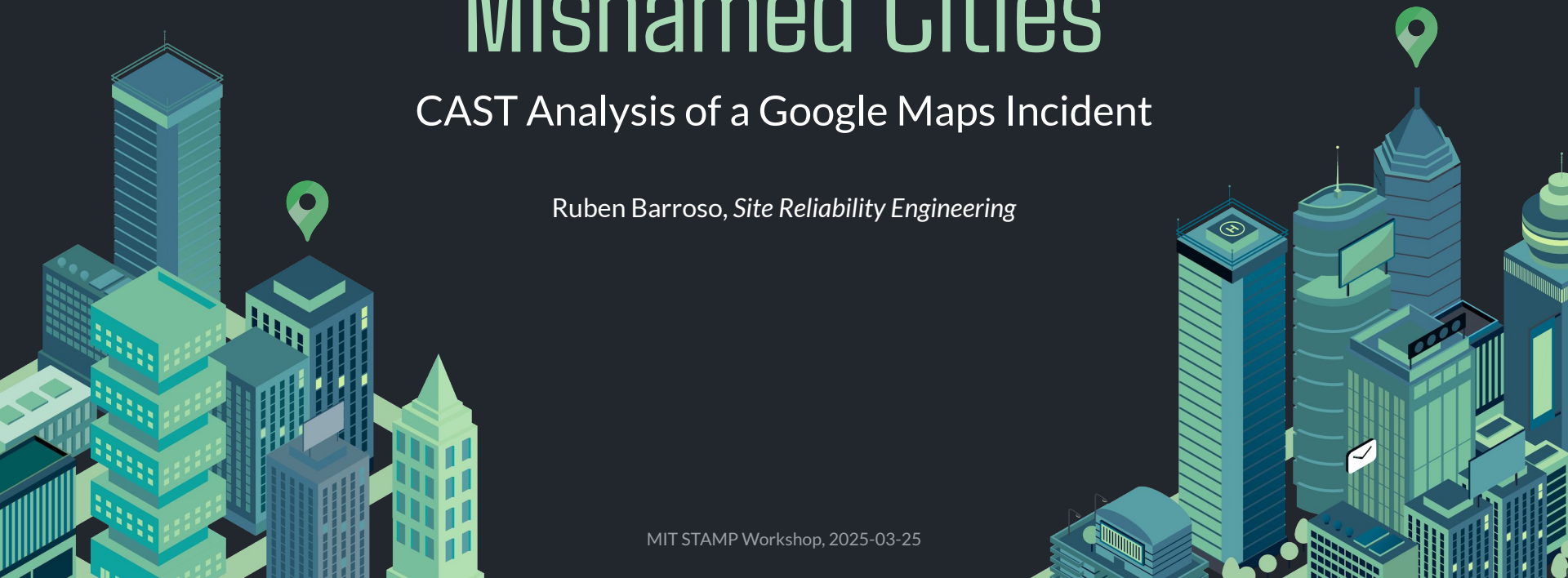


# The Case of the Misnamed Cities

CAST Analysis of a Google Maps Incident

Ruben Barroso, *Site Reliability Engineering*




# Agenda

- The Incident
- RCA
- CAST
- RCA vs CAST
- Takeaways

# The Incident



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←  r/GoogleMaps · 8 mo. ago ...

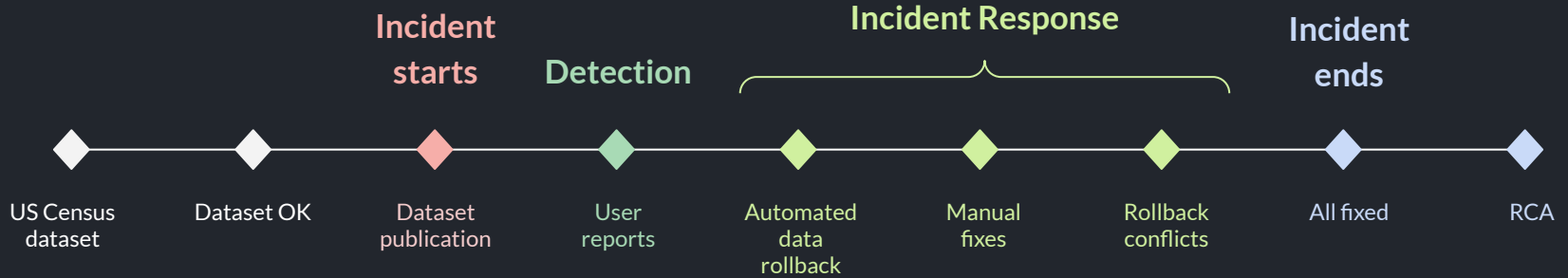
## Why is Google Maps showing "(balance)" next to some cities and referring to them as metro areas?

