Technology Predictions 2026

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IEEE Computer Society technology experts have unveiled 26 breakthrough technologies set to redefine industries and shape the future of our world for decades to come.

What's next in computer and software technology? Computing is no longer just evolving. It is reshaping every industry, from energy and health care to space and mobility. Each year brings breakthroughs that redefine how we build, operate, and trust technology. Staying ahead means knowing not just what's next, but what will matter.

For the past 16 years, every January, the IEEE Computer Society has identified technologies most likely to succeed in the year ahead. In recent years, this effort has expanded and formalized beyond traditional computing, covering areas, such as power and energy, space, health technology, and more. At the same time, we have strengthened the team's global representation and gender diversity to ensure these predictions reflect the full breadth of innovation and impact worldwide.

The 114-member 2026 Technology Predictions team foresees the following:

- accelerated growth in many artificial intelligence (AI) facets, requiring reskilling of the workforce
- increased focus on new sources of power and energy to feed the demanding applications of AI
- ever-increasing automation in many dimensions, setting the stage for additional AI opportunities
- emergence of health/biotech/aggrotech and personal assistants by wearables and physical AI.

Our flagship chart is presented in Figure 1.

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The 26 technology predictions for 2026 were broadly made in six categories: verticals (10), applied AI (six), user interfaces (two), nonfunctional characteristics (two), applied computing (four), and energy-related (two).

The team evaluated technologies for their likelihood of success in 2026 (*x axis*), impact on humanity (*y axis*), maturity (color-coded from very early to commercialization), market adoption (proportional to the bubble size), and adoption horizon (see Figure 4, later in the text).

TECHNOLOGY PREDICTIONS

The 2026 Technology Predictions team made the following 26 predictions (the numbers and grades following the prediction name represent the number of votes the prediction received with each member of the panel being allowed to cast as much as five votes not knowing what the others voted for, followed by the grade for the likelihood of success of the technology development).

1. *AI and future of work (150, B)*: AI agents will become standard "team members" for most knowledge workers. Competitive advantage shifts from headcount scale to intelligence leverage. While content creation moves to AI, human expertise is necessary for content reviews.
2. *Embodied, physical AI (118, B)*: Physical AI (robots, drones, smart devices): Physical AI will push intelligence into the real world, automating manufacturing, logistics, and urban infrastructure with autonomous, adaptive machines that sense, decide, and act dynamically, driving efficiency and safety.
3. *Wearable devices (106, A/B)*: New form factors for wearable devices will continue to integrate AI into everyday life in small, practical ways. These always-on, unobtrusive devices will push privacy concerns further to the fore.
4. *Data center energy management (80, B+)*: Scaling of data centers to meet AI needs will force further innovation in energy production, management, and dissipation in data centers.
5. *Social AI (80, B)*: Artificial emotional intelligence—AI assistants will be tuned to detect mood, tone, and sentiment to master "soft skills" such as resolving misunderstandings, negotiations, etc.

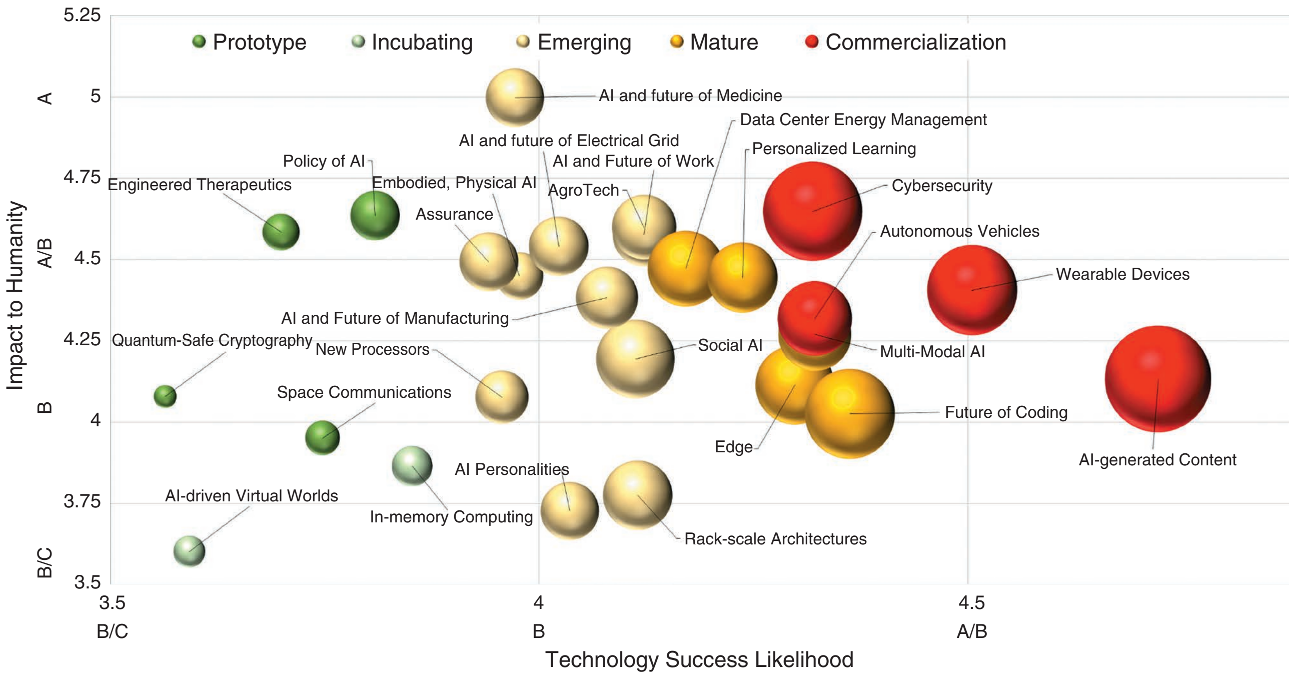

FIGURE 1. Comparing 2026 technology predictions: clusters of correlated technologies. Prediction: Technological success in 2026 (*x*-axis) versus impact to humanity (*y axis*) (size of bubble proportional to relative market adoption).

