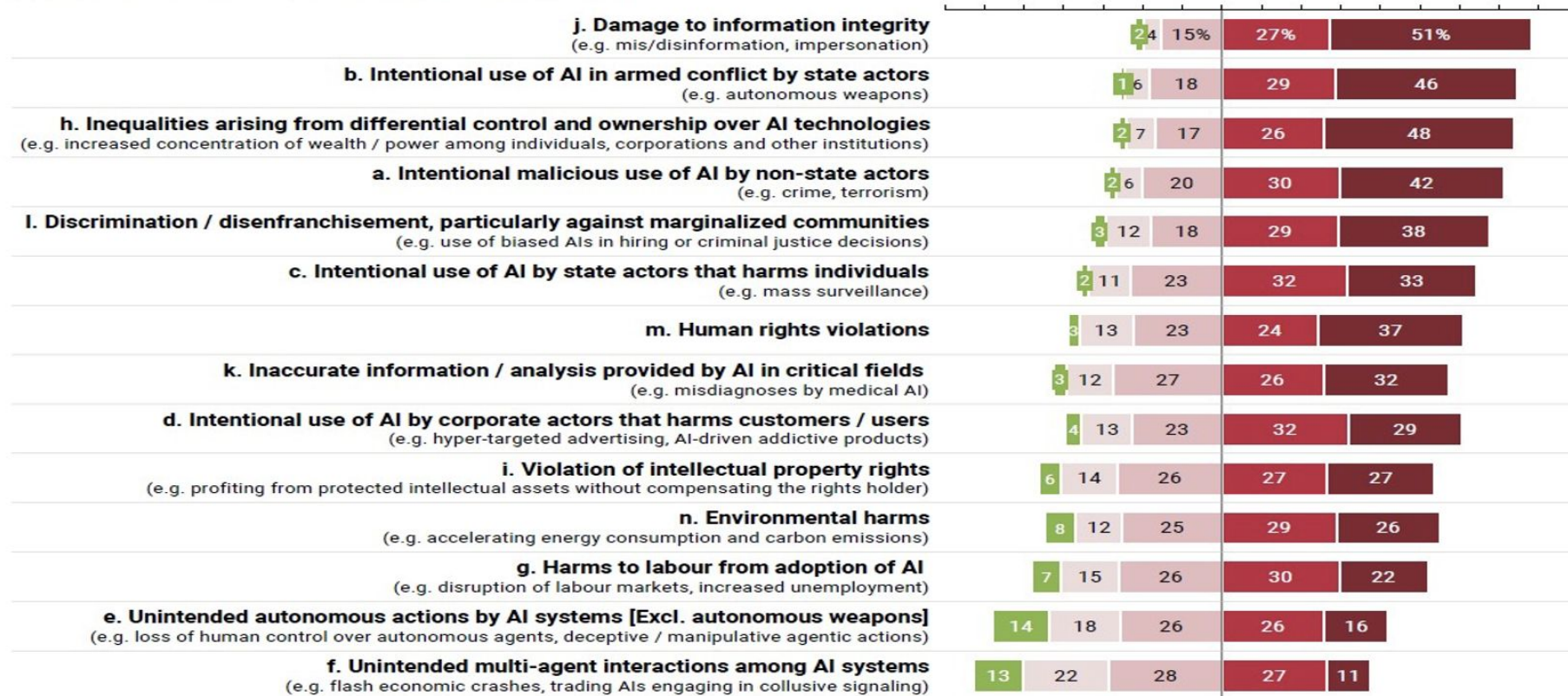
Top Countries For AI Preparedness

Rank	↕ Country	↕ AI Preparedness Index Score (0-1)	↕
1	 Singapore	0.80	
2	 Denmark	0.78	
3	 United States	0.77	
4	 Netherlands	0.77	
5	 Estonia	0.76	
6	 Finland	0.76	
7	 Switzerland	0.76	
8	 New Zealand	0.75	
9	 Germany	0.75	
10	 Sweden	0.75	

Experts' Level of Concern about AI Risks Across Multiple Domains

"Please rate your current level of concern that (existing or new) harms resulting from AI will become substantially more serious and/or widespread in the next 18 months for each area." (n = 348)

■ 1 Not concerned
 ■ 2 Slightly concerned
 ■ 3 Somewhat concerned
 ■ 4 Concerned
 ■ 5 Very concerned



Ethical Dilemmas in Higher Education

Academic Integrity

- The challenge of maintaining honesty in student submissions.

