SCITT SOUTHERN COLORADO INSTITUTE OF TRANSPORTATION TECHNOLOGY

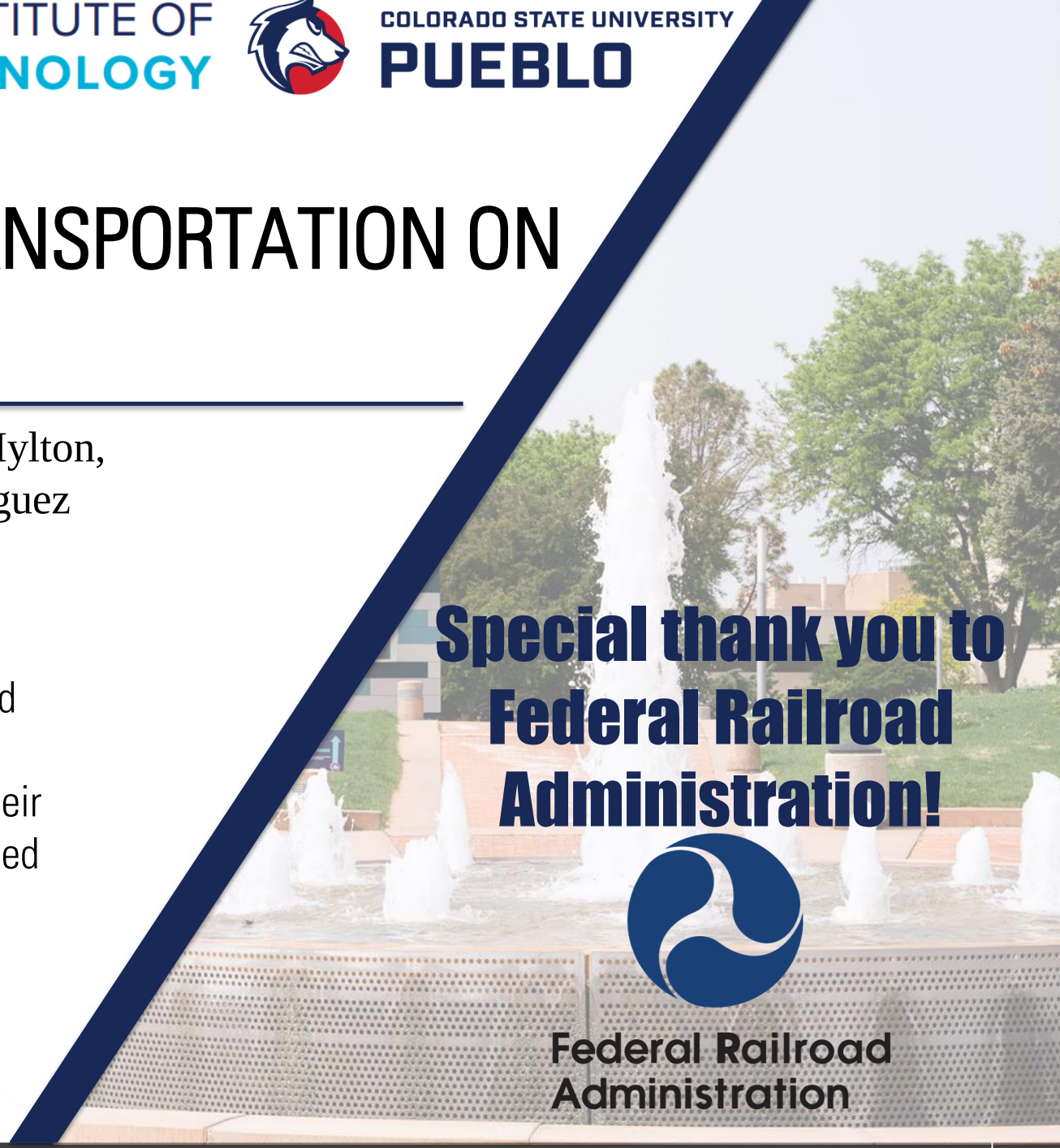
COLORADO STATE UNIVERSITY PUEBLO

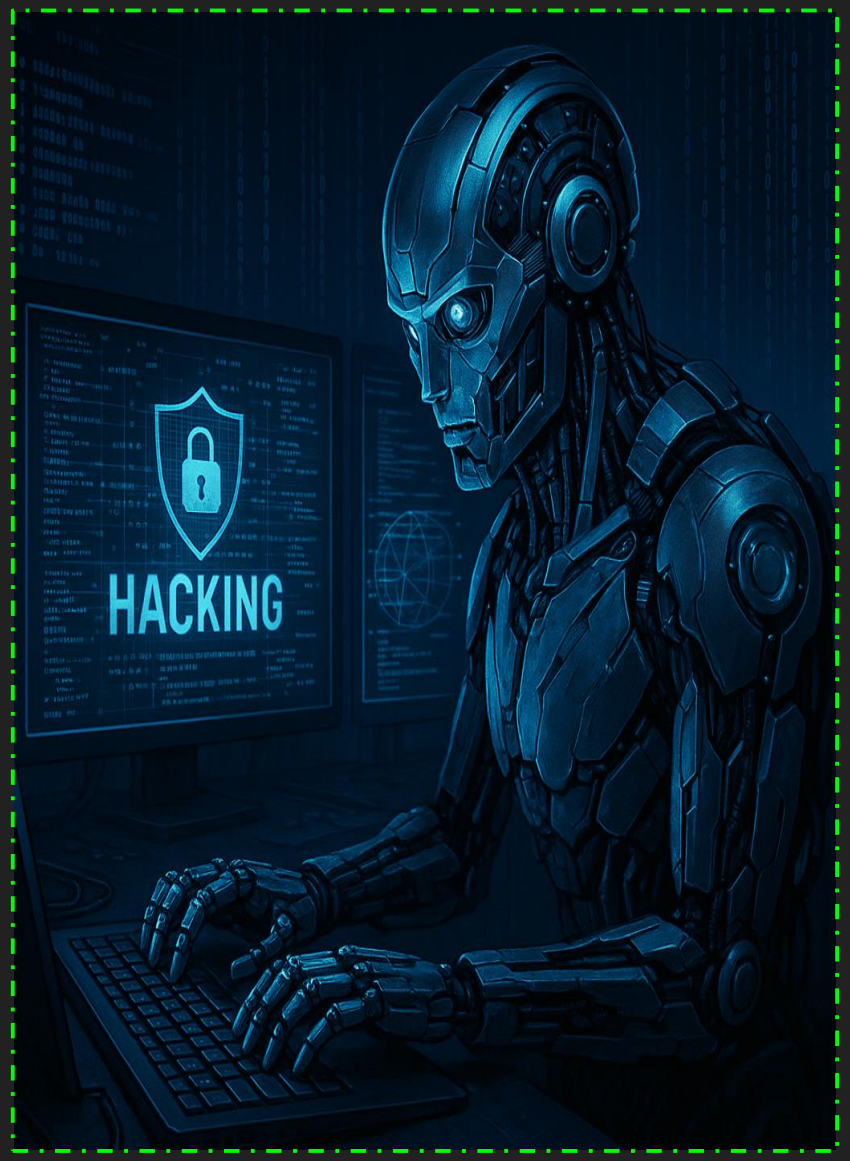
# CYBERSECURITY FOR LAND TRANSPORTATION ON SYSTEMS

Presenters: Jeremiah Romero, Matteo Picicci, Kimora Hylton, Yaretzi Perez, Maryam Islam, Fatimah Islam, Isa Rodriguez

**Project Details:** Middle schoolers explored real-world transportation issues through creative projects that encouraged research, problem-solving, and teamwork. This presentation gave them the chance to practice public speaking and share their innovative ideas. Join us as they showcase what they've learned for the cybersecurity of transportation.

June 27, 2025






# CYBERSECURITY FOR LAND TRANSPORTATION SYSTEMS

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# Introduction

Cybersecurity refers to the security of cyber technology that is utilized to protect and secure our electrical systems. It is vital to keep them from competitor companies and hackers that disrupt the code and allow cyberattacks to wipeout critical information.

# 1. How do surface-level transportation systems use cybersecurity?

Surface-level transportation (like buses, trains, and traffic systems) uses computers to run safely and on time.
Cybersecurity protects those computers from hackers who might want to mess things up, like changing train signals, messing with GPS, or even stealing personal info from passengers.

# 2. What are the latest developments/innovations made in cybersecurity in surface-level transportation systems?

Some cool new things include:

AI and machine learning to spot cyber attacks faster.

Encryption is used to keep data safe between vehicles and control centers.