[Here](#) is a screenshot of what I'm talking about. Never seen this until today. A glitch?

↑ 25 ↓    8         Share



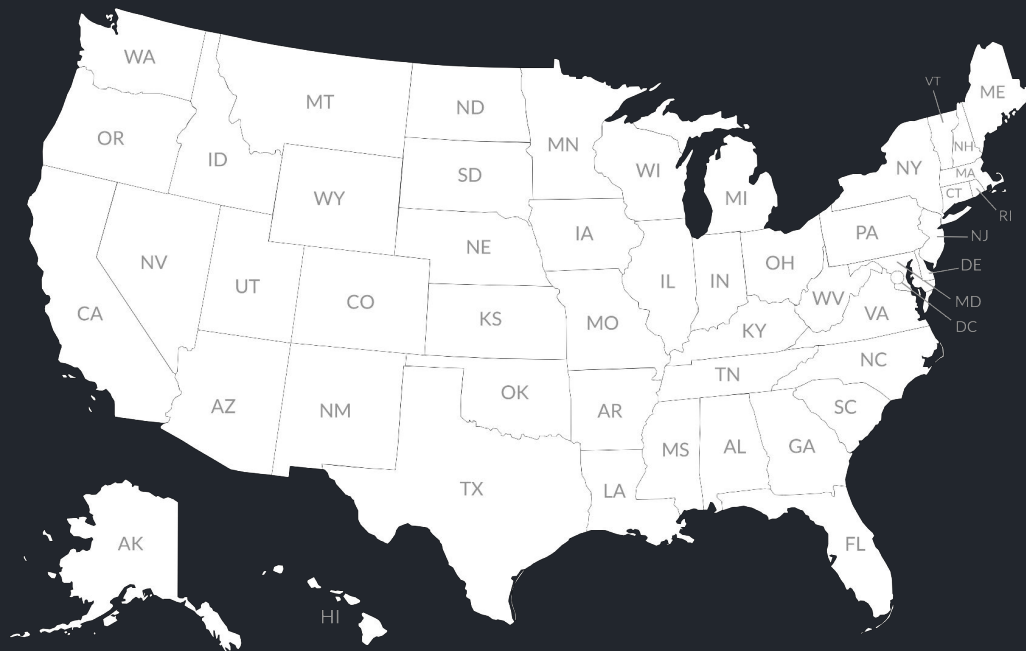
# Order of Events



# Root Cause Analysis

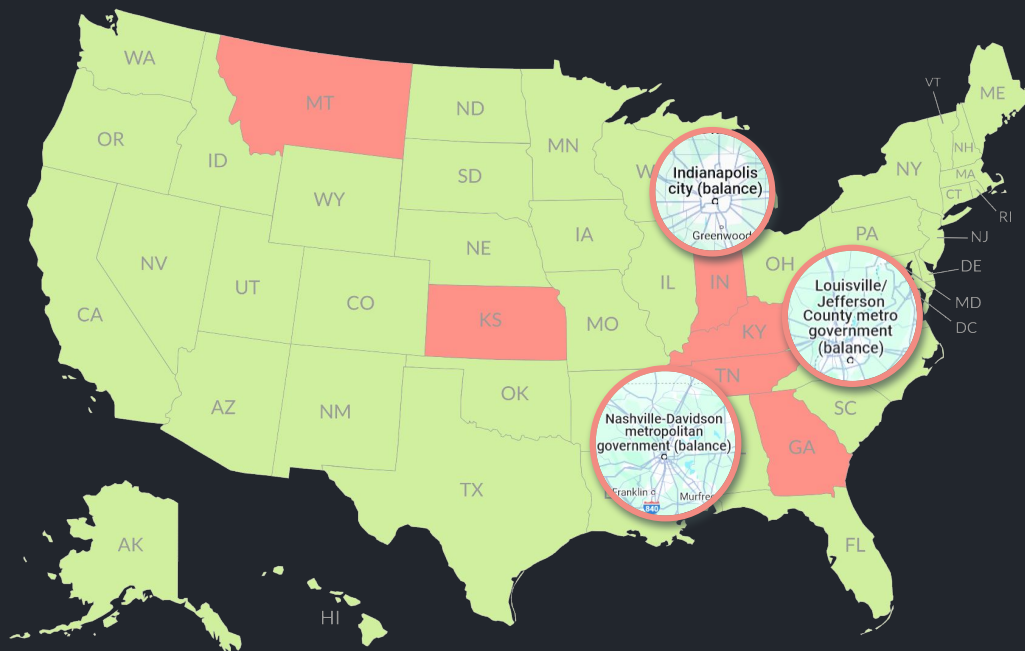
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# Data for All 50 States