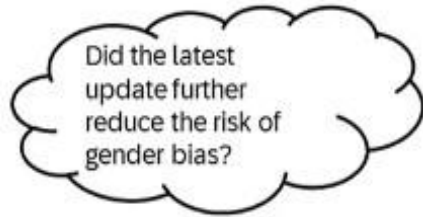
Algorithmic Bias

- The risk of unfair treatment due to biased algorithms in decision-making.

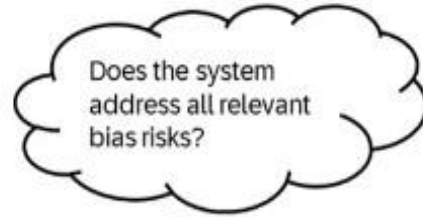
Data Privacy

- Protecting sensitive student information from unauthorized access.

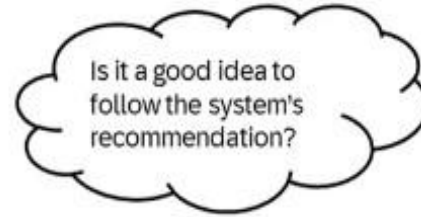
What human stakeholders need to understand



AI developer ¹



AI ethicist ²



AI end-user ³



Affected user ⁴



technical context
AI explainability



AI interpretability
real-world context



¹ or AI technology expert / theorist / data scientist / system builder / human on the loop / ...

² or assessor / regulator / regulatory body / ...

³ or business user / decision maker / domain-expert / human in the loop / ...

⁴ or impacted user / data subject / end-consumer / ...

Academic Integrity Challenges

Students increasingly use AI tools to generate essays and assignments. This trend raises concerns about originality and authenticity in academic work

Impact on Learning:

- Submitting AI-generated work undermines the learning process
- Devalues academic qualifications as students may not engage with course material meaningfully

AI Policies are Low, Use is High, and Adversaries are Taking Advantage

With Few Policies in Place



ONLY
28%




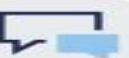

OF ORGANIZATIONS SAY
their companies expressly permit
the use of generative AI.



YET
41%

SAY THEIR ORGANIZATION'S
employees are using it regardless,
and another **35% aren't sure.**

HOW GENERATIVE AI IS BEING USED:

-  **65%** To create written content
-  **44%** To increase productivity
-  **32%** To automate repetitive tasks
-  **29%** To deliver customer service
-  **27%** To improve decision-making

AI Policies are Low, Use is High, and Adversaries are Taking Advantage



ONLY 10%

say their organization has a formal, **comprehensive policy** for generative AI.

MORE THAN 1 IN 4 say no policy exists and there is no plan for one.

Lack of Training and Low Attention to Ethical Implementations Can Lead to Increased Risks

ONLY 6%

of organizations are **providing training** to all staff on AI.

54%

say **no AI training** at all is provided, even to teams directly impacted by AI.

41%

say not enough attention is being paid to **ethical standards** for AI implementation.



AI Policies are Low, Use is High, and Adversaries are Taking Advantage

RISK MANAGEMENT NEEDS TO BE PRIORITIZED



FEWER THAN ONE-THIRD

of organizations say AI risk is an **immediate priority**.