6. *Edge (77, B+)*: Edge AI will enable privacy-preserving, low-latency, energy-efficient, generative intelligence via small language models on resource-constrained devices, extending AI access to remote settings and extreme environments where continuous connectivity is not guaranteed.
7. *Space communications (62, B-)*: Satellite direct to cell/device communications will be accomplished using existing radio protocols without extra hardware on the device. Both cellular and zero-trust approaches in space-based 6G networks will be very effective to overcome perimeter-based protection.
8. *AI and future of electrical grid (56, B)*: The future power grid will be AI-driven, predictive, and increasingly autonomous.
9. *AI and future of medicine: adaptive bio-AI interfaces listen to your body (55, B)*: Adaptive bio-AI interfaces that continuously sense and interpret human biological signals to adjust therapies, environments, or digital tools in real time will emerge as a breakthrough technology in 2026, marking the first true fusion of personalized health and intelligent computing.
10. *Assurance layers in AI pipelines (52, B)*: Mandatory assurance layers (sandboxed tools, provenance tracking, misuse detection) become standard in foundation-model deployments.
11. *Autonomous driving: commercialization and adoption (44, B+)*: Autonomous mobility shifts toward compute-heavy, capital-intensive robotaxi services in dense cities, driven by digital twin-based training, increased safety, and a novel AI stack.
12. *Cybersecurity (43, B+)*: In 2026, identity-first, AI-assisted security becomes baseline as ransomware and supply-chain pressure force engineering and IT leaders to consolidate platforms, enhance robustness, and harden data/software supply chains under tighter regulation.
13. *Future of coding (42, B)*: Vibe coding, facilitated by AI-native development platforms, will increasingly be used by non-developers to produce functional code using "prompts" and natural language descriptions, giving new meaning to low-code/no-code.
14. *AgroTech (37, B)*: AI as a support tool to enhance and predict agricultural productivity, improving the quality of agriculture products while reducing costs.
15. *Rack scale architectures (34, B)*: Rack scale architectures optimized for the IT-power cross-domain management will improve power and energy efficiency of next generation data centers, by shaving power peaks, balancing sources of power, individually and across multiple data centers.
16. *Multimodal AI (34, B+)*: Intelligent systems transcend single-modality constraints, unifying language, vision, audio, 3D, and sensor data for comprehensive understanding.

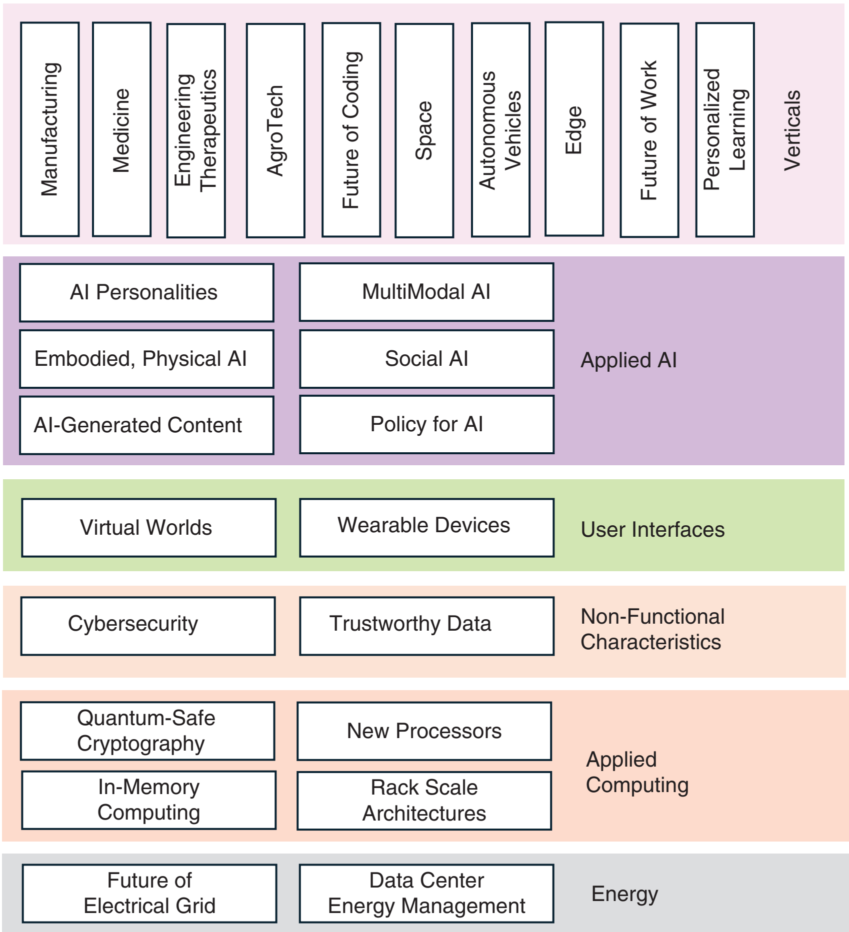

Figure 2. Landscape of predicted technologies.