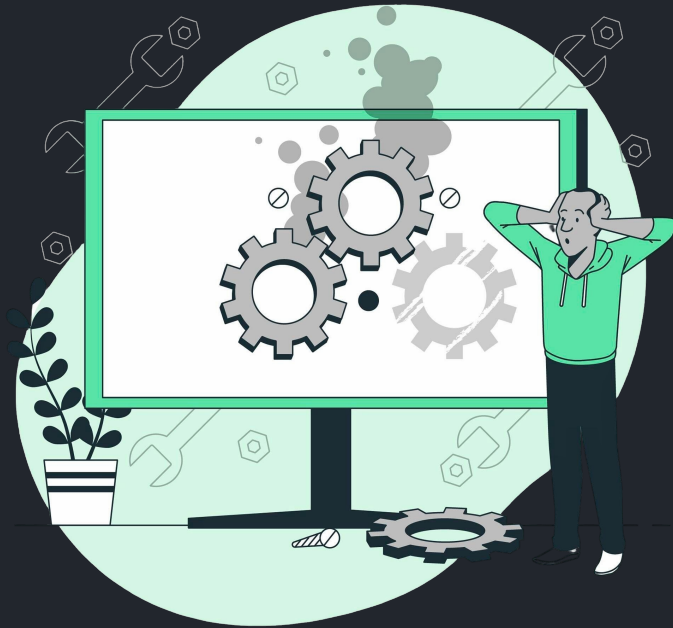




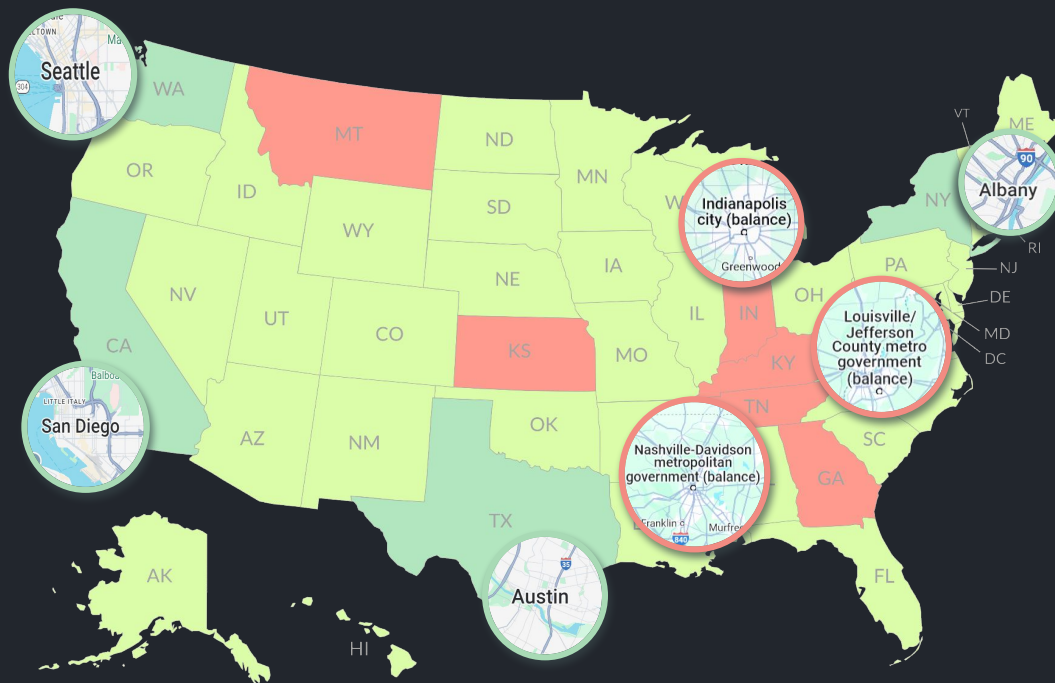
# Misnamed Cities in 6 States



# 1<sup>st</sup> Root Cause: Inadequate Evaluation Tooling



