GRAHAM NASBY P.Eng., PMP

https://grahamnasby.com • gnasby@ieee.org • Guelph, Ontario, Canada
https://linkedin.com/in/grahamnasby

Engineering, Automation, Cybersecurity, OT and Critical Systems Leader

Graham Nasby is an industry-recognized leader in the critical systems sector for his expertise in project leadership, master planning, automated control system design, standards development and cross-industry collaboration, with a focus on operational efficiency, maintainability and long-term sustainability. Through his work with CSA, ISA, ANSI and IEC, he has co-authored international standards on systems design, project delivery and design best practices, covering a broad span of disciplines including systems engineering, SCADA, technology governance, operational technology, cybersecurity, alarm management and HMI systems.

With over two decades of multi-industry engineering experience spanning water/wastewater utilities, civil construction, rail transport, pharmaceutical, nanotechnology, manufacturing, and process industries, Graham brings a deep blend of technical acumen, hands-on design and deployment, leadership, and strategic systems expertise to his clients. His background includes operations, capital projects, construction, program development, and developing long term technology roadmaps.

As a technical and thought leader, Graham is a frequent author of industry articles and invited speaker at industry events. To date, he has authored more than 51 papers, co-authored 45 international standards, and given 70+ presentations at conferences and seminars. He is currently co-chair and lead author of the ISA112 SCADA Systems Management standards committee, a member of the CSA P125 operational technology committee, and is actively involved in several industry associations. Graham also teaches an evening course on Engineering Law and Ethics at McMaster University's Faculty of Engineering.

CAREER HIGHLIGHTS

- Led the development of ISA112, a new management standard for long-term and project-based management of SCADA systems.
- Experience with managing multi-stakeholder, multi-disciplinary teams to solve complex construction / operational challenges.
- Wrote 25-year SCADA capital plan and roadmap for Guelph Water, based on condition assessments and industry best practices.
- Developed new Guelph Water SCADA design/code standards/templates/tools, driving a 75% labour savings on SCADA projects.
- 15+ years experience managing capital projects $30M to $20MM in multiple industries (w/ww, rail, pharma, SCADA, and IT/OT).

SPECIALTIES

strategy | long-term & master planning | program planning | resource planning | condition assessments | budgeting/scheduling capital projects | project management | construction sequencing | drawing/spec review | tendering | contract administration presentations | technical reports | meeting facilitation | supervision | training | managing in union & non-union environments

needs analysis | front end design | technical reviews | coordination between multiple engineering disciplines | mentoring technology roadmaps | needs analysis | new technology evaluation | risk analysis | budget justification/monitoring/control rail technology systems including backoffice, S&C, wayside, onboard systems on passenger, transit and freight rail infrastructure automated control system design | SCADA/HMI systems | alarm management | instrumentation | electrical design process systems | start-up/commissioning | water/wastewater treatment systems | on-site troubleshooting | negotiation

LICENSURE & CERTIFICATION

P.Eng., Professional Engineer – Professional Engineers Ontario (PEO) – since 2010
FS Eng., Functional Safety Engineer: Safety Instrumented Systems – TÜV Rheinland – 2015-2025
PMP, Project Management Professional – Project Management Institute (PMI) – since 2010
CAP, Certified Automation Professional – International Society of Automation (ISA) – since 2012
CISSP, Certified Information Systems Security Professional – ISC2 – since 2022
CISM, Certified Information Systems Manager – ISACA – since 2022
GICSP, Global Industrial Cyber Security Professional – GIAC/SANS – since 2023
Water Treatment and **Water Distribution and Supply** Operator Certificates – Ontario Water/Wastewater Certification Office
Wastewater Treatment and **Wastewater Collection** Operator Licenses – Ontario Water/Wastewater Certification Office
Qualified Freight Train Conductor, Rules-Qualified (CROR), Conductor Qualified – CN Rail – since 2022, re-qualified in 2025

