

FIRM

Soteria Company, LLC
May 2016 - Present

EDUCATION

B.A.Sc. in Computer Engineering,
University of Waterloo, Canada, 1991
Bachelor of Mathematics,
University of Waterloo, Canada, 1988

AREAS OF EXPERTISE

- System Safety for Rail Transit Systems
- RAM for Rail Transit Systems
- Communications-based Train Control Systems with ATO and ATP

REGISTRATIONS, CERTIFICATIONS AND MEMBERSHIPS

- Professional Engineer, Ontario License #100175642
- ASCE 21 Automated People Mover Standard Committee – Member
- International System Safety Society – Vice President, Canada Chapter

YEARS OF EXPERIENCE

25 Years

EMPLOYMENT/CONSULTING

- Soteria Company, LLC
2016 – Present
- The SafetyWright, Inc.
2016 – Present
- Parsons
2010 – 2016
- Thales Rail Signaling
1995 – 2010
- SPAR Aerospace Ltd.
1991 – 1994

TECHNICAL EXPERIENCE

Ms. Cox is a Professional Engineer licensed in Ontario. She has 25 years of technical and management experience. Of those 25 years, 20 have focused on the rail industry, primarily in the area of communications-based train control (CBTC) systems that provide automatic train operation (ATO) and protection (ATP) for a variety of rail systems. Ms. Cox specializes in System Safety and RAM for rail transit systems through the application of regulations and structured methodologies.

SUMMARY OF EXPERIENCE

Ms. Cox's current rail transit responsibilities include the following projects and activities:

- **Edmonton Valley Line LRT Project** – currently providing system safety and security planning, analysis and certification, and input to the Verification and Validation team.
- **Toronto Transit Commission Automatic Train Control** – supporting system safety and RAM of the ATC program on the YUS line; reviewing supplier's RAMS program and guiding certification of the integration of ATC into current operations and the TYSSE line extension.
- **Toronto Rapid Transit Implementation Program (formerly Transit Expansion Program), Metrolinx, Ontario Canada** – Ms. Cox is the System Safety, RAM and Security Lead on the Technical Advisors team monitoring progress of Crosslinx Transit Solutions.

RELEVANT AND RELATED EXPERIENCE WITH SOTERIA

LAX Automated People Mover Project (APM)

August 2018 - Present

The Los Angeles International Airport (LAX) Automated People Mover (APM) is a major component of the Landside Access Modernization Program (LAMP). The APM Project will provide an elevated guideway with an at-grade Maintenance and Storage Facility and six stations, connecting to CTA passenger terminals through a network of elevated pedestrian walkways and a vehicle system. The APM Project also includes procurement of the Bombardier INNOVIA APM vehicle, along with operating systems and infrastructure to support the system.

In the role of subcontractor to LAX Integrated Express Solutions (LINXS), Soteria has an extensive role in ensuring system safety. Among other roles, Soteria is managing the System Safety Program Plan, additional Safety Plans, performing Threat and Vulnerability Assessment, and managing Certification.

Ms. Cox's Role: Senior System Safety Consultant

In her role as Senior System Safety Consultant on this project Ms. Cox is providing system safety Independent Verification and Validation.

Edmonton Valley Line LRT Project, Edmonton, Canada

May 2016 – Present

The Edmonton Valley Line LRT Project connects the Mill Woods area with downtown Edmonton. It is comprised of low-floor, urban styled LRVs which run on a dedicated right-of-way that is integrated into the city landscape. The System consists of approximately 13km of dual guideway, with approximately 2km of the guideway elevated.

Soteria is leading the Safety and Security Certification Program and the Independent Verification and Validation (IV&V) Process, including supporting development of the System Safety Program and System Security Plan, as well as providing support in the areas of design and construction, training requirements, Safety and Security Verification, and operational readiness.

Ms. Cox's Role: Senior System Safety Consultant

Ms. Cox is providing system safety and security planning, analysis and certification. She will also participate on V&V team and on the Independent Verification and Validation (IV&V) team.

ADDITIONAL RELEVANT AND RELATED EXPERIENCE

The SafetyWright, Inc., Toronto, Canada

System Safety Consultant
October 2016 – Present

Metrolinx Finch West LRT, Toronto, Canada

Ms. Cox leads the Independent Safety Assessment team for system safety and security assessment of the project infrastructure and systems. This project will provide fast, reliable transit from Humber College to Finch West Station with essential links to TTC Line 1, York region transit and Peel region transit.

