



SMS Roundtable: Safety Event Investigation Causal and Contributing Factors

Presenters:

Lizbeth J. Feijóo Marrero

Program Manager (SSOA)

José Cruz Mangual

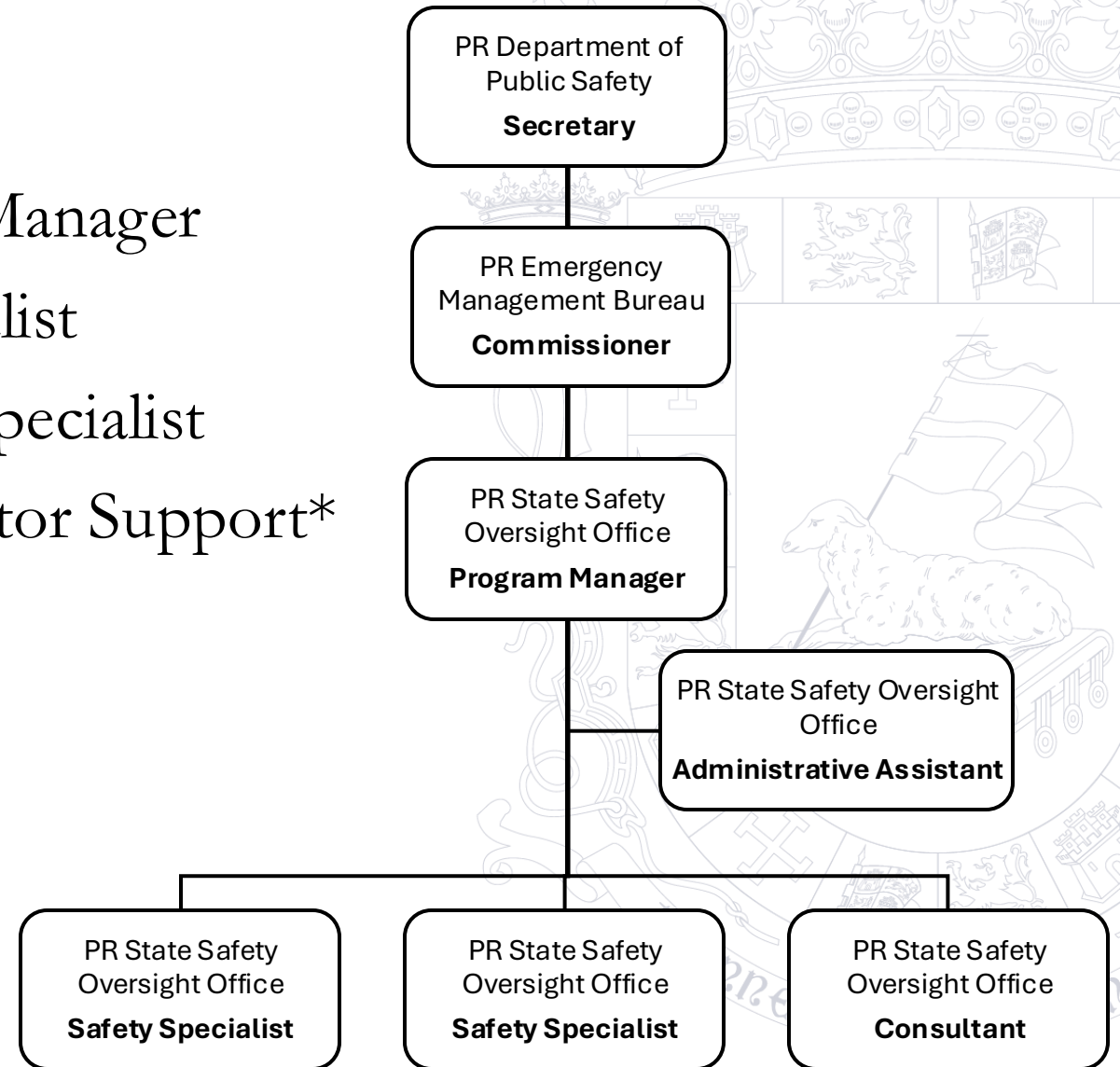
Safety & Security Manager (RTA)