Bad Actors Are Mastering AI More Quickly Than Digital Trust Professionals Are

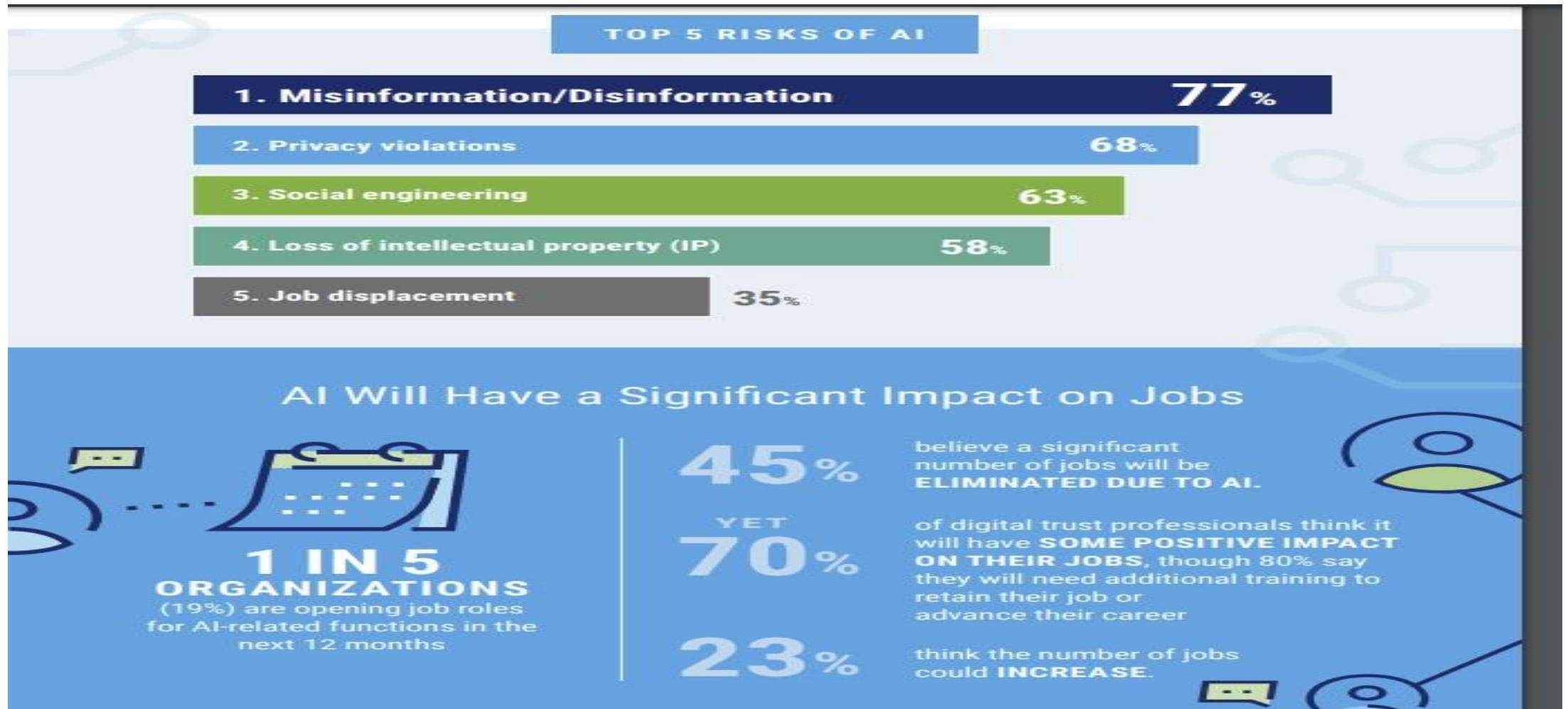


ARE VERY OR EXTREMELY WORRIED about generative AI being exploited by bad actors.