INDUSTRY RECOGNITIONS

Chief Information & Technology Officer Award (2025), Canadian National Railway Company (CN Rail)
For contributions to CN's TSA Security Directive program in 2022-2025, to meet new US Transportation Security Administration requirements.
Standards Excellence Award, Standards Leader of the Year (2021), International Society of Automation
For exceptional leadership and/or technical knowledge essential to the organization, development and/or administration of ISA standards to advance the mission of the Society. For contributions to the ISA112 SCADA management standard, and to the ISA18 / ISA101 series of standards.
Top Co-op Employer Award (2017), University of Guelph
Recognition of SCADA co-op student program that I launched in 2017 at Guelph Water to provide SCADA programming/design co-op placements.
Mid-Career Achievement Award (2014), School of Engineering, University of Guelph (Guelph, Ontario, Canada)
Recognizes an alumnus who has graduated from the University of Guelph in the last 10 to 25 years, and who has earned respect within the profession and in the broader community, and one who has already attained significant achievement and gives promise to future contributions.
Leaders Under 40: Class of 2011, Control Engineering magazine
Featured in the October 2011 issue of Control Engineering and Plant Engineering magazines.

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RECENT PUBLICATIONS

Presentations

Nasby, G. (2025). "**Keynote: Why SCADA is Hard – Tales from the Trenches & New Ideas."** BCWWA Conference, Nov 18-19. Vancouver, BC.
Nasby, G. (2023). "**Securing Critical OT Systems in a Railroad – Pitfalls and Best Practices**." Rail Cyber Senate. May 23, 2023. Chicago IL USA.
Nasby, G. (2022). "**Introducing ISA62443/IEC62443 Series of Cybersecurity Standards & Applying them to Municipal Water SCADA Systems**." 2022 Canadian National Water/Wastewater Conference. Jan 2022. Invited speaker.
Nasby, G. (2021). "**Permissives, Interlocks, Control Schemes, and Alarms: Using Better Terminology to Make SCADA Systems Easier to Design, Build, Understand and Use**." 2021 Ontario Water Conference. Ontario Water Works Association. Virtual sessions April 19-May 5.
Nasby, G. (2019). "**Operational Dashboards to monitor watermain flow patterns, towers, and real-time pumping electricity costs per m3**." 2019 OWWA Automation Workshop. Ontario Water Works Association. Nov 6, 2019. Mississauga, Ontario, Canada.
Nasby, G. (2017) "**Current Trends in SCADA Systems: Situational Awareness, Alarm Management, Data Availability and System Redundancy.**" OWWA Source to Tap Workshop. Ontario Waterworks Association. Oct 2, 2017. Timmins, Ontario. Invited Speaker.

Articles

Nasby, G. (2023). "**Managing SCADA During a Municipal Water/Wastewater Capital Project."** ISA InTech magazine. December 2023. pp. 57-69.
Nasby, G. (2023). "**ISA112: Supporting SCADA System Reliability**". ISA InTech magazine. February 2023. pp. 39-44
Nasby, G. (2022). "**Importance of Having a Strong SCADA Governance Policy Framework & Work Processes for SCADA Systems."** ISA-WWID. Fall 2022
Nasby, G. (2022). "**Cybersecurity and our Municipal Water Infrastructure: Identifying and Mitigating Threats**." Water Source. Spring 2022. pp.6-7.
Nasby, G. (2018). "**ISA112 Committee Releases SCADA System Workflows & Architectures**." ISA W/WW newsletter. Winter 2019. pp. 8-10.
Nasby, G. (2014). "**Workforce Development: It's a Team Effort**." ISA InTech magazine. Aug/Sept 2014. p. 46.
Nasby, G. (2012). "**Using Process Flow Sheets as Communication Tools.**" Chemical Engineering Progress. AIChE. Oct 2012. pp. 36-44.

Technical Reports / Standards

ANSI/ISA-112.00.01-2025 "**SCADA Systems – Part 1: SCADA Lifecycle, Diagrams and Terminology**." International Society of Automation.
IEC-63303:2024 "**Human-Machine Interfaces for Process Automation Systems**." International Electrotechnical Commission.
CSA/ANSI-T200-2022 "**Evaluation of software development and cybersecurity programs.**"
ANSI/ISA-84.91.01-2021 **"Identification and Mechanical Integrity of Process Safety Controls, Alarms, and Interlocks in the Process Industry Sector."**
ISA-TR18.2.2-2018 "**Alarm Identification and Rationalization**."
ANSI/ISA-18.2-2016 & IEC-62682:2022 "**Alarm Management for the Process Industries**."
ANSI/ISA-101.01-2015 "**Human Machine Interfaces**."