SSOA Staff

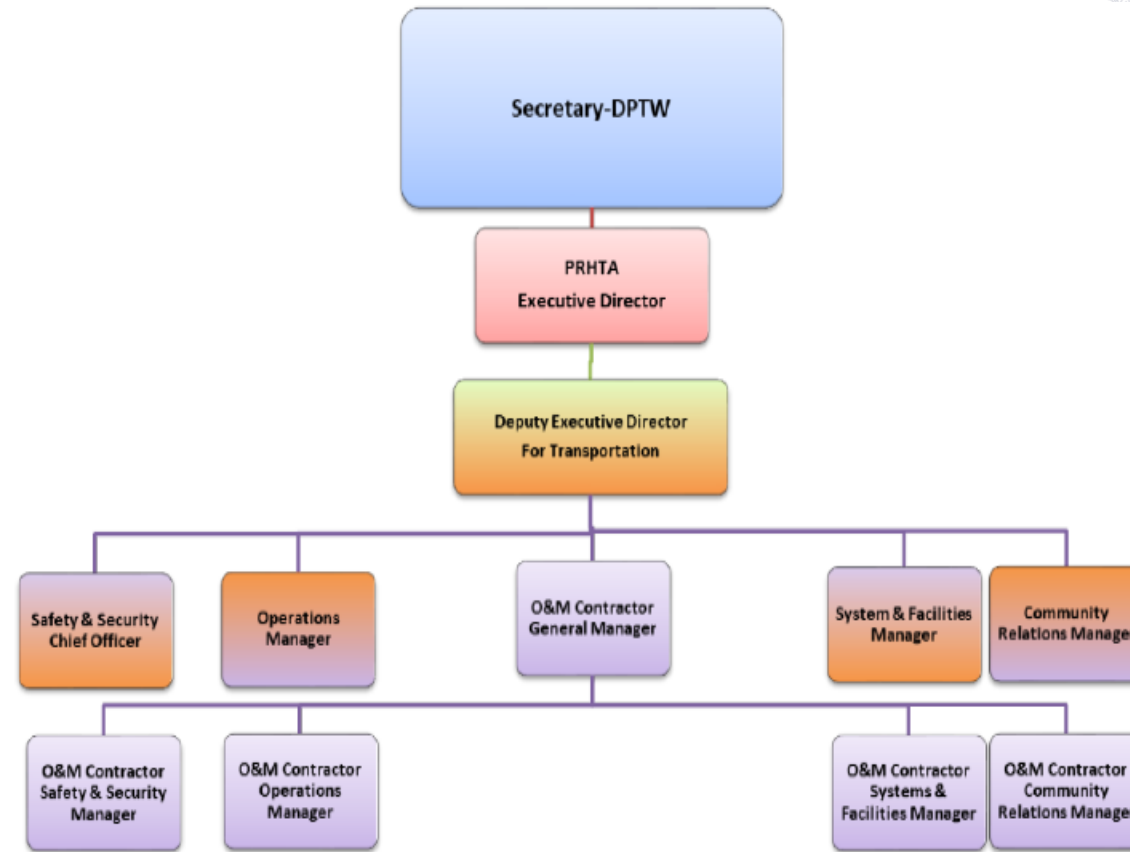
- Lizbeth Feijóo Marrero – Program Manager
- Thais L. Colón Ortiz – Safety Specialist
- Margie G. López Pacheco – Safety Specialist
- dss+ Transportation LLC – Contractor Support*

* Specific tasks



RTA Staff

The PRITA Rail System is managed by the PR Highways and Transportation Authority (PRHTA) under the Department of Transportation and Public Works (DTPW) Executive Branch. The system is the direct responsibility of the PRHTA as the FTA Grantee. Figure below illustrates the Rail Transit Authority Safety & Security organizational management structure.



Overview of the Tren Urbano – Puerto Rico

- The Tren Urbano is a heavy rail, fixed guideway public transportation system serving the San Juan metropolitan area in Puerto Rico. It is operated by ACI-Herzog Joint Venture under contract with the Puerto Rico Integrated Transportation Authority (PRITA/ATI).



