Top 10 Emerging Technologies

(Grouped from June 6, 2026 AGM Poll Results- full data is available in the Appendix starting on page 5)

1. Artificial Intelligence (AI) & Generative AI

- Generative AI (ChatGPT, Copilot, Gemini)
- AI-assisted reporting, QA, and workflow automation
- Agentic AI systems and decision-support tools
- AI for predictive maintenance, analysis, and communication
- AI governance, accountability, and privacy concerns

👉 **By far the most dominant theme across responses**

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2. Automation, Robotics & Mechatronics

- Industrial and collaborative robotics (cobots)
- Automation in manufacturing and operations
- Robotics in hazardous environments (e.g., nuclear)
- Mechatronics integration

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3. Drones, Remote Sensing & Surveying Technologies

- Aerial and marine drones
- Drone photogrammetry (e.g., WebODM)
- Use in inspections, surveying, and data collection
- LiDAR and laser scanning / point clouds

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4. Industrial IoT (IIoT), Smart Sensors & Connected Systems

- Smart sensors and remote monitoring

Note: This document was compiled with the assistance of AI tools and reviewed for accuracy.

- IO-Link and device-level data integration
- Connected factories and building systems
- Real-time device diagnostics and control

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5. BIM, Digital Twins & Advanced Design Tools

- Building Information Modeling (BIM)
- Digital twins for infrastructure and assets
- Clash detection (e.g., Navisworks)
- Laser scanning for as-built verification

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6. Data, Cloud & Digital Workflow Technologies

- Cloud-based project management platforms
- Data analytics and reporting tools
- Digital inspection forms and workflow automation
- Data centers and cloud-managed systems

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7. Smart Infrastructure & Advanced Control Systems

- SCADA system advancements (UX/UI improvements)
- PLCs, smart panels, automation systems
- Building automation systems (BAS)
- Remote troubleshooting and monitoring

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8. Energy, Sustainability & Electrification Technologies

- Renewable energy systems
- Battery storage (BESS, sodium-ion, structural batteries)
- EV charging infrastructure
- Microgrids and energy optimization systems
- Emerging energy concepts (SMRs, osmotic power)

9. Advanced Manufacturing & Materials

- 3D printing / additive manufacturing
- New materials (e.g., membranes for water treatment)
- Smart construction materials and testing technologies

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10. Telecommunications, Sensing & Specialized Technologies

- Fiber optics and embedded sensing in infrastructure
- GPS, satellite communication systems
- Cybersecurity and post-quantum cryptography
- Quantum computing (early-stage awareness)

Bonus Trend (Cross-Cutting)

Digital Work Environment & Tools

- Increase in virtual meetings
- Digital collaboration platforms
- Software tools for scheduling, reporting, and documentation

(This theme cuts across multiple categories rather than standing alone.)

Key Takeaways

- **AI dominates overwhelmingly**, appearing in a majority of responses.
- Strong **convergence of technologies** (e.g., AI + IoT + automation).
- Growing emphasis on:
    - **Practical implementation**
    - **Data-driven decision-making**

    - **Integration of legacy systems with new tech**
- Increased awareness of **governance (AI ethics, privacy, accountability)**

Appendix

What emerging technologies are you encountering in your work that OACETT should be sharing with members?
The use of more virtual meetings and a changing work environment
drones, AI
Use of Drones in providing survey info.
Drones, been around for a while but the use of them has expanded significantly
Mostly AI intergrated tech
One of the most significant emerging technologies in my workplace is Artificial Intelligence (AI), particularly tools such as ChatGPT and AI-powered assistants. AI is being used to improve communication, automate routine tasks, enhance productivity, and support decision-making. In facilities management and operations, AI can assist with predictive maintenance, data analysis, work order management, and energy optimization.
N/A
Geo science and tooling
Artificial Intelligence
AI really supports day to day engineering work based on the prompt
AI now, and robotics integration in the future
In my case, I want to know the latest developments in AI for industrial engineers. I want to know more about the Engine Room Software and Ergonomics in general!
unable to receive poll question
incorporation of robotics and 3d printing manufacturing
IO Link in the industries
nothing new
Drone technology, AI technology, Robotics technology, GPS technology, Satellite VHF,
Nothing specific
We have new high-resolution graphics in SCADA system which is user friendly and easy on the eyes.
new Devices with embedded AI tools
N/A
Engage with TESLA and SpaceX. Both of these public companies are fast becoming World Leaders in: Energy, Telecommunications and Automotive Solutions. \Further; the near Term Automation of Optimus Robotics will be world changing. NOTE: $TSLA and $SPCX are both on Wall Street.
software testing technologies
AI, Construction Management and Administration
AI accountability, who's responsible when errors are made?
Ortung emerging at the moment
Data centers purpose.
Retired
Integration of AI with old technologies to create a connected factory.
some AI adoption for research purposes
integration of AI into technical project work (not just used as advice but as agents), replacement of lower level jobs that can be monitored by AI. Electronics field vs. Electrical field is not well-documented, would like to see comparisons of their field equipment and bench equipment for typical tech jobs.
Not working currently.
Artificial Intelligence integration
QGIS - free mapping and geospatial software, WebODM - Drone photogrammetry software for compiling point clouds and topographic data
Ai discussions, implementation in work an data collection. privacy
AI related technologies
In the fire protection sector. the integrating of BIM and the use of Clash detection in software like Naviswork
AI
Agentic AI System, Generative AI Tools, Visual development software that empowers non-technical employees to build custom internal applications and automate workflows without writing code.
AI, BIM, drones, and digital tools for better project management, safety, and efficiency.
I am increasingly encountering the integration of Industrial IoT (IIoT), smart sensors, and advanced Building Automation Systems (BAS).
AI
AI tools for technical reporting, digital inspection forms, construction data tracking, and new technologies in concrete and soil testing are becoming more relevant in the workplace. I think OACETT should share practical guidance on how members can use these tools responsibly and effectively
Aerial and marine drones surveying.