17. *In-memory computing for AI (33, B-)*: Analog in-memory computing will bring computation directly into memory arrays, dramatically reducing data movement, the dominant source of power and latency in today's AI systems, delivering order-of-magnitude improvements in performance-per-watt from edge devices to data centers.
18. *Policy for AI (32, B-)*: Governments and organizations will impose ethical and responsible AI and will drive its use to unleash human potential and serve humanity in areas, such as improving health while emphasizing fairness, transparency, privacy, and human oversight to mitigate risks like bias.
19. *AI-generated content (31, A-)*: AI transforms how videos, music, presentations, documents, and multimedia content are made and consumed. But it raises questions about authenticity, creativity, and economic disruption.
20. *Engineered therapeutics (31, B-)*: In 2026, we will see the use of genetic/synthetic biology for the treatment of medical ailments in humans. This will include engineered living therapeutics and non-living molecules and materials.
21. *AI personalities (30, B)*: 2026 will see the rise of a range of AI-generated actors, presenters, influencers, newsreaders, etc. which by late 2026 will not be easily distinguishable from humans fulfilling these roles.
22. New processors (28, B): New processors should offer three orders of magnitude performance improvement and three orders of magnitude power consumption reduction. This can be achieved by exploring and integrating new technologies and full 3D architectures with support of AI-based design strategies.
23. *Quantum-safe cryptography (27, B/C)*: Quantum-safe cryptography will be a key area of development and standardization to de-risk the increasing threat of quantum computing breaking current encryption algorithms.
24. *AI-driven virtual worlds (25, B/C)*: Autonomously generated, adaptive, and personalized virtual worlds created by AI models that synthesize 3D content, narrative, and social interactions, driving system decisions and behaviors in real time.
25. *Future of manufacturing (25, B)*: Enabling the least lifetime-energy products.
26. *Personalized learning (22, B+)*: Long desired in pedagogical theory and practice, teaching that can be adapted to the path and pace of an individual student can be a better experience and result in better outcomes for the learner. AI tools and capabilities are making this possible in valuable and cost-effective ways.

INSIGHTS

The team gleaned the following insights for 2026:

- Technology with the most advancement, largest market adoption, and market maturity is AI-generated content (A-).
- Technology with the highest potential for impact on humanity is the future of medicine (A).
- Adoption bottlenecks are trust + power: identity/provenance, assurance, and software supply-chain controls + data center/grid energy constraints.
- Long-term opportunity is in space technologies (intelligent non-terrestrial networks; satellite to cell communications; nano satellites as a service; zero-trust approach in space-based 6G networks).

The team also offered some vertical insights across years:

- AI strengthened its absolute dominance compared to previous years.
- We see a growing need for trustworthiness and cybersecurity.
- The competitive shift is from capability to assurance: outcome metrics, audit-ready evidence, and evaluation frameworks increasingly determine deployment at scale.
- With a challenging economic climate, we see a decline in sustainability-related technologies and concerns.
- The growing amount of AI-created misinformation and disinformation drives AI technologies to counteract.

Finally, the team identified longer-term, broader opportunities, with an optimal risk-reward ratio:

- electric vertical take-off and landing (eVTOL)
- fusion energy
- robotics and robot scientists
- quantum computing
- convergence of physical AI and extended reality (XR)
- low-power hot-switching devices

For the graphical representation of high-reward technologies that did not make it into the first 26 technologies, see Figure 3. The bottom part of the figure was intentionally left empty to emphasize that we were focused on high-reward technologies.

It is also important to emphasize that among the predictions, the technologies most likely to scale are not only those with strong AI capabilities but also those supported by three recurring enablers:

- trust/security
- governance/policy
- safe human–AI interaction (social AI).

We also compared the 26 technologies in terms of their horizon to ultimate commercial adoption. This comparison is presented in Figure 4. Predictions were normalized from inputs to [0,15] years. Interesting insights about opportunities to research (academia), readiness level (governments), industrialization and standardization (professional organizations), and commercialization (industry) could be derived from this comparison.

Similar conclusions, derived from the outliers, can be observed in Figure 5. Technologies that have a higher impact on humanity than the likelihood of technology success could benefit from additional government funding. Those technologies that have a higher likelihood of technology success than impact on humanity are ripe for industry for broad commercialization.

