

Losses:

1. Loss of human life or injury to passengers and personnel during train operations.
2. Property damage, including potential damage to train units, stations, or infrastructure.
3. Environmental pollution resulting from train operations.
4. Loss of mission, such as disruptions in the regular train schedule.
5. Loss of reputation for the passenger train system and associated stakeholders.
6. Loss or leak of sensitive information related to system operations.

System-level Hazards:

1. **H-1:** Train derailment or collision [L-1, L-2, L-3].
2. **H-2:** Failure of safety systems leading to passenger injury [L-1, L-2].
3. **H-3:** Environmental impact from train emissions or accidents [L-3, L-4].
4. **H-4:** Service disruption due to technical faults [L-4, L-5].
5. **H-5:** Security breaches leading to sensitive information leaks [L-6].

System-level Constraints:

1. **SC-1:** Trains must maintain a safe distance to prevent derailment or collision [H-1].
2. **SC-2:** Safety systems must be maintained and functional to prevent passenger injury [H-2].
3. **SC-3:** Emission control measures must be in place to minimize environmental impact [H-3].
4. **SC-4:** Proactive maintenance must be implemented to prevent technical faults and service disruptions [H-4].
5. **SC-5:** Robust security measures must be in place to prevent information breaches [H-5].