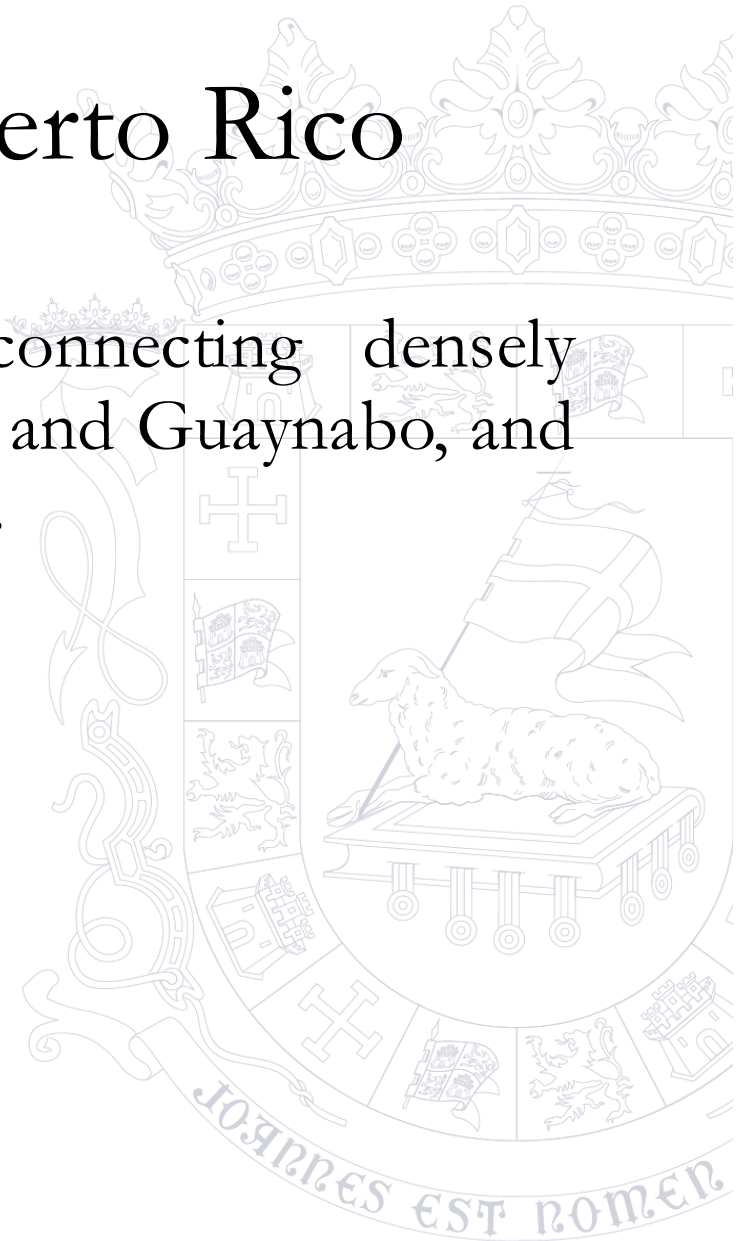
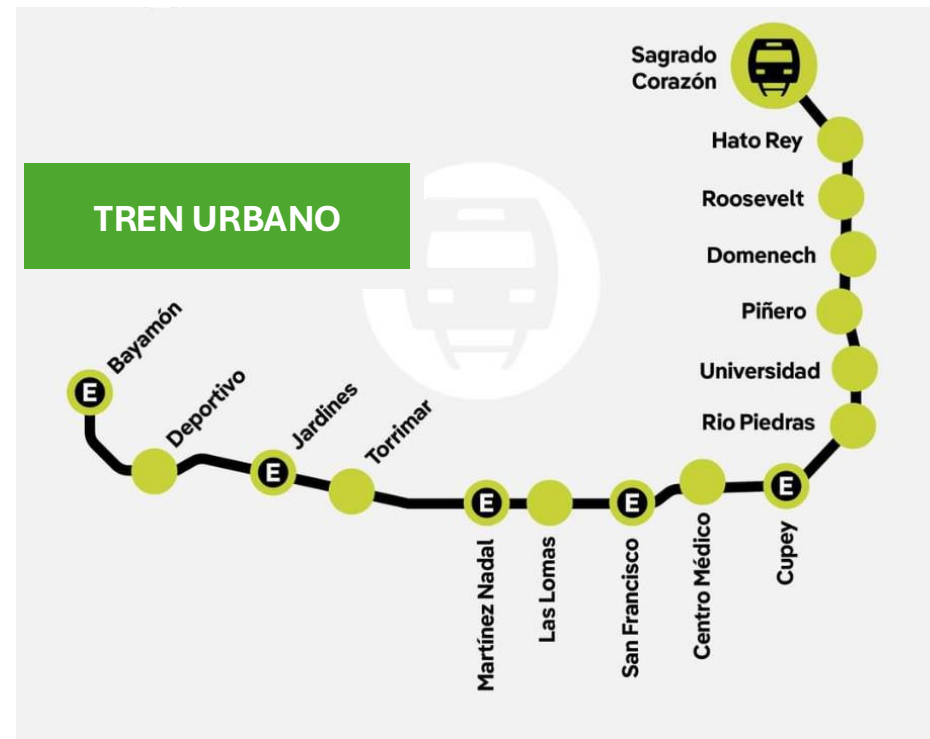
Overview of the Tren Urbano – Puerto Rico