Yet another set of observations can be made by mapping the 26

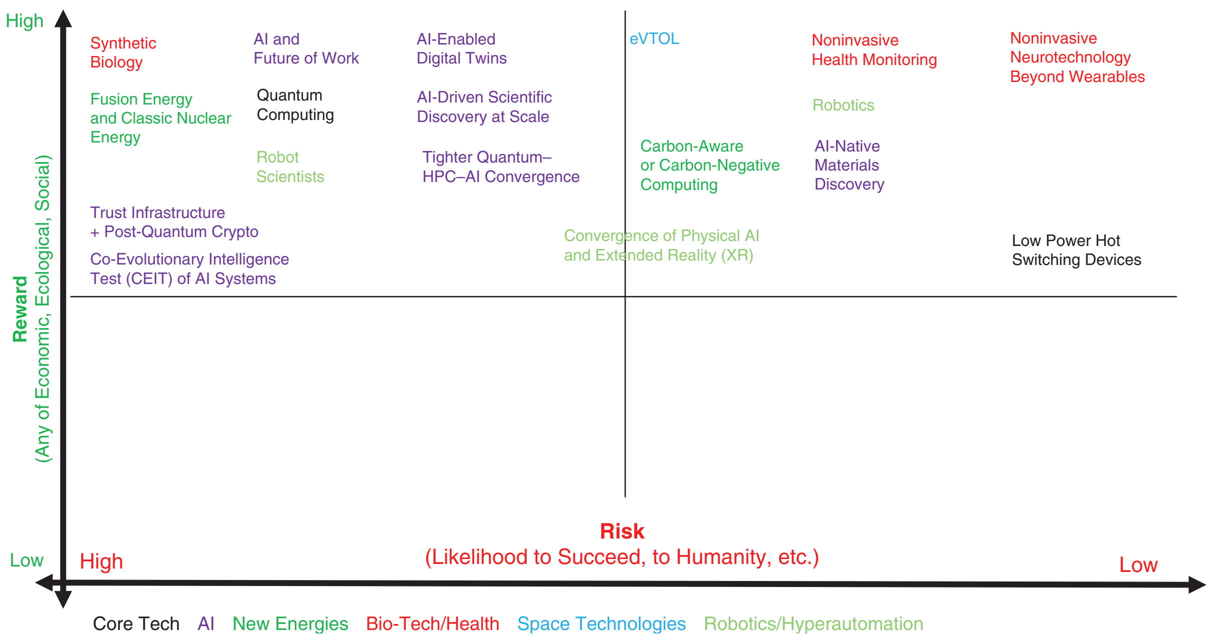

FIGURE 3. List of technologies with a favorable risk–reward ratio. Risk–reward analysis for select honorable mention technologies.

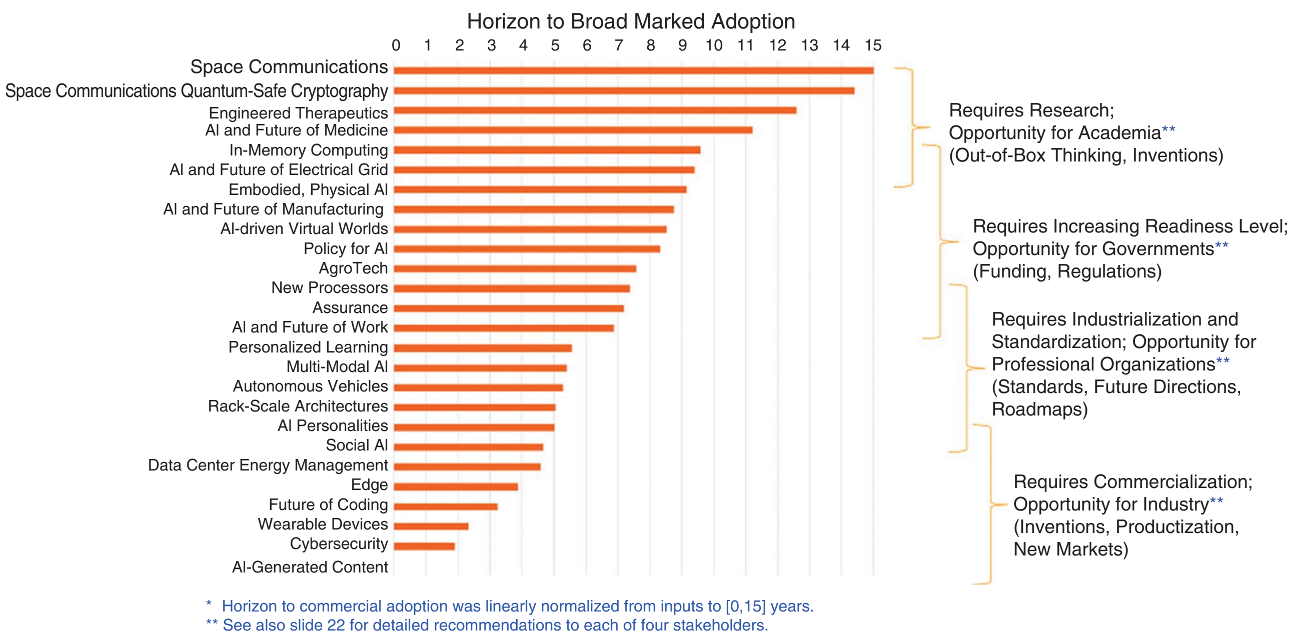

FIGURE 4. Horizons to commercial adoption.

technologies onto IEEE Future Directions Committee (FDC) Megatrends 2030 (see Figure 6). Of special interest are those technologies that are at the center of the bubbles and could be applied to all megatrends. These technologies could have the largest impact.

In addition to multiple insights, we also made recommendations to industry, government, academia, and professional organizations, such as IEEE as well as to different roles, such as end users, developers, C-suite, and investors. Please see the report for the details.