Secure software updates that happen automatically to fix problems quickly.

Smart firewalls that block bad traffic on networks.

## 3. How does cybersecurity in land transportation systems affect the environment?

Good cybersecurity helps prevent system shutdowns. If traffic lights or trains stop working because of a cyberattack, it can cause traffic jams or fuel waste. Keeping systems safe means transportation runs smoothly, which helps reduce pollution.

# 4. How costly is cybersecurity?

Cybersecurity can be **expensive**, especially for big cities and companies. It costs money for:

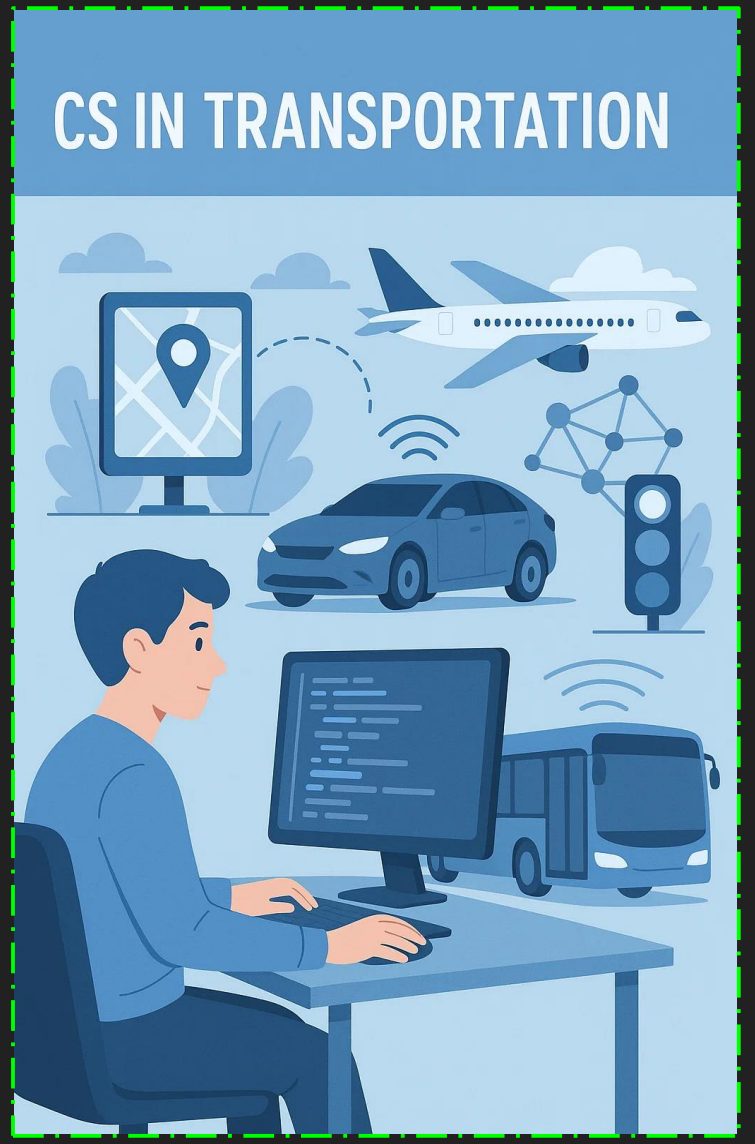
- Hiring experts
- Buying tools
- Keeping systems updated
  But it's cheaper than dealing with a cyberattack that could cause accidents or delays.

## The Economic Impact of CSLT

- After a breach in security, it can cost up to ***millions*** to repair and rebuild security systems.
- To prevent this detrimental outcome, many railroad and transportation companies invest in networked systems, staff training, and system updates.