- Key features of the system include:
 - Length: 10.7 miles (17.2 kilometers)
 - Stations: 16
 - Mode: Heavy rail
 - Operations: Fully grade-separated with automated train control
 - Oversight Jurisdiction: Puerto Rico Emergency Management Bureau (PREMB) State Safety Oversight (SSO) Program



Overview of the Tren Urbano – Puerto Rico

- The system provides critical urban mobility, connecting densely populated municipalities such as San Juan, Bayamón, and Guaynabo, and serving both daily commuters and university students.

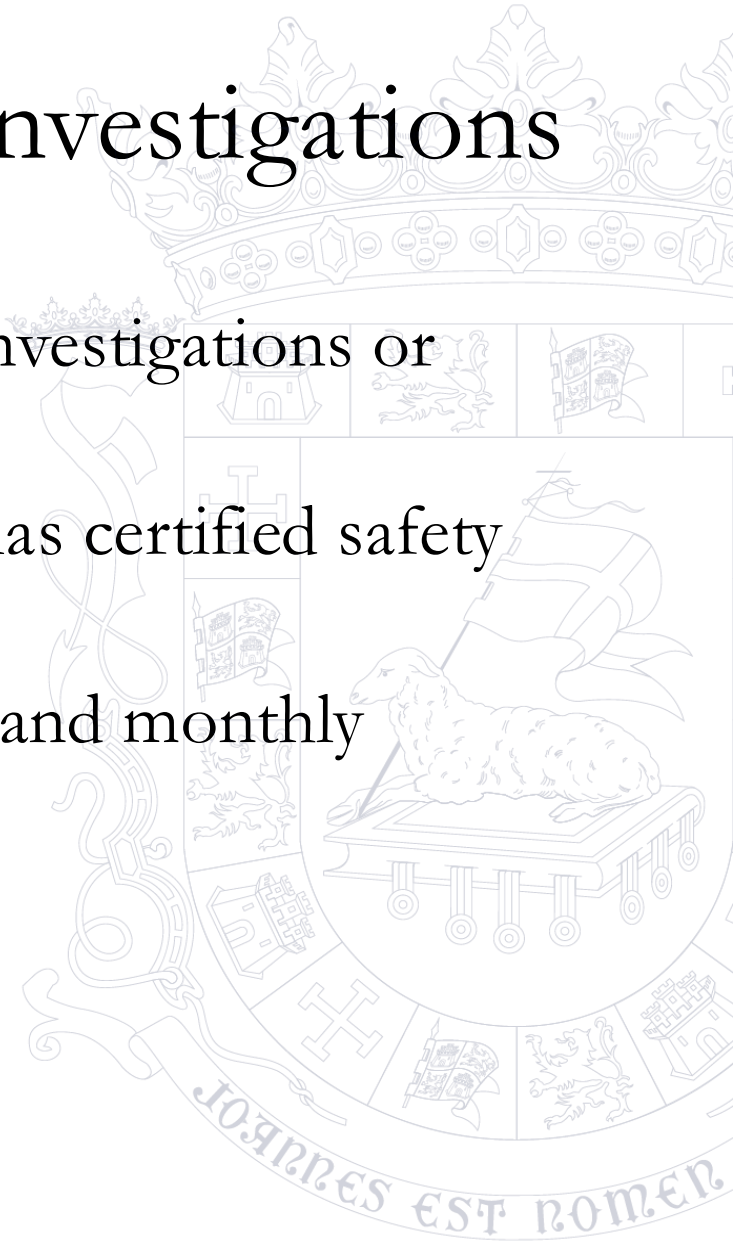


SSOA



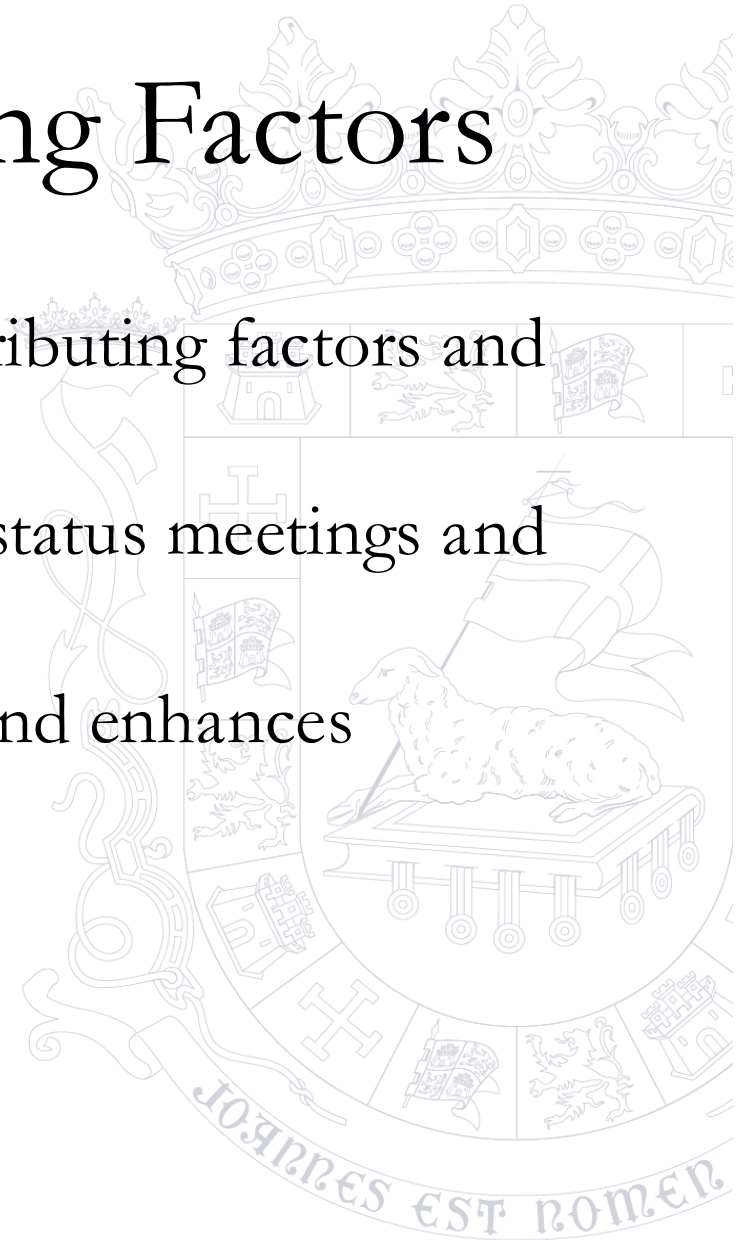
SSOA Involvement in RTA Event Investigations

- PREMB SSO is authorized to conduct independent investigations or delegate them to the RTA (Section 7.1.2).
- Typically delegates investigations to the RTA, which has certified safety staff and subject matter experts.
- SSOA oversees the process through progress reports and monthly meetings, ensuring compliance and accountability.