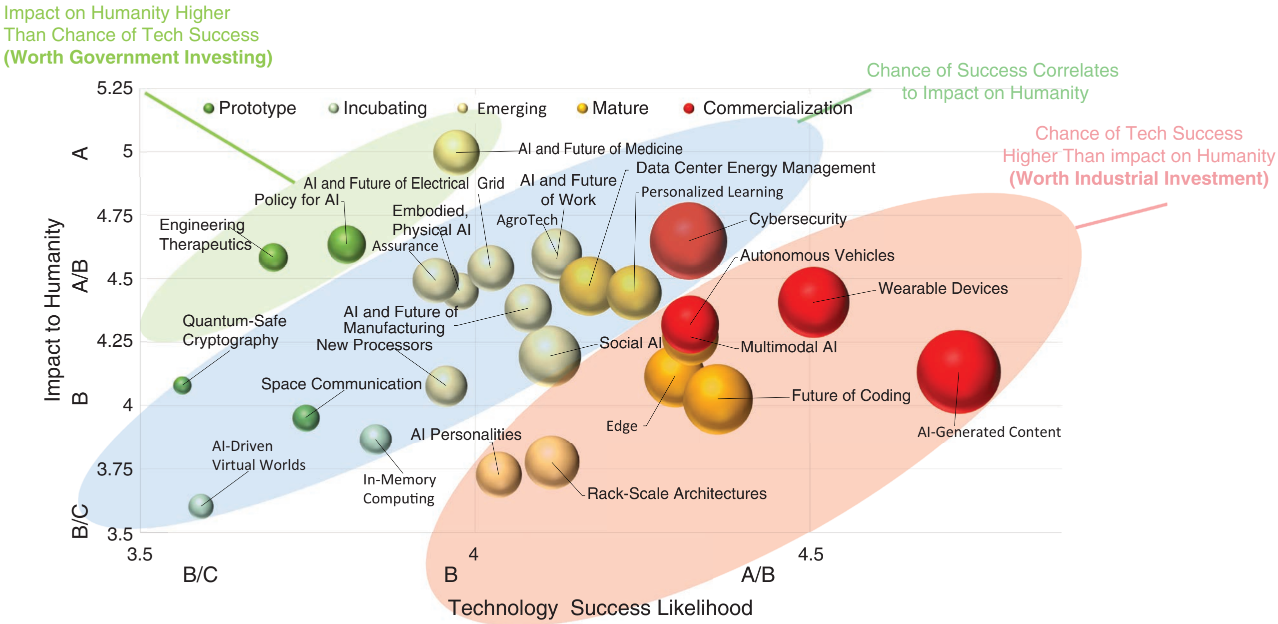

FIGURE 5. Comparing 2026 technology predictions: outliers. Prediction: Technological success in 2026 (*x*-axis) versus impact to humanity (*y axis*) (size of bubble proportional to relative market adoption).

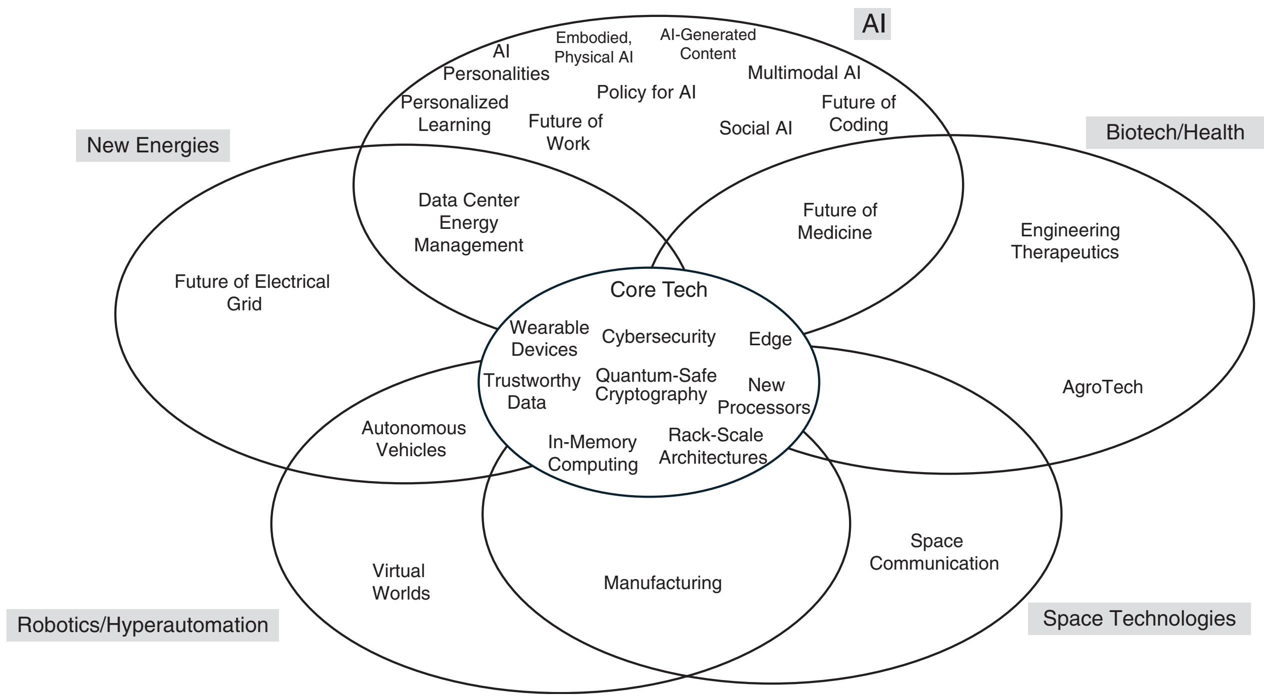

FIGURE 6. Technologies mapped on FDC megatrends 2030.