# 2<sup>nd</sup> Root Cause: Imperfect Sampling of States



# Lessons Learned

## Things That Went Well

Quick rollback

## Things That Went Wrong

Misnamed cities *should have* been detected early

Conflicting fixes

# Lessons Learned

## Things That Went Well

Quick rollback

## Things That Went Wrong

Misnamed cities ***should have*** been detected early

Conflicting fixes

# Improvement Plan



Tooling



Evaluation

# Improvement Plan



Tooling



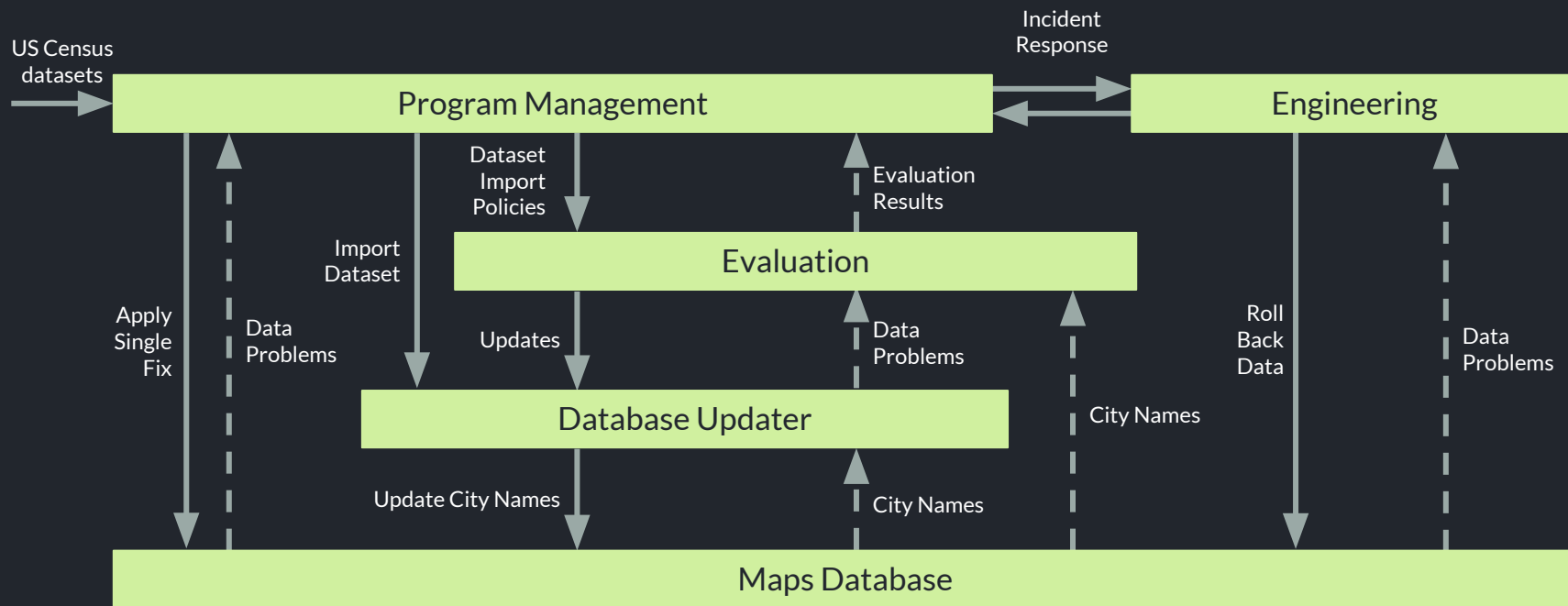
Evaluation

25+ years of of RCA  
