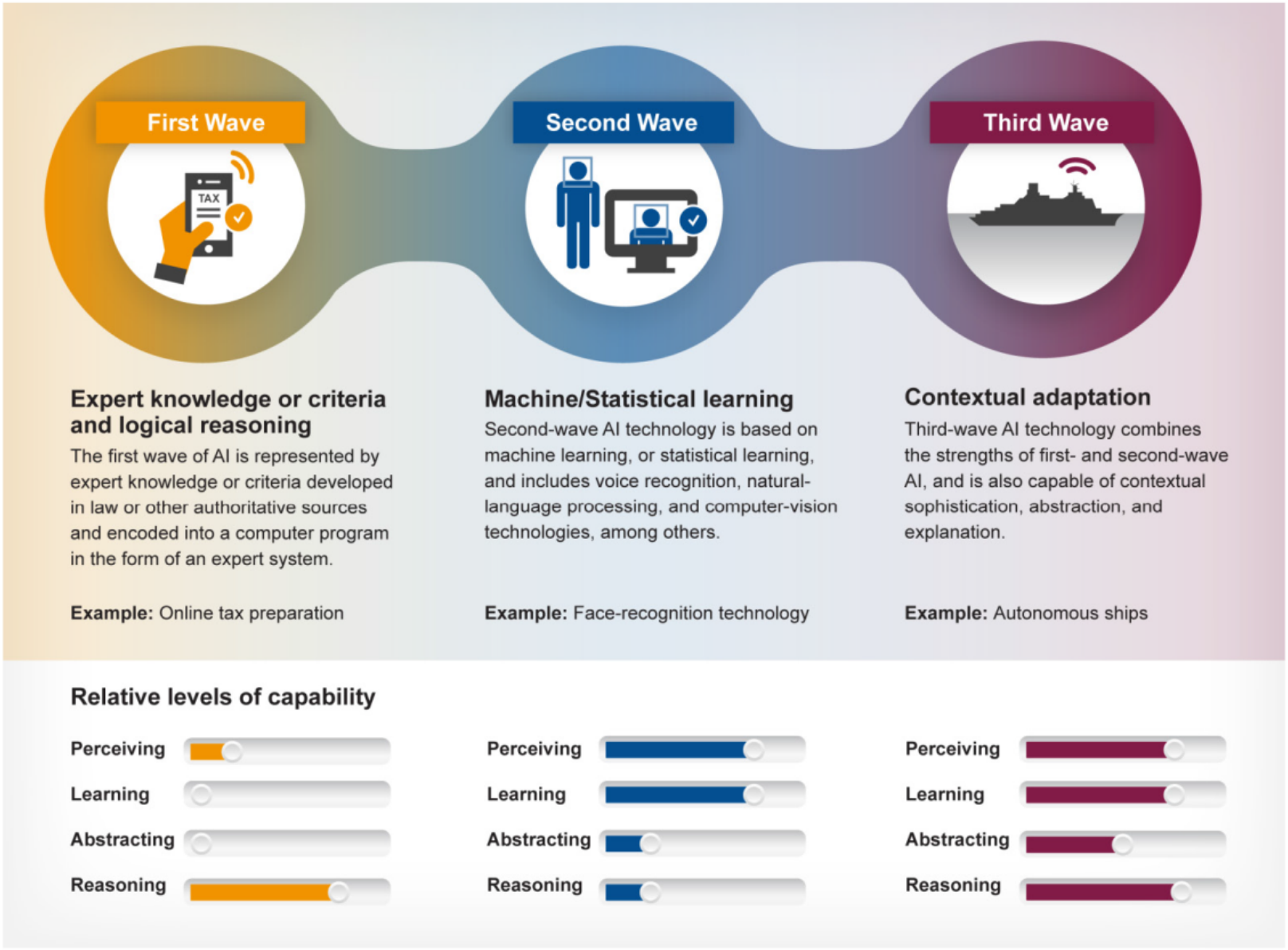
GAO United States Government Accountability Office

TECHNOLOGY ASSESSMENT

Artificial Intelligence

Emerging Opportunities, Challenges, and Implications

Three Waves of AI



Source: Defense Advanced Research Projects Agency (DARPA) information; Art Explosion (art). | GAO-18-142SP

AI and High-Consequence Applications

	Selected Questions
 **Cybersecurity** AI applications face threats from cybersecurity attacks, but AI also may be used as a tool for detecting and defending against attacks.	▸ How can autonomous systems be made secure, without stifling innovation? ▸ How useful is a risk-based approach to determining if machine-learning algorithms adhere to legal requirements or ethical norms?
 **Automated Vehicles** Automated vehicles hold promise for increasing driving safety and providing enhanced mobility, but pose challenges for assuring increased safety.	▸ What is the appropriate regulatory framework for automated vehicle safety assurance? ▸ What are the roles of federal, state, and local governments in infrastructure adaptation and addressing issues of liability and enforcement?