SCORECARD FOR 2025 PREDICTIONS

At the end of each year, we also evaluate how successful we were in the previous year. We included these results for the predictions for 2025 in the 2026 report. Figure 7(a) compares original predictions made at the end of 2024 for the year 2025, and Figure 7(b) presents our scorecard for the same 2025 year, conducted at the end of 2025 by regrading technologies. We can draw similar observations as for the 2026 predictions—the substantial pace of AI that surpassed our expectations, and that also influenced many other technologies.

Similar observations could be drawn from Figures 8 and 9, where deltas in grading are presented. We can see an overwhelming positive difference with only a few negatives (meaning much higher grades at the end of the year) in Figure 8, while Figure 9 indicates shortening time to ultimate

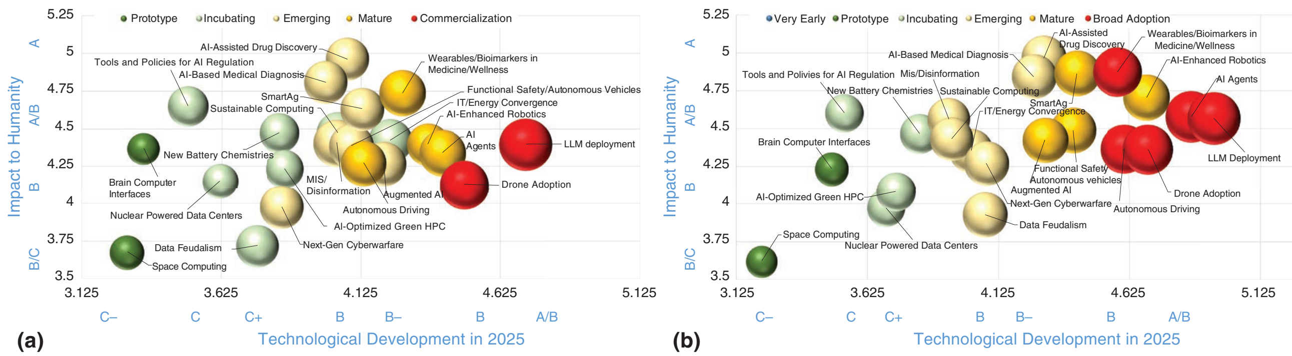

FIGURE 7. (a) Original predictions, made in December 2024. (b) Scorecard grades for 2025, made in December 2025.