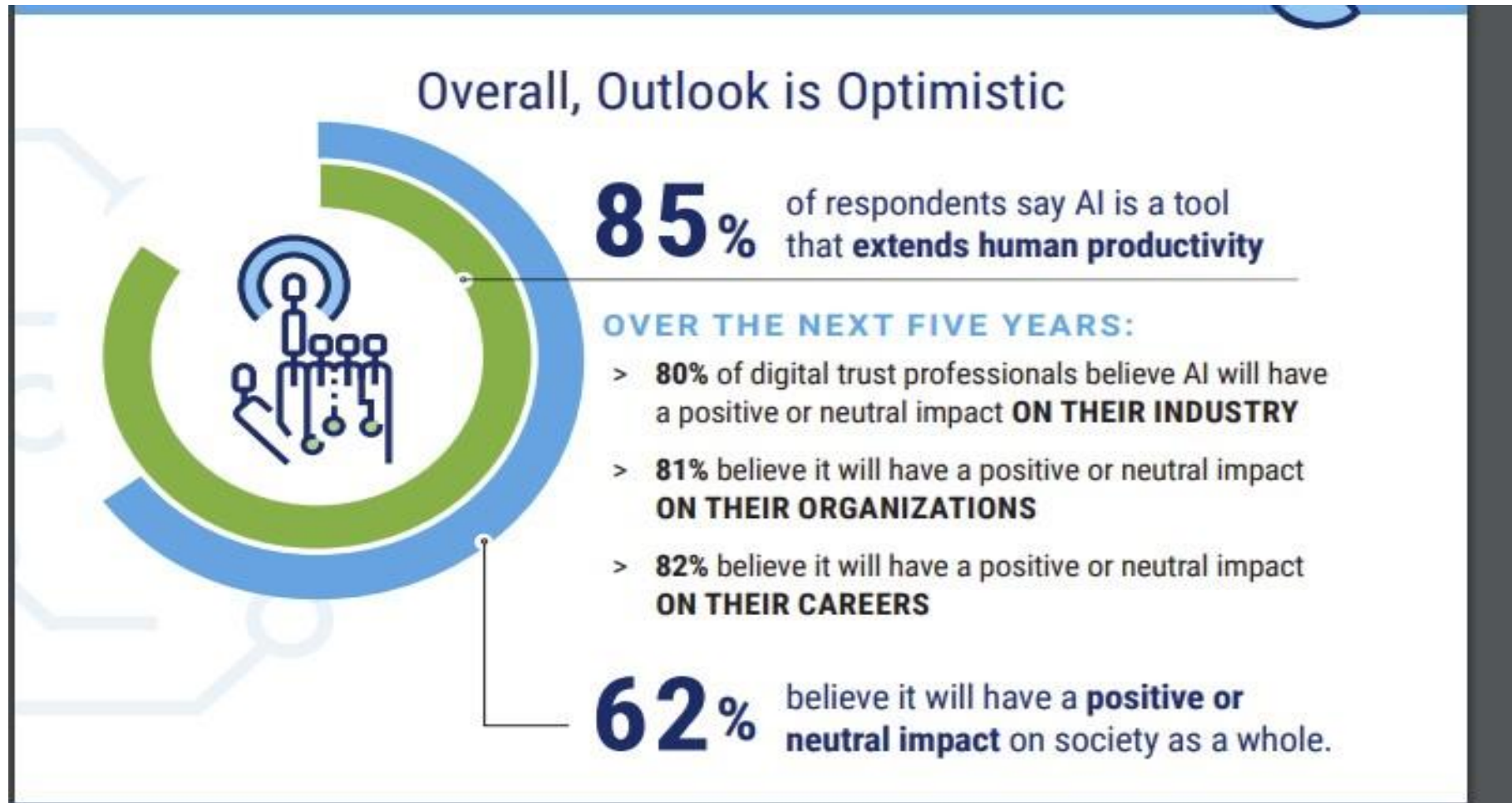


SAY ADVERSARIES ARE USING AI as successfully or more successfully than digital trust professionals currently are.

AI Policies are Low, Use is High, and Adversaries are Taking Advantage



AI Policies are Low, Use is High, and Adversaries are Taking Advantage



Consequences of AI on Learning

Diminished Engagement:

- Students may prioritize quick solutions over deep understanding, leading to superficial learning

Erosion of Critical Thinking Skills:

- Dependence on AI tools can hinder the development of essential skills such as analysis, evaluation, and synthesis

Long-term Implications:

- Graduates may enter the workforce lacking necessary competencies for problem-solving and critical thinking

Algorithmic Bias in Decision-Making

Lack of Transparency:

- Many AI algorithms operate as "black boxes," making it difficult to understand how decisions are made

Need for Accountability:

- Institutions must ensure that AI systems are not only effective but also transparent in their operations

Strategies for Improvement:

- Implementing audits and assessments of AI systems to identify biases and ensure fairness

Data Privacy Concerns

Extensive Data Collection:

- AI tools often require significant amounts of personal data for effective functioning.

Risks to Sensitive Student Information:

- Unauthorized access or mishandling can lead to breaches of privacy

Potential Violations and Consequences:

- Breaches can damage trust between students and institutions, leading to reluctance in sharing personal information.

9 Problems with Generative AI

Generative AI tools are demonstrating massive potential. But right now, many of them are also demonstrating potential for harm.