A full list of publications is available on www.grahamnasby.com under Publications.

PROFESSIONAL CONTRIBUTIONS

Committees:

Co-Chair and Lead Author, ISA112 SCADA Systems Management standards committee (2016 - present)
Voting Member, CSA P125 Operational Technology Functional Safety and Security, Canadian Standards Association (since 2019)
Voting Member, ISA18 / IEC-62682 Alarm Management standards committee (2010 - present), voting member since 2012
Voting Member, ISA101 HMI / IEC-63303 Systems Management standards committee (2011 - present, voting member since 2017)
Contributing Member, ISA99 /62443 Industrial Automation and Control Systems Security standards committee (since 2014)
Technical contributor and reviewer on the committee which develops/maintains ISA/IEC-62443 series of industrial cyber security standards.
Canadian Expert, SCC/IEC-TC65/65A "Industrial Process Measurement, Control & Automation" standards committee (since 2017)
Director, ISA Standards & Practices Oversight Board, International Society of Automation (2026 – present)

Formerly held positions:

Vice-President – Industries and Sciences, International Society of Automation (2016-2017 VP-elect, 2018-2019 VP)
Director, ISA Water/Wastewater Technical Division (2013-2015, Director-elect 2011-2012, Marketing Chair 2010)
General Symposium Chair, **2012 & 2013 ISA Water/Wastewater and Automatic Controls Symposiums**, Orlando FL (2011-2013)
President, ISA Hamilton Section, Hamilton, Ontario, Canada (2014 & 2022-2023, VP 2012-2013, Secretary 2015-2021
Newsletter Editor, ISA Water/Wastewater Technical Division, International Society of Automation (2011 - 2023)
AWWA Operational Technology Committee, American Water Works Association (2016-2022)
AWWA Cybersecurity Sub-committee, American Water Works Association (2018 - 2022)
WEF Automation and Information Technology Committee, Water Environment Federation (2012 - 2022)
OWWA Automation Committee, Ontario Waterworks Association (2015 - 2022)
Government Relations Committee, Ontario Society of Professional Engineers (2010-2017)

MEMBERSHIPS

PMI - Project Management Institute | ISA - International Society of Automation – Senior Member | IEEE Control Systems Society
IEEE - Institute of Electrical and Electronic Engineers – Sr. Member | ACM - Association for Computing Machinery – Sr. Member
WEF - Water Environment Federation | WEAO - Water Environment Assoc. of Ontario | AWWA - American Water Works Assoc.
OWWA - Ontario Waterworks Association | AIChE - American Institute of Chemical Engineers | OPSE – Ontario Soc. Prof. Eng'rs

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WORK EXPERIENCE

Systems Lead – Eastern Canada, Senior Systems Engineer (Jan 2026 – present)

PBX Engineering Ltd. – Guelph Ontario Office. Head Office in Victoria BC, with multiple offices across Canada.

PBX is a specialty electrical & systems engineering firm servicing the transportation, infrastructure, water/wastewater, industrial, telecom, power, security/corrections sectors, designing resilient systems that power, connect, move and protect communities across North America.

Responsible for developing, building and leading PBX's system engineering practice in Ontario and Eastern Canada. My particular areas of focus are servicing and building the business in the Ontario municipal water/wastewater, industrial, rail, and infrastructure sectors, as well as building and developing PBX's Ontario-based electrical and systems engineering teams.

Senior Manager – OT & Network Security Architecture (Aug 2024 – Oct 2025)
Senior Manager – OT Security Architecture (2022 – 2024)

CANADIAN NATIONAL RAILWAY COMPANY (CN Rail) – Guelph/Toronto, Ontario, Canada. *Head Office: Montreal*

CN operates a rail network of 20,000 route-miles of spanning Canada and the USA. Each year, CN's 25,000 railroaders transport more than $250 billion worth of goods. CN is one of the largest Class 1 Railroad companies in North America with more than 13,000 route pairings.