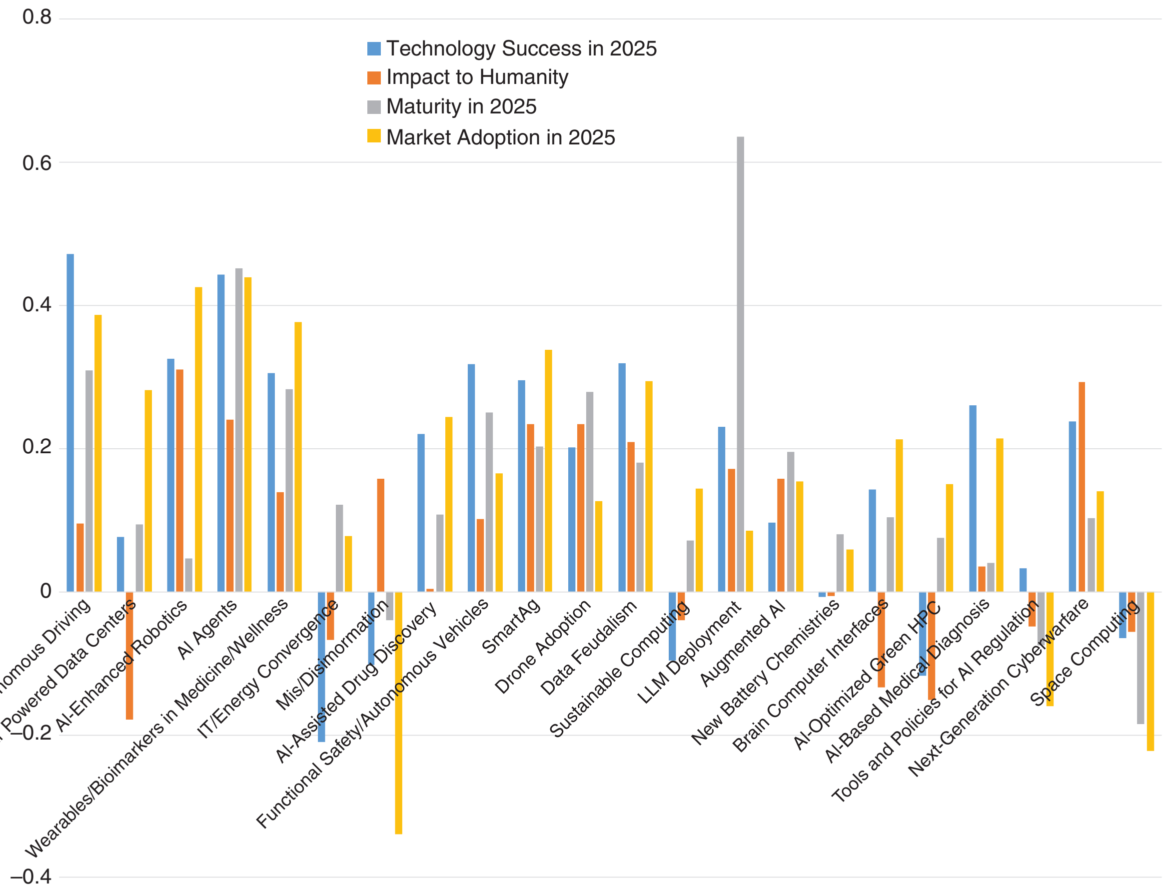

FIGURE 8. Delta between predictions and scorecard for technology success, impact on humanity, maturity, and market adoption.

commercialization, indicating speed of development enabled by AI.

This acceleration of technologies enabled by AI is even more obvious when we compare three consecutive years, as described in Figure 10.

PUTTING IT ALL TOGETHER

Predictions conducted in the Computer Society by this team are not the only predictions in IEEE, but they are one of the oldest. We informally started prediction in 1999[1] as part of a column in *IEEE Concurrency*, and later in *IEEE Distributed Systems Online* (both out of print), while this column in *Computer* still continues. However, these predictions also initiated the IEEE Future Directions Megatrends effort[2] that issues reports every few years as well as the Future of Workforce effort, which issues reports periodically. The global report covered 10 regions around the world[3] and the most recent one is focused on Africa. Megatrends and technology predictions are synergistically addressing trends and megatrends, while they both serve as a basis for predicting the future of the workforce. Last year, we published an article in *Computer* on technology predictions for 2025[4] and this is our second attempt to formally archive predictions in IEEE Xplore.

See Figure 11 that compares these three efforts described in terms of history, sponsor organizations, and contributions.

Two papers summarized the history of technology predictions over decades.[5,6] We also held special invited issues of *Computer* from 2019[7] until last year,[8] as well as many “Predictions” columns in *Computer*.[9,10,11,12] However, the first targeted publication on the predictions topics was the result of almost two years of research, and it was used as a basis for two strategic plans of the IEEE Computer Society, for student competitions, and it influenced all subsequent publications and processes.[13]

There are also many prediction efforts outside of IEEE, such as those by Forrester,[14] Gartner,[15] International Data Corporation (IDC),[16] Massachusetts Institute of Technology,[17] Forbes,[18] and many others.

Like in the past years, we will again develop a scorecard for our 2026 predictions report, and we will release it with next year’s report. We actively improve our processes and synergistically develop them with IEEE FDC Megatrends. We will also continue to improve the diversity of the team. For the following year, we will supplement our own grading with a broad survey going to the IEEE membership and possibly outside of IEEE. We will also revisit the way we grade (for example, A–F versus 1–10 or 1–100) as well as whether we want to normalize all the grades to counter regression to the mean over a large number of participants.

Please read our full report[19] and provide feedback (contacts available at the end of the article). Also, please consider joining us in developing future reports. ■

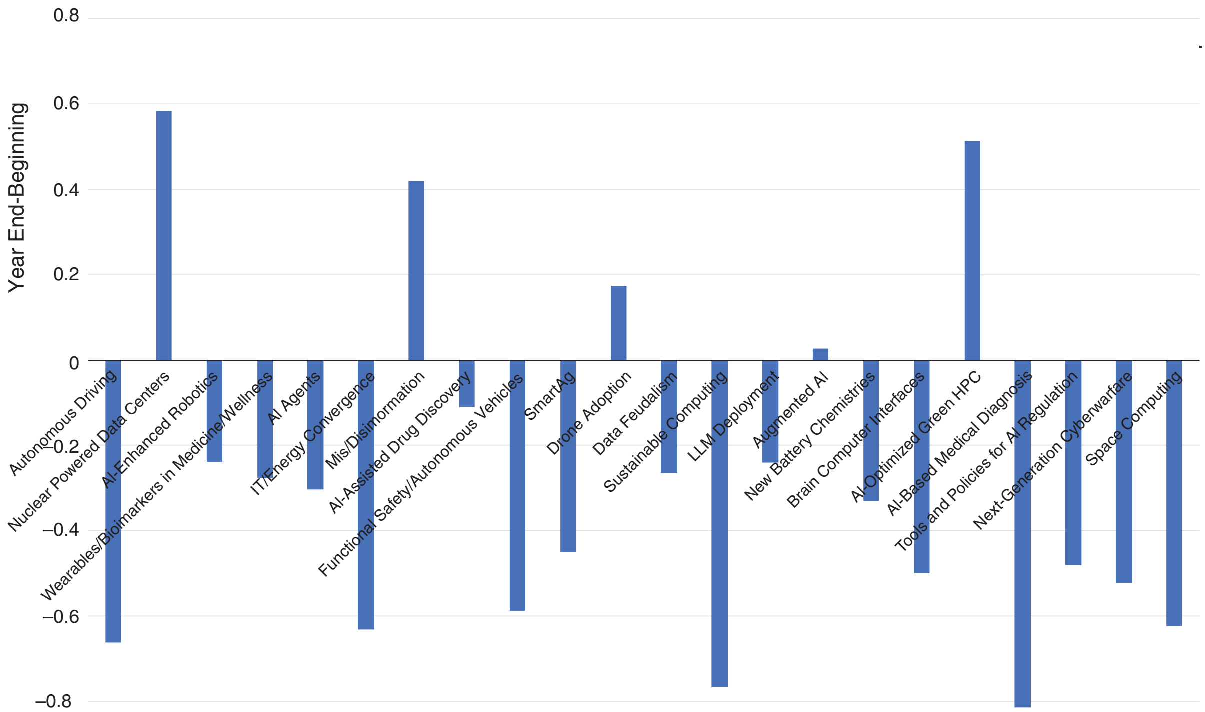

FIGURE 9. Delta between predictions and scorecard for horizon to commercial adoption.