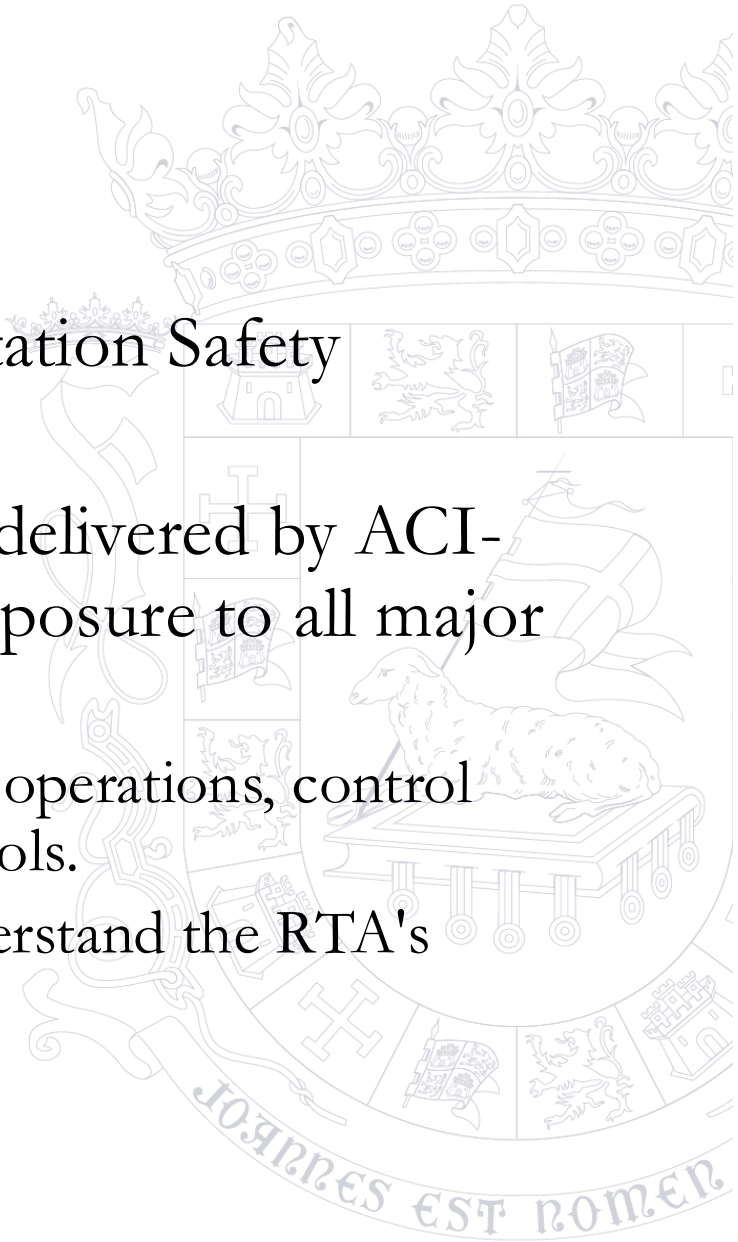
Identifying Causal & Contributing Factors

- Section 7.4 requires RTAs to identify causal and contributing factors and develop corrective actions.
- Factors are discussed progressively through monthly status meetings and 30-day investigation updates.
- Collaborative review strengthens root cause analysis and enhances corrective planning..