Responsible for leading the OT & Network Security Architecture practice at CN, by leading a multi-disciplinary security team that develops/maintains security architecture design standards, assesses new technologies, develops security roadmaps, provides security support for critical systems, and works with CN's various internal business units and subsidiaries.

Sessional Instructor, Evenings (2017 – present)

McMASTER UNIVERSITY, Faculty of Engineering – Hamilton, Ontario, Canada

I teach a 14-week evening course on Engineering Law and Ethics. As of 2026, I have taught the course more than 15 times.

Water SCADA and Security Specialist (2015 – 2022)

CITY OF GUELPH, ENVIRONMENTAL SERVICES – Guelph, Ontario, Canada

Environmental Services provides Guelph's 140,000 residents and businesses clean, safe, and high-quality drinking water from a distributed ground water system that encompasses some 22 production wells, 35 water facilities, and over 600 km of distribution piping.

Responsible for leading the Water SCADA team that operates, designs, and maintains automatic control systems, including process control systems, instrumentation, historical data collection, reporting systems, cyber security and physical security. The role also encompassed developing and maintaining the long-term SCADA capital plan; SCADA asset lifecycle planning; SCADA condition assessments; prioritizing SCADA investments; overseeing and planning SCADA capital upgrades; managing consultants and contractors; managing support contracts, warranties, and spare parts strategies; and coordination with other functional groups including operations, compliance, capital projects, health/safety, IT and corporate security.

Sessional College Instructor, Evenings (2017 – 2022)

FLEMING COLLEGE, School of Environmental & Natural Resource Sciences (Frost Campus) – Lindsay, Ontario, Canada

I have taught as a guest instructor for their Advanced Water Systems Operations and Management (AWSOM) program.

CONESTOGA COLLEGE, Applied Electrical Motion and Control Management Program – Kitchener, Ontario, Canada

As part of their technical programs, I have taught evening courses on electrical theory and PLC programming (ControlLogix).

MOHAWK COLLEGE, Marshall School of Skilled Trades & Apprenticeship – Stoney Creek, Ontario, Canada

As part of 847 Fluid Power trade school program, I have taught evening courses on pneumatic controls and Siemens PLCs.

Instrumentation & Controls Lead (2012 – 2015)
System Integrator (2010 – 2011)

ERAMOSA ENGINEERING INC. (now ERAMOSA, A CIMA+ Company) – Guelph, Ontario, Canada

Eramosa is a consulting engineering firm that provides system integration, electrical engineering, and SCADA master planning services.

Began role as a system integrator, focusing on PLC/RTU programming, HMI development, and plant start-ups. Soon moved into I&C design, electrical design, and preparing tender specifications/drawings for large SCADA retrofit projects. Oversaw junior designers and acted as a reviewer. Developed I&C, electrical and integration scopes of work and SCADA designs for sewage lift stations, water plants, water towers, and pumping stations. Managed Projects. Tenders. Contract Administration.

Sample Projects:

- **Alarm Management Program:** Region of York – Facilitated the implementation of the ISA-18.2 alarm management standard, including developing an alarm philosophy and alarm rationalization for 160 water/wastewater facilities.
- **Cayuga WWTP Capacity Increase and Upgrade:** Haldimand County – Developed control narratives, designed, and programmed the new SCADA system. Coordinated the 4-month plant start-up as the on-site project manager.
- **SCADA standards and Pilot Site Integration:** Region of York – Review, assessment and major update to Region's Division 13 I&C specs, standards, and guidelines. Developed new standards for HMI/PLC programming, screens and tagging.
- **SCADA Master Plan & SCADA Standards:** City of Hamilton **–** Development and implementation across 230+ facilities.
- **Arkell Wellfield Control System Upgrades:** City of Guelph – upgrade of coordinated control for 6 groundwater wells
- **Philip H. Jones WWTP Treatment Plant Major Expansion & SCADA System Replacement:** Town of Penetanguishene

WORK EXPERIENCE (cont'd)

Controls and Commissioning Lead (2008 - 2010)
Controls Specialist (2007 - 2008)

CHEME ENGINEERING – Campbellville, Ontario, Canada, *now part of Vulcan Engineering Group*

Cheme is a consulting engineering firm providing process engineering, commissioning, and validation services for the pharma industry.