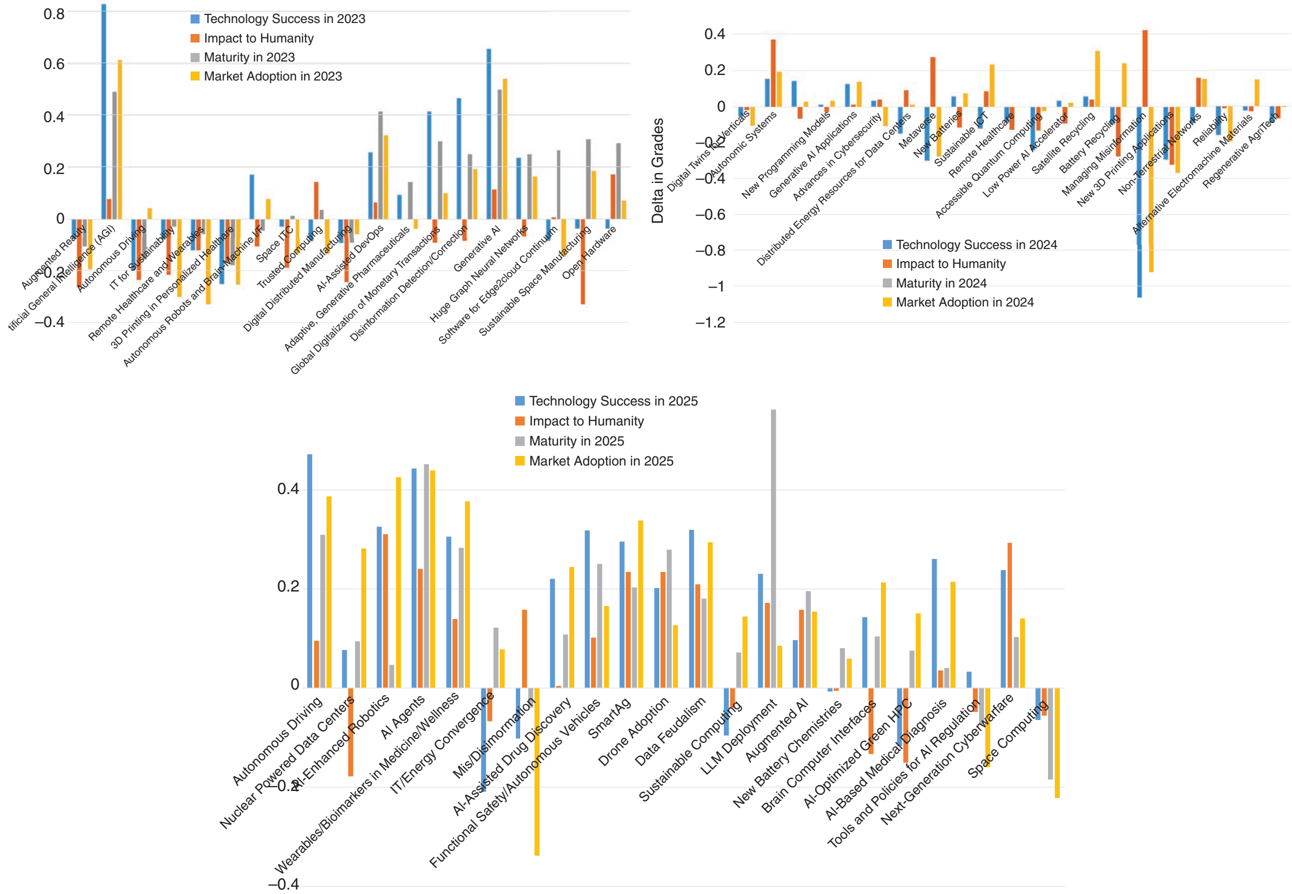

FIGURE 10. Scorecard delta progression over the past three years.

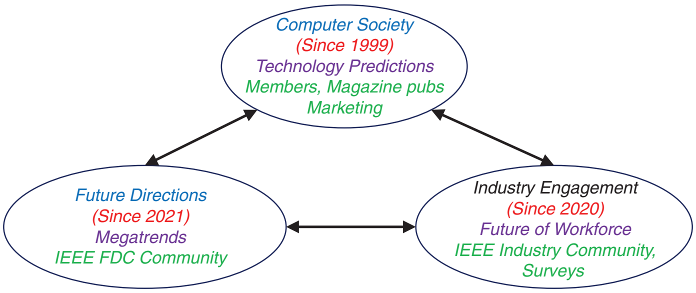

FIGURE 11. Mapping the IEEE Computer Society Technology Predictions 2026 to IEEE FDC Megatrends 2030.

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