*and nothing else*

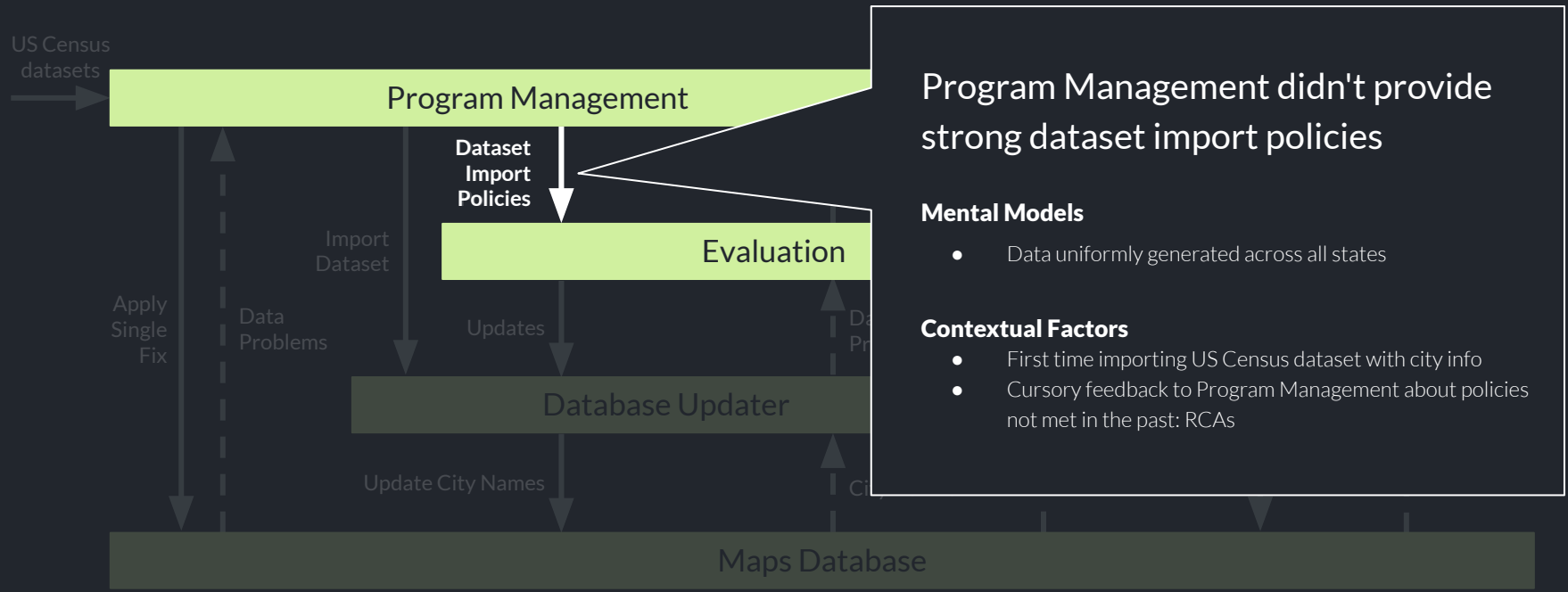
# CAST



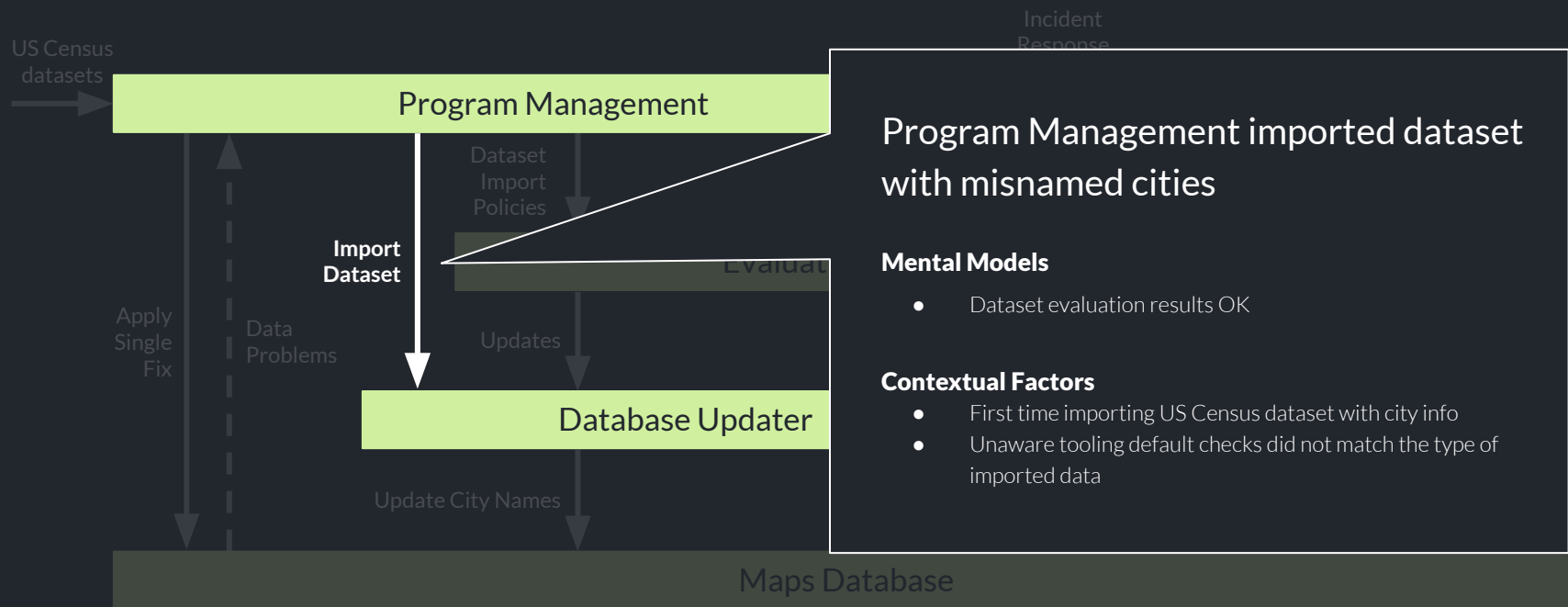
# Control Structure



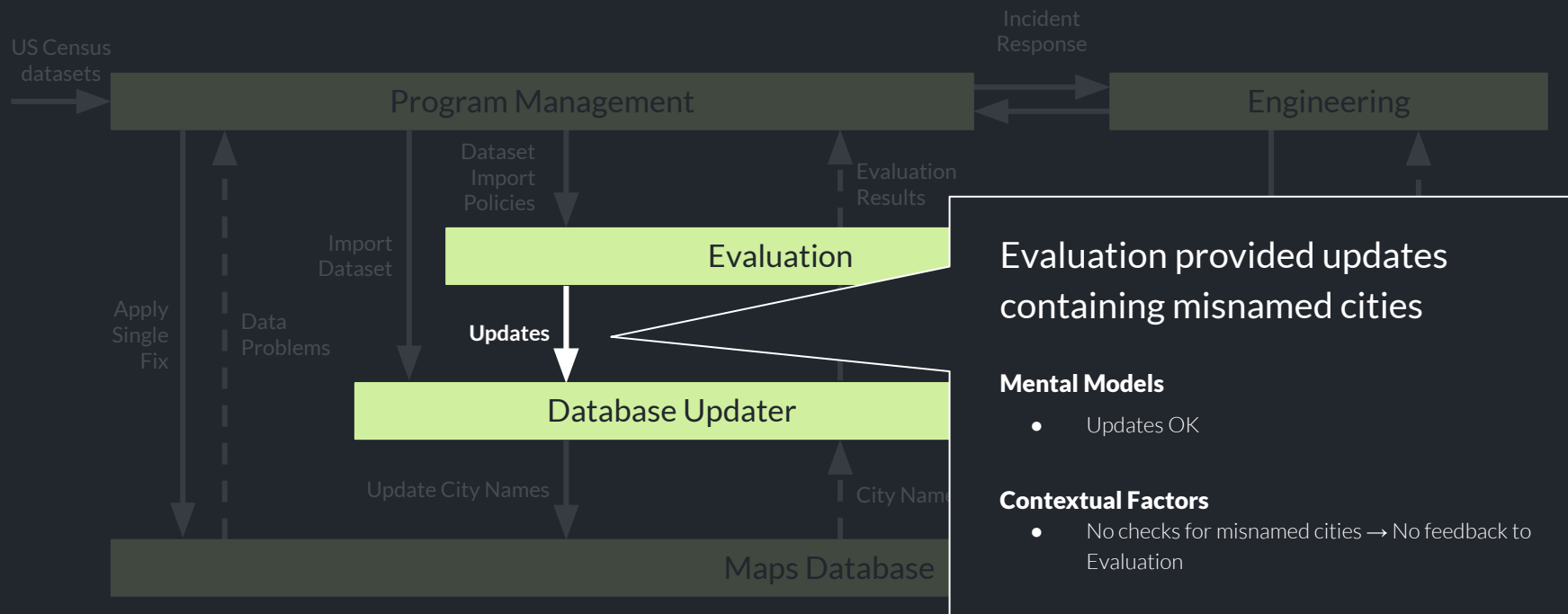