Appendix

In my work and professional development, I am increasingly using digital tools and AI-assisted technologies to improve efficiency in communication, documentation, and information analysis.
asset management
New softwares
Artificial intelligence is the only thing that I can think of ultimately, which is already occurring across all avenues of our lives these days.
Integration of collaborative robotics in manufacturing processes, such as welding, to help fill the skills gap issue.
Now is all about AI
Reporting and analyzing data
AI
As a graduate student, I am not currently employed, but I am learning about emerging technologies such as Artificial Intelligence (AI), Building Information Modeling (BIM), digital twins, drones, and cloud-based project management tools. I believe OACETT should share information and training on these technologies to help members stay up to date with industry trends and improve their professional skills.
N/A
I guess we are see more and more virtual assistances popping up for customer serve rolls.
AI technology
Fiber Optics
Artificial Intelligence (AI)
None
Scout Brief documentation management
AI related technology advancements
Nothing specific comes to mind
AI usage in identifying products in fire scenes. Battery technology and management systems
nothing in specific
automation, smart sensors, IoT, cybersecurity, renewable energy systems, battery storage, EV charging infrastructure, and advanced control systems. In my field, I also see more demand for PLCs, SCADA, smart panels, remote monitoring, and digital troubleshooting tools. OACETT should share practical training on how these technologies are being applied in real workplaces.
Trenchless and remote sensing technology
I am retired member.
note
AI
OACETT could support members by providing training, webinars, case studies, and practical guidance on how these technologies are being implemented across engineering and applied science disciplines. For my specific background in inspection and environmental/geotechnical work, mentioning AI, drones, mobile field-data collection, GIS, remote monitoring sensors, and LiDAR would likely be the most relevant.
I am seeing new technologies like AI tools, automation, robotics, IoTs, and electric motion control in my work. These are growing fast, and OACETT should share updates so members can stay current.
retired
None as of the moment
A deeper explanation of AI, how it actually works and its benefits.
Nothing to report.
AI INTEGRATED WITH MICROSOFT
3D Printing
Generative AI like ChatGPT, Gemini, etc.
drones in nuclear power plant applications (e.g. inspections, object retrievals, surveys) increased use of various robotics in the nuclear industry to improve process times and reduce exposure time to radiation of people
AI technology.
None so far
AI
The use of AI to structure QA entirely
na
none
AI absolutely
use of AI e.g. Copilot for everyday office work, design, analysis & forecasting, will impact need for technologists and technicians
Drone usage
The emerging technologies I am encountering include AI and machine learning tools, data analytics platforms, automation and digital workflow systems, cloud-based project management tools, Building Information Modeling (BIM), digital twins, and sustainability-focused technologies. OACETT could help members stay current by sharing practical applications, case studies, implementation best practices, and the impact of these technologies on engineering and applied science professions.
AI being the most significant.
wastewater treatment
Cloud management technology. Data management and programming driving design to be dynamic vs limier

Appendix

AI, other than that, not much. Would be curious what Civil Engineering related, specificallyland development emerging technologies are being shared accross the province
Scheduling softwares
Generative AI, cloud collaboration platforms, cyber security
Effect of storing fleet electric vehicles indoors on fire protection requirements.
i cant think of anything really
Our company produces a hollow fibre membrane for waste and wastewater treatment
AI
Quantum computing and the need to move to post-quantum cryptography. The move from legacy systems to cloud-managed systems.
3d printing
Small Modular Reactors (SMRs) Sodium-Ion & Structural Batteries Osmotic Power Systems Green Nitrogen Fixation Engineered Living Therapeutics
NONE
Lately at the City of Toronto, my Fire and Life Safety Division have been using and installing new Emergency Lights which have a self tester on them. When it comes to big sites like waster water or water treatment, that have these emergency lights connected to a software where you can see on a computers the status of the emergency lights.
Ai Mechatronics
n/a
Yes, sure.
IO Link as the 1st step in gathering device information when implementing IIOT strategies. Artificial Intelligence to assist customers with product selection and implementation
Not necessarily from my workplace, but definitely applicable, was something I learned from one of the booths at the conference. They told me that fibre cables could be used, by being embedded in structures, to obtain data on the forces/temperatures occurring in the structure. Kind of like a nervous system for buildings. I thought the application of this could be extremely useful in future applications.
AI related tools
Integrated laser-scanning technologies to support design and construction. Laser-scanning with point clouds to verify existing buildings and infrastructure to support in engineering and design.
Right now I don't have a any answer to that
AI Tools and data privacy
AI but more than just conversation like AI automation is really powerful tool. people mostly just see AI as a chatting tool only just to ask questions.
Emerging technologies that would be valuable for OACETT members include artificial intelligence (AI), machine learning, automation and robotics, digital twins, Building Information Modeling (BIM), IoT-enabled smart infrastructure, cybersecurity, cloud-based engineering platforms, GIS technologies, renewable energy systems, energy storage solutions, advanced fiber-optic and telecommunications networks, drone applications for inspections and surveying, and data analytics for asset management
Emerging technologies I am seeing include AI-driven data centers, high-density power distribution systems, liquid cooling technologies, battery energy storage systems (BESS), microgrids, digital twins, BIM integration, and advanced monitoring and automation systems. As demand for AI and cloud computing continues to grow, data center design and operation are rapidly evolving. OACETT could help members by providing technical training, industry case studies, and updates on standards and best practices