Ottawa Chapter Newsletter

Spring 2026

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SRE OTTAWA CHAPTER

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POINT OF VIEW

On behalf of the Society of Reliability Engineers (SRE), Ottawa Chapter, I would like to sincerely thank General Dynamics Mission Systems - Canada for the use of the Edge Room at the Bells Corners campus for the past 11 years for the conduct of SRE Ottawa chapter presentations and Executive meetings. As a not for profit organization the SRE Ottawa chapter continuously looks for better ways to serve our members and to provide them with the best possible experience when they attend our functions. Our Chapter strives to engage local Reliability Engineers in the various aspects of reliability engineering by developing, communicating, and advancing the state-of the art reliability techniques to achieve greater effectiveness in the application of reliability principles. The Edge Room provided a top of the line presentation facility that allowed us to deliver this experience. The SRE Ottawa chapter will be looking into alternate presentation facilities to enable members and presenters to attend physically. The presentation meetings will continue to be held virtually on-line via Zoom meetings. If a presentation facility becomes available for physical attendance it will be noted in the presentation invite.

- Malcolm Nash

SPRING 2026 OTTAWA SRE TECHNICAL PROGRAM

Mark your calendar! Here are the dates for presentations this Spring:

7:00 p.m. Meeting opens, Greetings & Chapter Business
7:15 p.m. Presentation
8:30 - 9:00 Questions and Discussion

February 25th, Arun Gothan, Consultant, *Reliability in Municipal Operations;* March 25th, Lou Gullo, Chair IEEE Reliability Standards Committee, *Reliability Standards*; April 29th, Dr. Julio Pulido, President SRE International, *Applications using AI for DFMEAs and system modeling*.

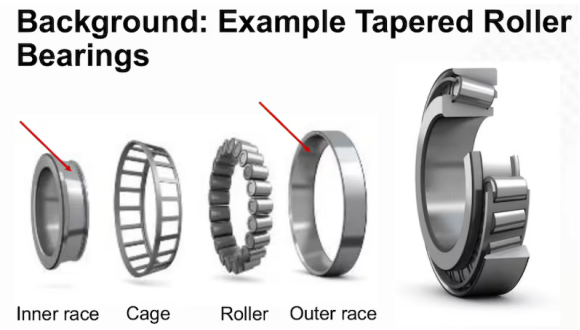
Note that all presentations this spring will be via Zoom. Details are contained in the meeting announcements.

CHAPTER NEWS

- Our chapter executive has reached out to other physically local and regional virtual associations for possibly hosting a joint event or two in local alternate facilities or virtual presentations, to leverage common topics or interests, expand SREO visibility, enable ties between our organziations and potentially attract new SREO members.
- Members are encouraged to consider and suggest possible alternate presentation venues, even a setting for a social gathering, for discussion at the February meeting.
-- Members are reminded that May 31st is the deadline for renewing membership dues for the 2026-2027 season, after which a list of paid-up members is sent to SRE, along with payment. Dues are $50 and payment can be made by e-transfer to sreotreasurer@gmail.com. Cheques are acceptable - they should be mailed to: SREO Treasurer, 6023 Meadowglen Drive, Ottawa, ON K1C 5V4.

RELIABILITY IN THE NEWS

Once again the reliability of Ottawa's LRT system is headline news. This CBC article quotes Troy Charter, interim general manager of transit services at OC Transpo, "We know what is failing,



but the exact reason why it's failing, we don't have that information,". The "what is failing" is a cartridge bearing assembly which joins the axle to the wheels — more specifically, a roller bearing inside it. Transit officials say they still have no idea why metal is flaking off - 'spalling' - inside a vital component of the bearing. Charter said it could be a bad batch of parts; maybe it's contamination, or problems with maintenance or installation.
Regardless, OC Transpo is forcing its maintainer, Rideau Transit Group (RTG), to replace axles that have exceeded 100,000 kilometres of use. The flaking metal was only found beyond that limit.

But it isn't easy: "You have to … put up a train on jacks, drop a bogey that weighs thousands of pounds," he said. Then crews need to remove the cartridge bearing assemblies and tear them apart as they try to study the root cause of the problem. So far, they've inspected 24 and have found eight with spalling.
Charter said the city is still demanding a redesigned assembly that can better withstand pressures from the rails. He said Alstom has a design, but not a prototype.
"Now we've got this new failure mode," he said. "They'll have to look at that and determine … does the redesign rectify it or is there other work that needs to be done?"
Meanwhile, OC Transpo will force RTG to keep replacing the assemblies. It will push for more work on mitigation measures and documentation to back it up. And it's demanding a long-term solution that fixes the root cause — even if there's still no sign of what that might be.