Themes

Quality Control & Data Accuracy

Ethical & Legal Considerations

Complexity & Technical Challenges



1

Bias in, bias out

Generative AI tools reproduce content as biased as the data they were trained on.



2

Black box

Generative AI decisions are opaque and unexplainable. They hinder accountability, trust and potentially lead to unjust outcomes.



3

Expensive

Ex-CEO of OpenAI, Sam Altman, confirmed GPT-4 cost more than \$100 million to train.

4

Mindless parroting

Generative AI's output is tightly bound to the caliber and volume of its training data. Its output can only be as good as its training input.

5

Alignment with human values

Generative AI lacks the capacity to model the consequences or ethical implications of its decisions.

6

Power hungry

ChatGPT's daily queries are estimated to cost the equivalent of powering 33,000 US households.

7

Hallucinations

Generative AI has the tendency to confidently spew inaccurate information or simply make up facts.

8

Copyright & IP infringement

Several Gen AI models appropriated copyrighted material and intellectual property with no consent, credit, or compensation.

9

Static

Generative AI models cannot update their knowledge in real-time or generate new ideas which may lead to misinformation.

Sources: 1. Bloomberg, 2. cpq.se, 3. Wired, 4. Lingora, 5. Roost.ai, 6. University of Washington, 7. Forbes, 8. PR Newswire, 9. PC Mag
Themes sourced from: Profolus

VERSES is committed to creating intelligent software that wields transparent decision-making and prioritizes explainability, auditability and accountability.



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Why should institutions respond to Ethical Responses?

Institutional Responses to Ethical Challenges

What can institutions do?

- Institutions must develop clear guidelines governing the ethical use of generative AI.

1. Upskilling Faculty:

- Training programs on ethical implications of AI use in education.
- Workshops on integrating technology responsibly into curricula.

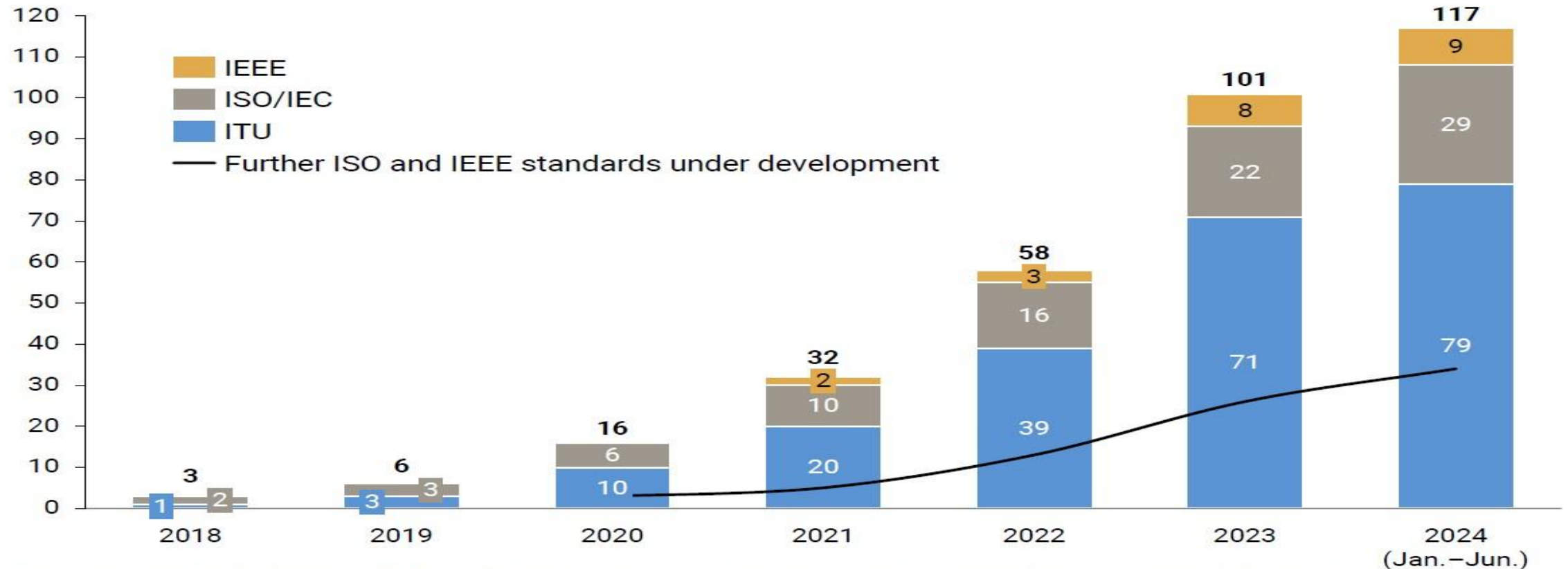
2. Stakeholder Consultation:

- Regular engagement with faculty, students, and industry experts to stay updated on technology trends.
- Creating forums for discussion on ethical dilemmas arising from technology use.