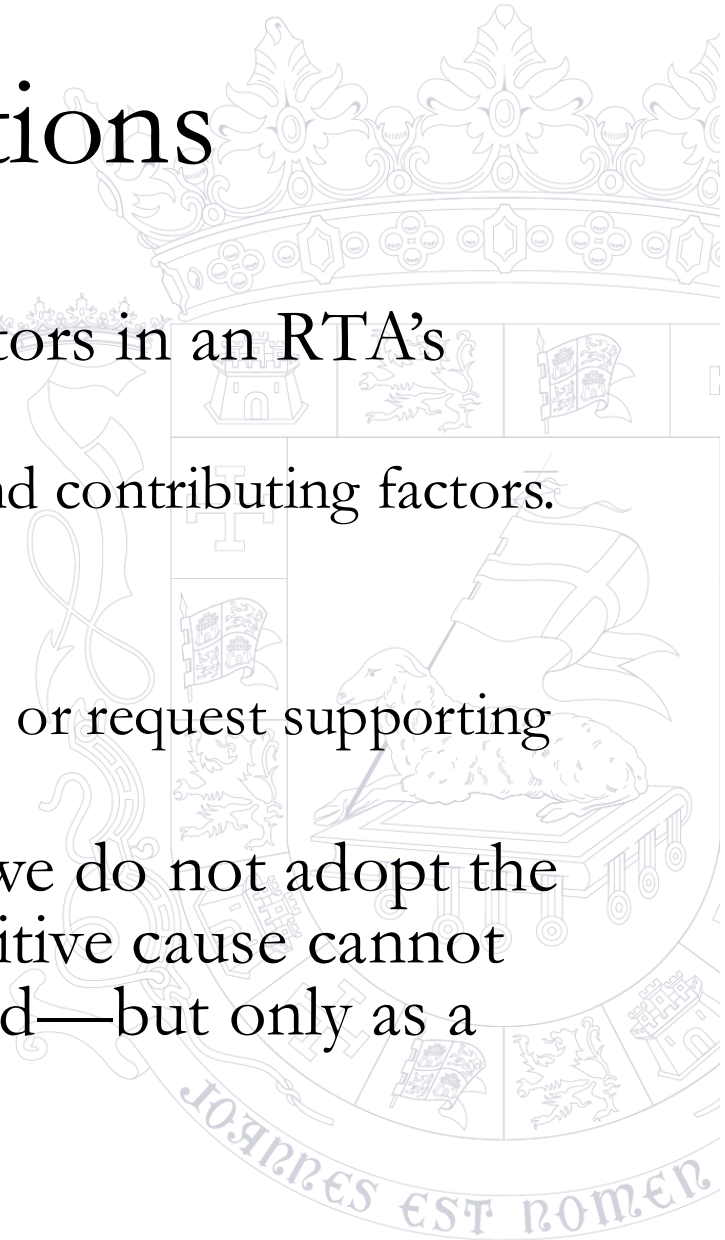
SSOA Staff Training

- All personnel are required under the Public Transportation Safety Certification Training Program (PTSCTP).
- A biennial technical training refresher developed and delivered by ACI-Herzog for the SSO Staff provides comprehensive exposure to all major operational areas of the Tren Urbano system.
 - Topics include power systems, track infrastructure, vehicle operations, control center, maintenance, human resources, and training protocols.
 - This hands-on training enhances the SSOA's ability to understand the RTA's internal processes and conduct more effective oversight.



Process for Reviewing Investigations

- The process for reviewing causal and contributing factors in an RTA's report includes:
 - Ensuring staff understand the difference between causal and contributing factors.
 - Regularly monitoring the progress of investigations.
 - Conducting a detailed review of the final report.
 - Scheduling follow-up meetings if needed to clarify findings or request supporting evidence.
- If the reported factors are unclear or not acceptable, we do not adopt the report until further clarification is provided. If a definitive cause cannot be determined, the “most probable cause” may be used—but only as a last resort and with consensus from both parties.