Toronto Transit Commission Automatic Train Control, Toronto, Canada

Ms. Cox supports system safety and RAM of the ATC program on the YUS line, reviewing supplier's RAMS program and guiding certification of the integration of ATC into current operations and the TYSSE line extension.

Toronto Rapid Transit Implementation Program (formerly Transit Expansion Program), Metrolinx, Ontario, Canada

Metrolinx is developing a network of new Light Rail Transit (LRT) lines, operating in a combination of tunnel, elevated structure and surface semi-private right-of-way that will use Light Rail Vehicles with Automatic Train Protection (ATP) and Automatic Train Operation (ATO) functionalities. Ms. Cox is the System Safety, RAM & Security Lead on the Technical Advisors team monitoring progress of Crosslinx Transit Solutions.

The Florida Environmental Mitigation and Mobility Initiative ("EMMI"), Inc., Orlando, Florida, May 2016 – February 2017

Ms. Cox supported this project as Technical Advisor, providing system safety advisory services for the concept development and preliminary design phases of a cutting-edge passenger transport system. The project connected the Orlando International Airport and the Orange County Convention Center, with essential application of FTA practices and ASCE 21 standard.

Parsons, Toronto, Canada

Manager, System Safety in Rail Transit Systems
April 2010 – October 2016

Bay Area Rapid Transit (BART) Train Control Modernization Program, San Francisco, CA

Ms. Cox was the System Safety Manager for BART's train control modernization program, an initiative to modernize BART's 40+ year old train control, and address critical capacity, reliability, and safety needs. Updates focused on a modern Communication-Based Train Control (CBTC) system to support more frequent service and ensure safe operation of the system. Additionally, the CBTC system monitors train location, ensures sufficient distance between trains, manages train movements, and helps staff to analyze and report on any issues. Ms. Cox managed the safety aspects of the program to ensure improved system reliability, decreased runtime of trains between stations, and to allow trains to run closer together.

GO Rail Transit CBTC Concept of Operations and Migration Plan, Metrolinx, Ontario Canada

This project was to implement CBTC technology. Ms. Cox was the System Safety Consultant on the study team to develop a Preliminary Concept of Operations for the GO Transit rail network equipped with CBTC technology, and to outline potential migration strategies for the Metrolinx Regional Rail Express program.

GO Rail Transit Enhanced Train Control Feasibility Study, Metrolinx, Ontario Canada

Ms. Cox was the System Safety Consultant on the Metrolinx study team to identify and assess potential technologies to meet increased service level demands. The team addressed increased needs in the areas of rail network infrastructure, signaling/train control systems, grade crossing protection systems, and communications networks.

Toronto Rapid Transit Implementation Program (formerly Transit Expansion Program), Metrolinx, Ontario Canada

Metrolinx formed a team to develop approaches for a network of new Light Rail Transit (LRT) lines, operating in a combination of tunnel, elevated structure and surface semi-private right-of-way. The lines were to use Light Rail Vehicles with Automatic Train Protection (ATP) and Automatic Train Operation (ATO) functionalities. Ms. Cox was the System Safety, RAM & Security Lead on the Technical Advisors team, developing procurement documentation and reference concept design for the infrastructures and systems. She established the Concept of System Safety and Security Management for the RTI Program, providing context for the procurement to ensure Metrolinx met its responsibilities as owner.

Low-Floor Light Rail Vehicle Procurement, Metrolinx, Ontario Canada

Metrolinx formed a team to develop approaches for a network of new Light Rail Transit (LRT) lines, operating in a combination of tunnel, elevated structure and surface semi-private right-of-way. The lines were to use Light Rail Vehicles with Automatic Train Protection (ATP) and Automatic Train Operation (ATO) functionalities. Ms. Cox was the System Safety Manager on the LTK/Parsons team, providing Vehicle Engineering Services for the design/procurement of the LRVs. She reviewed the system safety program throughout development of the vehicle.

Houston Metro Rail Expansion

Ms. Cox conducted a safety analysis of axle counter based secondary detection for HRT.

Vehicle Subsystems System Safety and RAM Plan, Toshiba, Tokyo, Japan for Bangkok Purple Line

On this project, Toshiba delivered Propulsion, Auxiliary Power, Train Control & Monitoring and Air Conditioning systems for integration into the rolling stock for Bangkok Purple Line. Ms. Cox developed the System Safety and RAM Program Plan for Toshiba's delivery of subsystems.