3. AI-resistant Assessment Rubrics:

- Designing assessments that encourage original thought and critical engagement while minimizing reliance on AI tools.

Number of Standards related to AI



Sources: IEEE, ISO/IEC, ITU, World Standards Cooperation (based on June 2023 mapping, extended through inclusion of standards related to AI).

Global Regulatory Frameworks

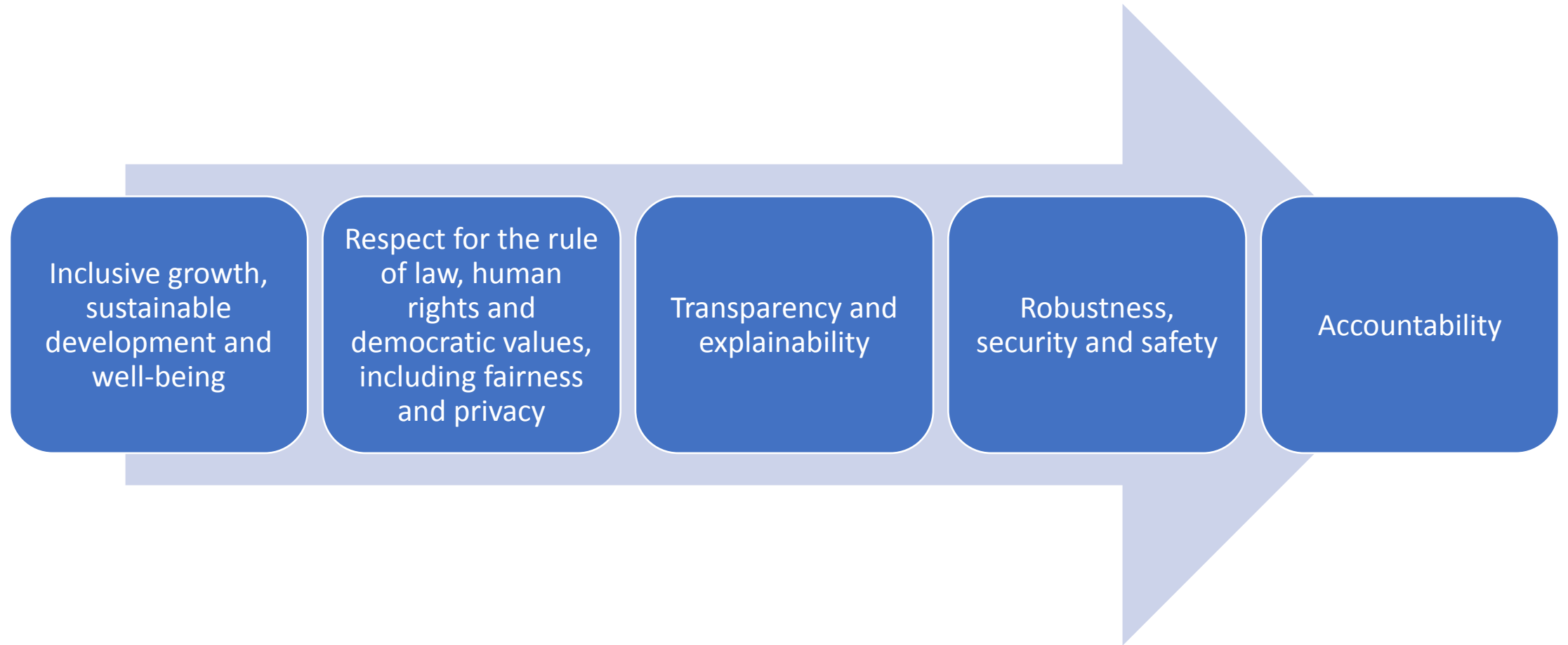
International Organizations Involved:

- European Union, UNESCO, OECD have developed frameworks addressing ethical concerns related to AI in education (Mahrishi et al., 2024).