Responsible for project management, process design, detailed controls design, drawing/spec preparation, tendering, bid evaluation, construction, managing contractors, contract administration, commissioning, and IQ/OQ/PQ validation.

Sample Projects:

- **Building 90 Facilities Upgrade** – Led process engineering for $20 million expansion of vaccine production facility: USP PW & WFI water systems, liquid waste treatment, lab water systems, clean steam, lyophilizer, support utilities, etc.
- **Building 86 Waste System** – Designed duplex pH neutralization system, led HAZOP review, prepared tender pkg, evaluated bids, acted as owner's rep, contract admin, reviewed shops, supervised installation/testing/commissioning.

Control Systems Consultant (2007)

INVENTURE SYSTEMS LTD – Concord, Ontario

Inventure Systems provides turnkey engineering solutions for the concrete industry, from upgrades to complete batch plants.

Provided control system engineering and process monitoring support for SCADA monitoring of ready-mix concrete plants.

Control Systems Specialist (2006)

INTLVAC – Georgetown, Ontario*, formerly known as IntelVac*

Intlvac designs and manufactures custom high vacuum systems for ion-beam etch, vapour deposition and thin film applications.

Designed, implemented, and commissioned control systems for turn-key systems used in semiconductor, optics, and defence industries. Provided technical support for installed systems, developed training materials, and wrote user manuals.

Technical Coordinator – R&D (2005)

RWDI, Consulting Engineers & Scientists – Guelph, Ontario

RWDI provides a wide range of design services including wind engineering, air quality, wind/snow loading, and vibration analysis.

Assisted with engineering studies of air movement, loading, vibration, and wind tunnel simulations. Developed calculation tools using C/C++, C#, .NET, Visual Basic, Web Services, SQL, Excel Macros, FORTRAN, and dBase for statistical models.

Web Designer / Programmer (1998 - 2015)

WEB MASTERING SERVICES – Guelph, Ontario

WMS provided consulting services for online transaction processing, user portals, and record storage for the insurance industry. Other services also included web development, online identity advice, and database administration services using wide range of technologies.

IT Help Consultant – Team Lead, Computing & Communications Services (2000 - 2005)
IT Help Consultant, Computing & Communications Services (1998 - 2000)

UNIVERSITY OF GUELPH – Guelph, Ontario

CCS is the UofG's central IT department which supports over a 100 products & services for the campus's 40,000+ user accounts.

Provided 1st and 2nd level support (both on-site and call centre) for staff, faculty and students. Team-lead for drafting support policies, maintaining documentation, and training development. Developed and taught training seminars for staff, faculty, and students. 20-30 hours per week while completing part-time engineering degree at University of Guelph.

Graham's Marine Electrical Solutions (1994 - 1998)

GRAHAM'S MARINE ELECTRICAL SOLUTIONS – Penetanguishene, Ontario

Part-time and summer business I started when I was 16 years old installing/upgrading electrical systems in boats 20 to 100 ft.

EDUCATION

B.Sc. (Engineering) - Honours (2004)
University of Guelph, Guelph, Ontario, Canada
Major: Systems Engineering
Minor: Computer Science

EMBA (part-time, expected graduation in 2027)
University of Fredericton, Fredericton, NB, Canada

Certificate in Project Management (2010)
University of Waterloo, Waterloo, Ontario, Canada

COMMUNITY INVOLVEMENT

Ont. Soc. of Prof. Engineers, mentor (2025-present), **OWWA & WEAO mentoring programs**, volunteer mentor (2016-2022)
Hart House Orchestra, Clarinet (2019-present), **Hart House Symphonic Band**, Clarinet & Bass Clarinet (2020-2022)
Guelph Little Theatre, played clarinet in pit orchestra for production of Gilbert & Sullivan's: *The Gondoliers* (2017)
Toronto Concert Band, Contrabass Clarinet (2015-2016), **Mississauga Pops Concert Band**, Clarinet (2015-2018)
MS Bike Ride for Multiple Sclerosis, Rider (2010 – present), Team Captain (2013 – 2014), Tour Leader (2015 – present)