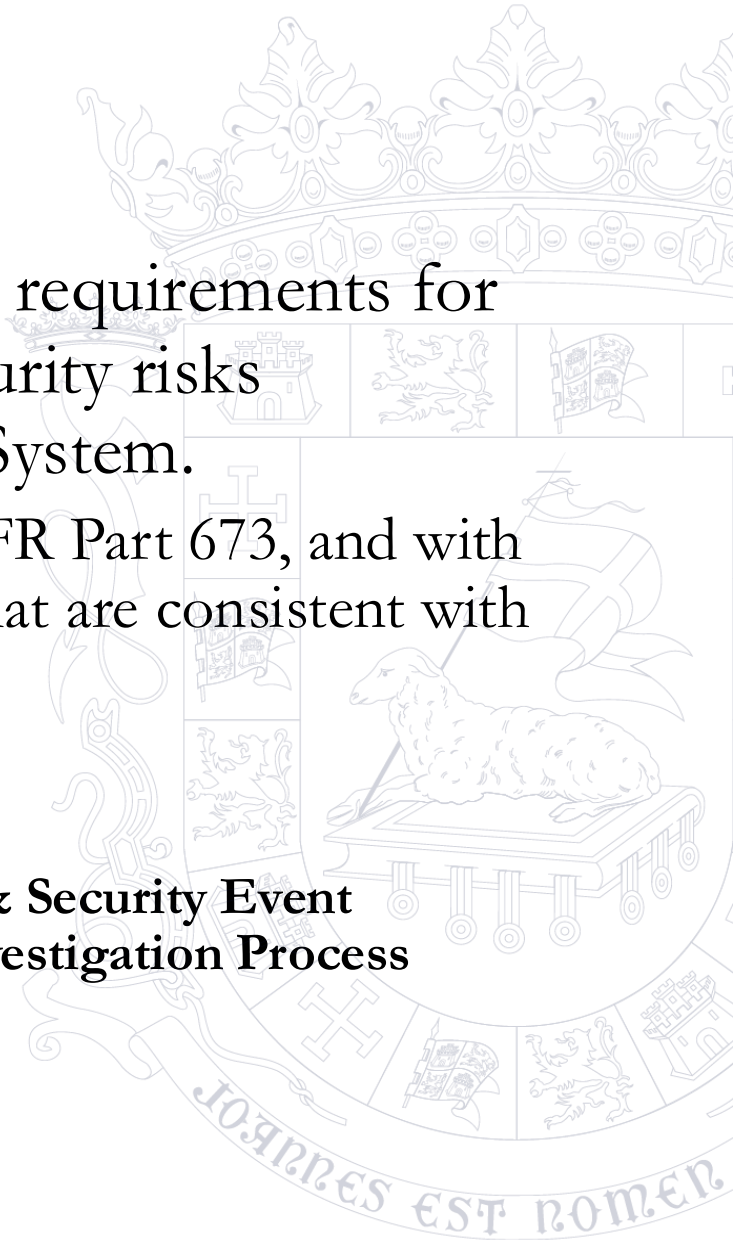


RTA



AHJV Purpose & Scope

- To set forth the Operations and Maintenance (O&M) requirements for identifying, evaluating, and minimizing safety and security risks throughout Tren Urbano (TU)/ PRITA-Rail Transit System.
 - Complying with the Federal Transit Administration's 49 CFR Part 673, and with the PR State Safety Oversight (SSO) Program Standards that are consistent with the four components;
 - Safety Management Policy (SMS)
 - Safety Risk Management
 - **Safety Assurance - (O&M Safety Plan, Section 3.1.7, Safety & Security Event Investigations references SOP SS-21 Accident / Incident Investigation Process**
 - Safety Promotion

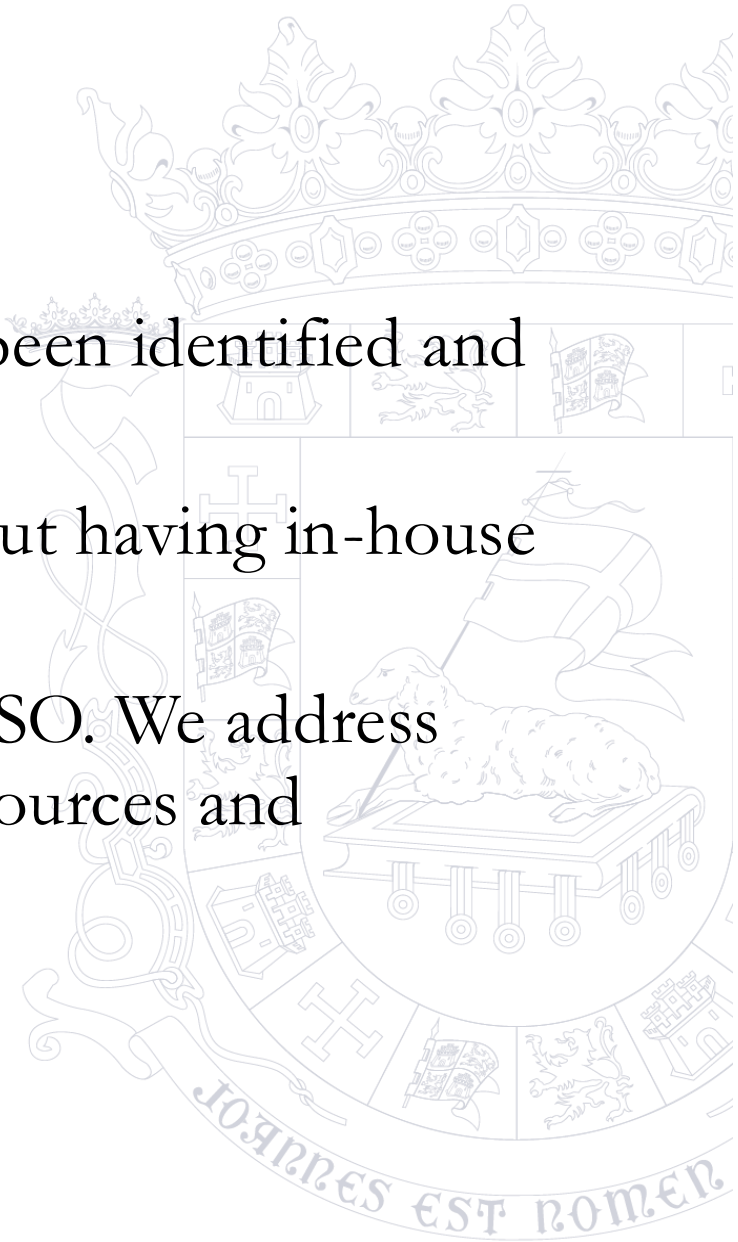


Top Challenges in Oversight of Causal and Contributing Factors



Top Challenges

- One key challenge is the follow-up after causes have been identified and investigations are closed.
- Another is fully identifying contributing factors without having in-house SMEs, as we rely on the RTA's expertise.
- The primary reason is limited personnel at PREMB SSO. We address these challenges by leveraging the RTA's technical resources and conducting our own research to validate findings.



Contact Information

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NEGOCIADO PARA EL MANEJO DE
EMERGENCIAS Y ADMINISTRACIÓN
DE DESASTRES

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GOBIERNO DE PUERTO RICO

Q&A