Policy Frameworks Developed:

- Guidelines for institutions include best practices for ethical technology use.
- Emphasis on transparency, accountability, and inclusivity in policy formulation.

OECD-Recommendation of the Council on Artificial Intelligence




Status of AI- specific legislation

On September 12, 2023, the US Senate held public hearings regarding AI, which laid out potential forthcoming AI regulations.

Possible legislation could include requiring licensing and creating a new federal regulatory agency. Additionally, US lawmakers held closed-door listening sessions with AI developers, technology leaders and civil society groups on September 13, 2023 in a continued push to understand and address AI.

Several Federal Proposed Laws Related to AI

The SAFE Innovation AI Framework, which is a bipartisan set of guidelines for AI developers, companies and policymakers. This is not a law, but rather a set of principles to encourage federal law-making on AI



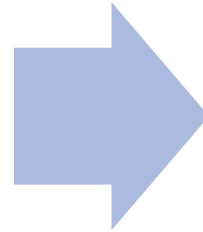
The REAL Political Advertisements Act, which aims to regulate generative AI in political advertisements



The Stop Spying Bosses Act, which aims to regulate employers surveilling employees with machine learning and AI techniques

Several Federal Proposed Laws Related to AI

The Draft No FAKES Act, which would protect voice and visual likenesses of individuals from unauthorized recreations from Generative AI



The AI Research Innovation and Accountability Act, which calls for greater transparency, accountability and security in AI, while establishing a framework for AI innovation. It would create an enforceable testing and evaluation standard for high-risk AI systems and require companies that use high-risk AI systems to produce transparency reports. It also empowers the National Institute of Standards and Technology to issue sector-specific recommendations to regulate them

State Legislatures

On May 17, 2024, Colorado enacted the first comprehensive US AI legislation, the Colorado AI Act.

The Act creates duties for developers and for those that deploy AI. The Act focuses on automated decision-making systems and defines a covered high-risk AI system as one that "when deployed, makes, or is a substantial factor in making a consequential decision."

There is a specific focus on bias and discrimination, and developer and deployers must use reasonable care to avoid discrimination via AI systems that make, or are a substantial factor in making a consequential decision.

The Act will go into effect in 2026

State Legislatures

The California Consumer Privacy Act, which contains provisions on the use of automated decision-making tools.

Additionally, the California Privacy Protection Agency released draft rules on these provisions governing consumer notice, access and opt-out rights with respect to automated decision-making technology, which the rules define broadly.

The regulations are still being finalized but will likely cover expanded uses of AI.

The draft rules, which are not expected to be formalized until sometime in 2024, would require significant disclosure about businesses' implementation and use of ADMT.

State Legislatures

More than 40 state AI bills were introduced in 2023, with Connecticut¹⁷ and Texas¹⁸ actually adopting statutes.

Both of those enacted statutes establish state working groups to assess state agencies' use of AI systems to ensure they do not result in unlawful discrimination

University of Michigan's UM-GPT

The University of Michigan launched UM-GPT, providing free access to AI tools for students, staff, and faculty.



This initiative promotes equity and accessibility in AI use across the campus community.



They also developed custom chatbots like Maizey to provide tailored support, and a GPT Toolkit to empower educators in developing AI-assisted teaching tools

University of California Berkeley's Responsible AI Working Group

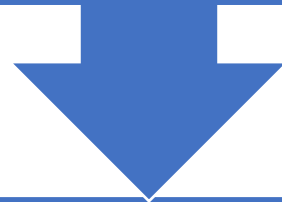
University of California Berkeley's Responsible AI Working Group:
UC Berkeley established a Responsible AI Working Group to advocate for
tailored AI solutions that meet specific institutional needs.



This group focuses on leveraging the multi-campus structure of
universities for effective and equitable AI implementation while
managing costs

University of Delaware's Generative Study Tools

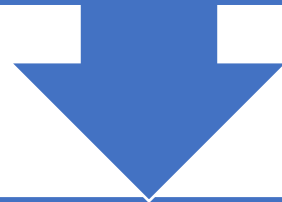
The University of Delaware has focused on developing generative study tools that leverage lecture capture content.