Vehicle Subsystems RAM Analysis and Prediction, Toshiba, Tokyo, Japan for Bangkok Purple Line

On this project, Toshiba delivered Propulsion, Auxiliary Power, Train Control & Monitoring and Air Conditioning systems for integration into the rolling stock for Bangkok Purple Line. Ms. Cox was the RAMS lead for the study, providing technical direction and review based on the MIL-HDBK guidelines.

ECP Brake System for Passenger Trains Safety Study, APTA, Washington D.C.

The objective of this program was to utilize the results of the Electronically Controlled Pneumatic (ECP) Brake System for Passenger Trains study in the development of an APTA standard. Results were published by the APTA Passenger Rail Equipment Safety Standard (PRESS) Mechanical Group, and utilized by mainline passenger rail systems under the regulatory oversight of the Federal Railroad Administration (FRA). The program included Safety Risk Model, Preliminary Hazard Analysis (PHA), Failure Mode Effects and Critically Analysis (FMECA), Operating and Support Hazard Analysis (O&SHA). Ms. Cox led the study, providing technical direction and review.

Operation Control Centre, Calgary Transit, Alberta Canada

Ms. Cox led the system safety development for the Phase A conceptual design of a new OCC and the development of a Threat and Vulnerability Assessment for the proposed control center and the existing facility. The work included a review of existing organization, the processes and procedures, with recommendations for future development in support of the new OCC. She continued to support the project in Parsons' role as Owner's Engineer for the Phase B detailed design and Phase C Construction of the new OCC.

Red Line Project, Tel Aviv Metropolitan Mass Transit, Israel

Ms. Cox provided RAMS consulting services for strategy plans to NTA for this light rail system and ensured compliance with selected Israel legislation regarding safety and CENELEC safety management of railway projects. She was also involved in SDAG tender review focusing on RAM and Safety elements of the overall tender package, and in supporting development of O&M tender specifications.

Hazard Analysis, San Francisco Municipal Transportation Agency, California, United States of America

The MUNI Metro is a mixed-mode light rail transit operations through a combination of street-running and underground tunnels. Ms. Cox led a study to assess the risk of hazards present in specific areas of operations and to recommend mitigation measures.

Union-Pearson Express - Automated People Mover Interface Safety Support Services, Greater Toronto Airports Authority, Mississauga Ontario Canada

This project provided diesel-powered passenger train service between Toronto Pearson International Airport Terminal 1 and Union Station, Toronto. Ms. Cox was the Project Manager and System Safety Engineer conducting independent reviews of risk analyses and identifying impacts to APM standard operating procedures.

Automated People Mover Audit, Greater Toronto Airports Authority, Mississauga Ontario Canada

Ms. Cox was the Project Manager and System Safety Lead of an audit of the Toronto Pearson International Airport APM. The audit covered safety, security, operations and maintenance.

Vehicle Subsystem Design, Toshiba, Japan for WMATA 7000 Series Rail Cars

This project integrated Communications and Monitoring (CAMS) and Propulsion Systems into rail cars for Washington Metro. Ms. Cox led the development of RAMS documentation based on the MIL-STD-882, IEEE 1473, IEEE 802.11n, IEEE 802.3, FTA MA-90-5006-02-01 and NFPA 130 standards and guidelines.

Transit Expansion Program, Toronto Transit Commission, Toronto Canada

Ms. Cox was the System Safety Specialist for a study that researched industry precedent for application of secondary train detection systems, and assessed the hazards and risks of operations for Transit Expansion. She was the PHA manager with the responsibility to initiate, review and consolidate the PHAs being developed for various service lines and their Maintenance and Storage Facilities. She was also responsible for hazard analysis of the Low-Floor LRV station platform interface to identify and evaluate the hazards, and to assess the effectiveness of various control measures including Platform Edge Doors and Guideway Intrusion Detection systems to mitigate the hazards. On this project she also served as technical expert for a strategic analysis for operational control of line functions and yard control. The study considered operation needs and phasing, centralized and decentralized transit command and controls strategies, system architecture, yard control strategies and associated systems design issues, and system safety.

Thales Rail Signaling, Toronto Canada

1995 - 2010

Projects included Docklands Light Rail, Hong Kong Disneyland Resort Line, Paris RATP Line 13. Ms. Cox fulfilled various roles, such as software group leader, systems designer, system safety leader, and R&D technical specialist.

SPAR Aerospace Ltd, Toronto Canada

1991 - 1994

As Control Systems Analyst, Ms. Cox developed control systems for the International Space Station program robotic system Special Purpose Dexterous Manipulator (SPDM).