AI and High-Consequence Applications

Criminal Justice

The use of AI in criminal justice may improve the allocation of law enforcement resources and has the potential to reduce crime and jail populations, but also raises concerns about privacy and civil rights violations.

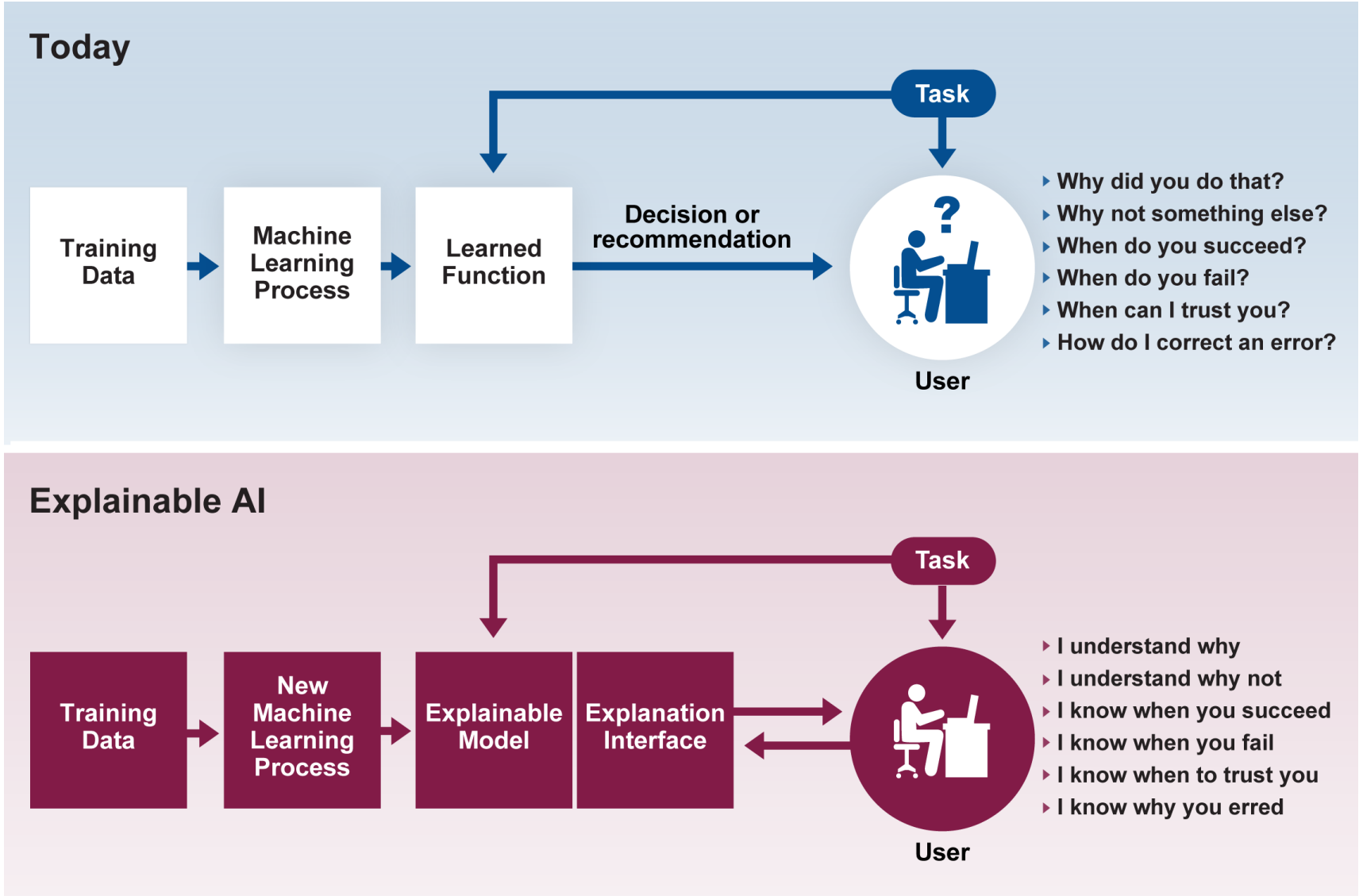
- What are the options for assessing accuracy and the potential for bias in AI data and algorithms?
- What are solutions for safeguarding privacy in the collection and use of personal information by AI systems?

Financial Services

The use of AI in financial services could improve client services and enhance surveillance monitoring, but also poses challenges to ensuring fair lending, attracting and retaining staff with requisite skills, and maintaining hardware and software.

- What are the mechanisms to address ethical considerations, tradeoffs, and protections?
- How can regulatory sandboxes be used to test new AI products, services, and business models?

Explainable AI



Source: GAO and Defense Advanced Research Projects Agency (DARPA). | GAO-18-142SP

Cross-Sector Policy and Research Considerations

- Safety and security
- Assessing acceptable risks & ethical decision making
- Updating regulatory approaches
- Incentivizing data sharing

Cross-Sector Policy and Research Considerations

- Computational ethics and explainable AI
- Regulatory sandboxes
- Effects on employment, training and education
- Developing high-quality data