How AI Is Reshaping Reliability Engineering — and Why Judgment Matters More Than Ever

Here is ChatGPT's take on the task: '*Describe the influence AI is having on reliability engineering.*'

"Over the past year, artificial intelligence has shifted from a promising tool to a structural force in reliability engineering. What began as experimentation with anomaly detection and predictive maintenance is now influencing how reliability is defined, measured, and practiced across industries.
AI is not simply making reliability work faster. It is changing what we consider a failure, how we detect risk, and who (or what) makes reliability decisions. Understanding this shift is essential if reliability engineers are to remain effective stewards of complex systems.

From Reactive to Predictive Reliability

Traditional reliability engineering has long relied on probabilistic models, historical failure data, and post-event root cause analysis. Metrics such as MTBF, failure rates, and Weibull parameters remain foundational, but they are inherently backward-looking.
AI changes this dynamic by enabling forward-looking reliability:

- Degradation patterns can be learned directly from sensor, operational, and log data
- Weak signals can be detected well before thresholds are crossed
- Maintenance strategies can shift from scheduled to condition-based or predictive

Rather than managing populations of assets using averages, AI allows reliability engineers to reason about individual asset trajectories. This is a profound conceptual shift: reliability becomes personalized rather than statistical.

Expanding the Limits of Reliability Modeling

Classical reliability models depend on assumptions: failure distributions, independence, stationary behaviour. These assumptions often break down in modern systems where software, hardware, human interaction, and environment are tightly coupled.
AI extends modelling capability by:

- Capturing nonlinear and high-dimensional interactions
- Adapting to evolving system behaviour
- Operating continuously rather than at fixed design or review points

However, this power comes with a cost. AI models often lack transparency, making it difficult to explain why a prediction was made. In safety-critical or regulated environments, this creates

tension between predictive performance and engineering accountability.

Operational Reliability and the Rise of Autonomous Response

In operational contexts—IT systems, cyber-physical infrastructure, and industrial control—AI is increasingly used to:

- Detect anomalies across metrics, logs, and traces
- Correlate incidents across complex system boundaries
- Recommend or execute predefined remediation actions

This shifts reliability work from hands-on diagnosis to designing guardrails for automation. The engineer's role moves upstream: ensuring that automated systems act safely, conservatively, and reversibly.

A new risk emerges here: automation bias. When AI systems perform well most of the time, organizations may place excessive trust in them—precisely when rare, high-consequence events demand human judgment.

New Failure Modes Introduced by AI

AI does not simply reduce failure; it introduces new categories of failure that reliability engineers must explicitly manage:

- Data drift: system behavior changes while models remain static
- Silent degradation: model confidence remains high as accuracy declines
- Feedback loops: AI decisions alter the system they observe
- Rare-event blindness: models trained on normal behavior miss catastrophic edge cases

These risks are forcing the discipline to confront meta-reliability: the reliability of the tools intended to improve reliability.

Changing How Reliability Is Measured

AI is accelerating a move away from single-number reliability metrics toward richer, consequence-aware measures:

- Severity-weighted reliability rather than failure counts
- User-perceived reliability where performance degradation matters
- Confidence-aware predictions that communicate uncertainty

The central question is no longer simply "Did the system fail?" but rather "Did the system behave acceptably under uncertainty?"

The Evolving Role of the Reliability Engineer

Rather than replacing reliability engineers, AI is redefining their responsibilities.

Less emphasis on:

- Manual data processing
- Rule-based monitoring
- Repetitive diagnostics

More emphasis on:

- Model validation and monitoring
- Failure mode imagination
- Governance, ethics, and safety cases
- Integrating physics, statistics, and data-driven methods

Engineering judgment becomes more—not less—important as systems grow more autonomous.

Where AI Fits—and Where It Doesn't

AI performs best when:

- Large fleets generate rich operational data
- Failure precursors are subtle but detectable
- Systems evolve faster than static models can track

AI performs poorly when:

- Failure data is sparse or nonexistent
- Systems are unique or one-off
- Explainability and certification are mandatory

The most successful reliability programs are adopting hybrid approaches, combining physics-based understanding, classical statistics, and AI—rather than treating AI as a replacement.

Closing Thoughts

AI is reshaping reliability engineering by making it more predictive, more continuous, and more behaviour-focused. At the same time, it introduces new risks, new failure modes, and new ethical and professional responsibilities.

The future of reliability engineering will not be defined by how much AI is used, but by how well it is regulated. In that future, the reliability engineer remains indispensable—not as a diagnostician of failures, but as a steward of trust in increasingly autonomous systems."

DID YOU MISS RAMS?

Here is the link. There's always next year!

SREO Newsletter

If you have something to share with the Ottawa SRE community, please send it to: James Menard jamespmenard@gmail.com. Deadline for the next Newsletter is 30 June, 2026