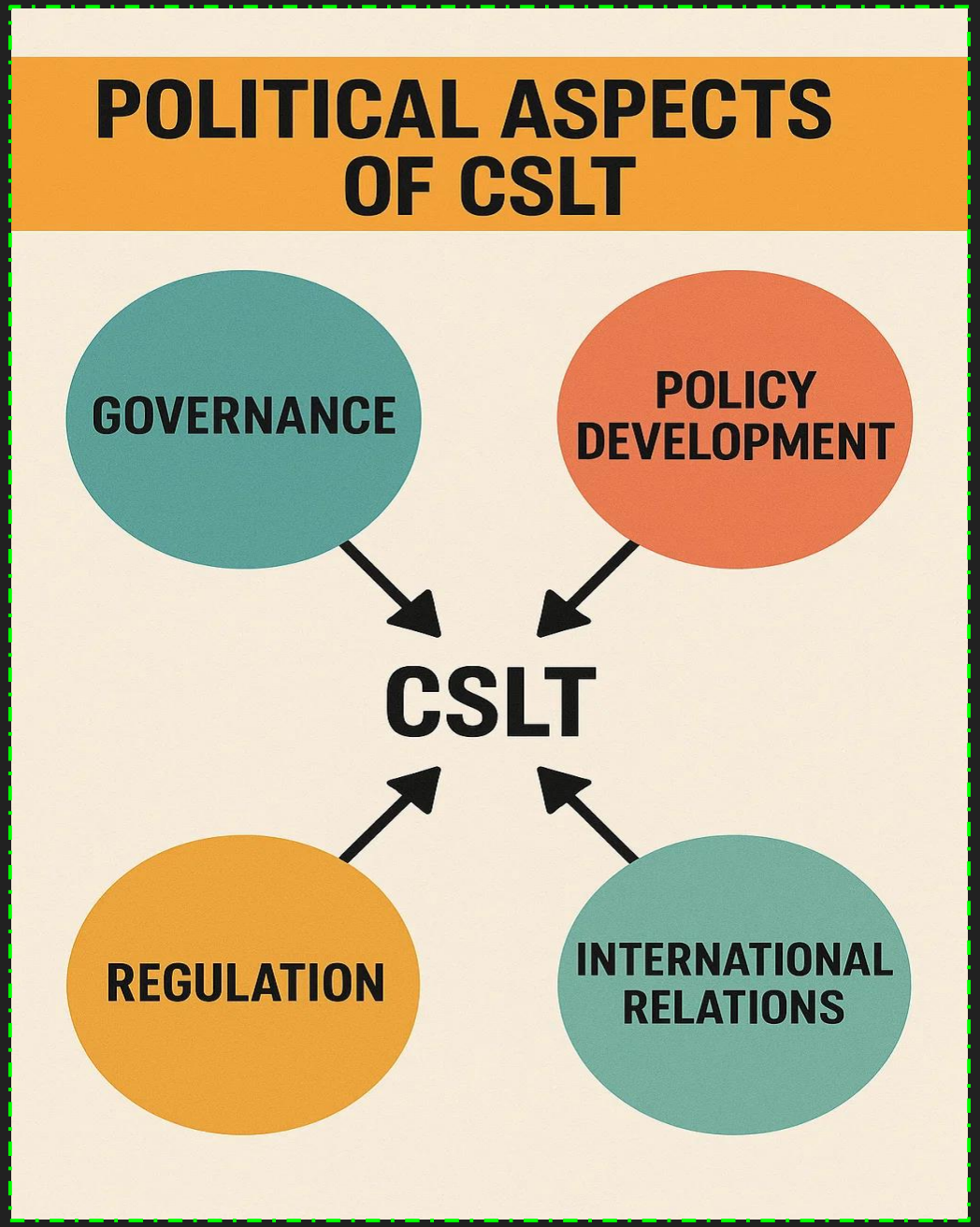
## The Environmental Impact of CSLT

- Land transportation alone can cause respiratory issues, environmental degradation, and other issues.
- On top of that, cybersecurity is known to cause energy grid disruptions and ecological disasters like electric fires and what not.



# Political aspects of CSLT

- Many organizations around the US are either privately owned or government owned. Some well known examples are the Department of Transportation *(DOT)*, the National Highway Traffic Safety Administration *(NHSA)*, and the Department of Homeland Security *(DHS)*.
- These systems have leaders that decide what CS standards different modes of land transportation need to meet, how employees report breaches, and how quickly to respond to threats.



# So why should we care about CS in Land Transportation?

On july 9th 2021, Iran’s rail system was breached, the offenders faking delays and cancellations of public transportation. This inconvenienced many, and it most likely costed millions, since it was Iran's national railroad system under attack. SentineLABS researchers were unable to connect this attack to previous threat groups, as it was a “Never-before-seen” wiper. (https://www.sentinelone.com/labs/meteorexpress-mysterious-wiper-paralyzes-iranian-trains-with-epic-troll/ )

While this is a small ‘prank’, it was expensive and aggravating to many. This is why we should care about CS in land transportation, because stunts like this would happen a lot more frequently all over the world.