Their approach emphasizes ethical considerations, including obtaining consent, mitigating bias, and prioritizing human well-being in AI implementation

University of Wisconsin-Madison's Trustworthy AI Guidelines

UW-Madison encourages its community to choose AI tools and services that exhibit the NIST's characteristics of trustworthy AI.



This approach aims to protect users and promote responsible AI
usage

Purdue University's Flexible Approach

Purdue University continues to support the autonomy and choice of faculty and instructors to utilize instructional technology that best suits their teaching and learning environments.

As such, there is no official university policy restricting or governing the use of Artificial Intelligence, Large Language Models or similar generative technologies.

However, as a result of considerable interest and requests from instructors, Innovative Learning has compiled several resources and suggestions for exploring the effect of these tools on your teaching practice.

Microsoft's AETHER Committee

While not a university, Microsoft's approach is relevant to higher education.

They established the AETHER Committee to evaluate normative questions related to AI, providing a model for how universities might approach ethical considerations in AI

Future With AI

Artificial Intelligence Framework

Ethical Principles

Empower stakeholders to exercise situated judgement about the use of AI

Guide for Understanding Risk

Enables critical reflection on potential risks

Advisors

Support reflection and decision-making

Oversight Committees

Existing committees that may increasingly be required to assess emerging or contentious use proposals

Guidelines for Responsible Use

Enable productive and ethical practices

Knowledge Base

Develops knowledge and skills in AI use

AI Competency Framework for Students

Competency aspects	Progression levels		
	Understand	Apply	Create
• Human-centred mindset	• Human agency	• Human accountability	• Citizenship in the era of AI
• Ethics of AI	• Embodied ethics	• Safe and responsible use	• Ethics by design
• AI techniques and applications	• AI foundations	• Application skills	• Creating AI tools
• AI system design	• Problem scoping	• Architecture design	• Iteration and feedback loops

AI Competency Framework for Teachers

Aspects	Progression		
	Acquire	Deepen	Create
1. Human-centred mindset	Human agency	Human accountability	Social responsibility
2. Ethics of AI	Ethical principles	Safe and responsible use	Co-creating ethical rules
3. AI foundations and applications	Basic AI techniques and applications	Application skills	Creating with AI
4. AI pedagogy	AI-assisted teaching	AI–pedagogy integration	AI-enhanced pedagogical transformation
5. AI for professional development	AI enabling lifelong professional learning	AI to enhance organizational learning	AI to support professional transformation

AI and Education: 7 Seven Principles for AI in Education



Future of Work

- **2025:** Technology requires constant re/upskilling by workers.
- **2026:** Job tasks are partially automated.
- **2029:** New technologies create new types of occupations and industries.
- **2030:** More and more occupations are augmented by AI, helping people work more efficiently and productively.
- **2033:** Major ecological disasters occur.
- **2035:** Economic inequality increases dramatically.
- **2037:** People work alongside robot colleagues. More and more jobs are entirely replaced by technology.
- **2042:** Third world war breaks out.
- **2044:** Surveillance societies become the norm worldwide.
- **2046:** Automation leads to shorter workweeks, increased leisure time, and a renaissance of human craftwork.

- **2050:** Labor markets worldwide are faced with mass unemployment.
- **2051:** Governments introduce universal basic income.
- **2052:** Humanity depends on technology for everything.
- **2053:** Breakthroughs in longevity research drastically extend the lifespan of the technocratic elite.
- **2063:** Technocratic elites start colonizing other planets.
- **2065:** All human qualities are surpassed by intelligent technology.
- **2074:** Human civilization is irreversibly changed by an uncontrollable superintelligence beyond our comprehension (technological singularity).

AI and the Future of Skills

Real-World Tasks

educational, occupational, daily life ...

Human Capability Frameworks

cognitive, developmental, social-emotional, perceptual, psychomotor

...

Missing AI Capabilities

common sense, personal experience, object permanence, pronoun referents ...

Source: Elliott, S. (2021^[3]), "Building an assessment of artificial intelligence capabilities", in AI and the Future of Skills, Volume 1 <https://doi.org/10.1787/01421d08-en>.

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