# Contribution of Program Management



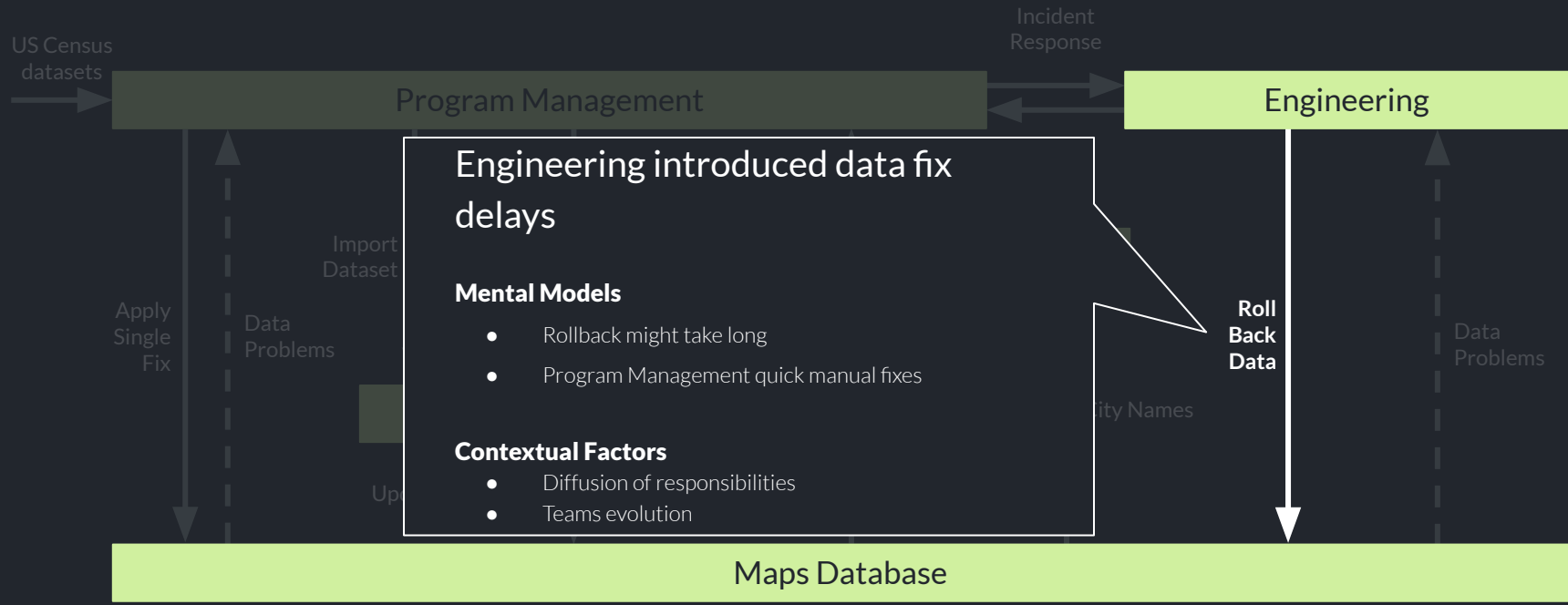
# Contribution of Program Management



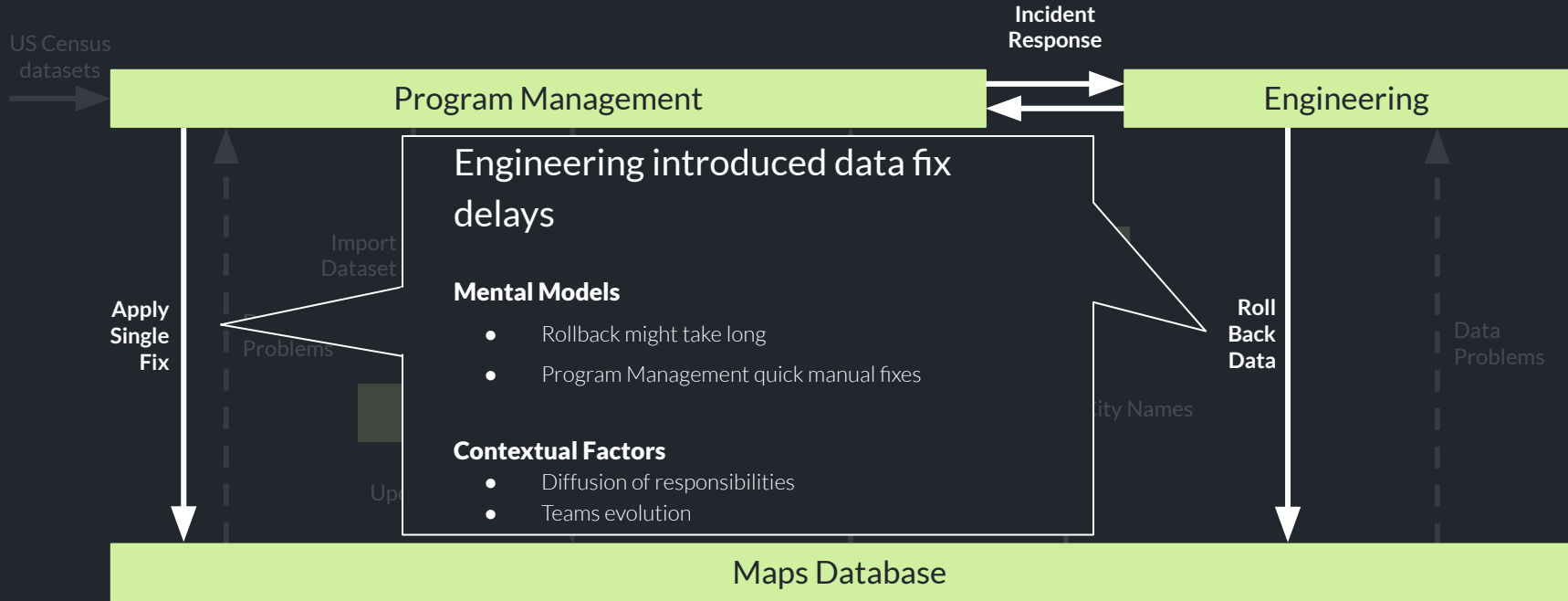
# Contribution of Evaluation



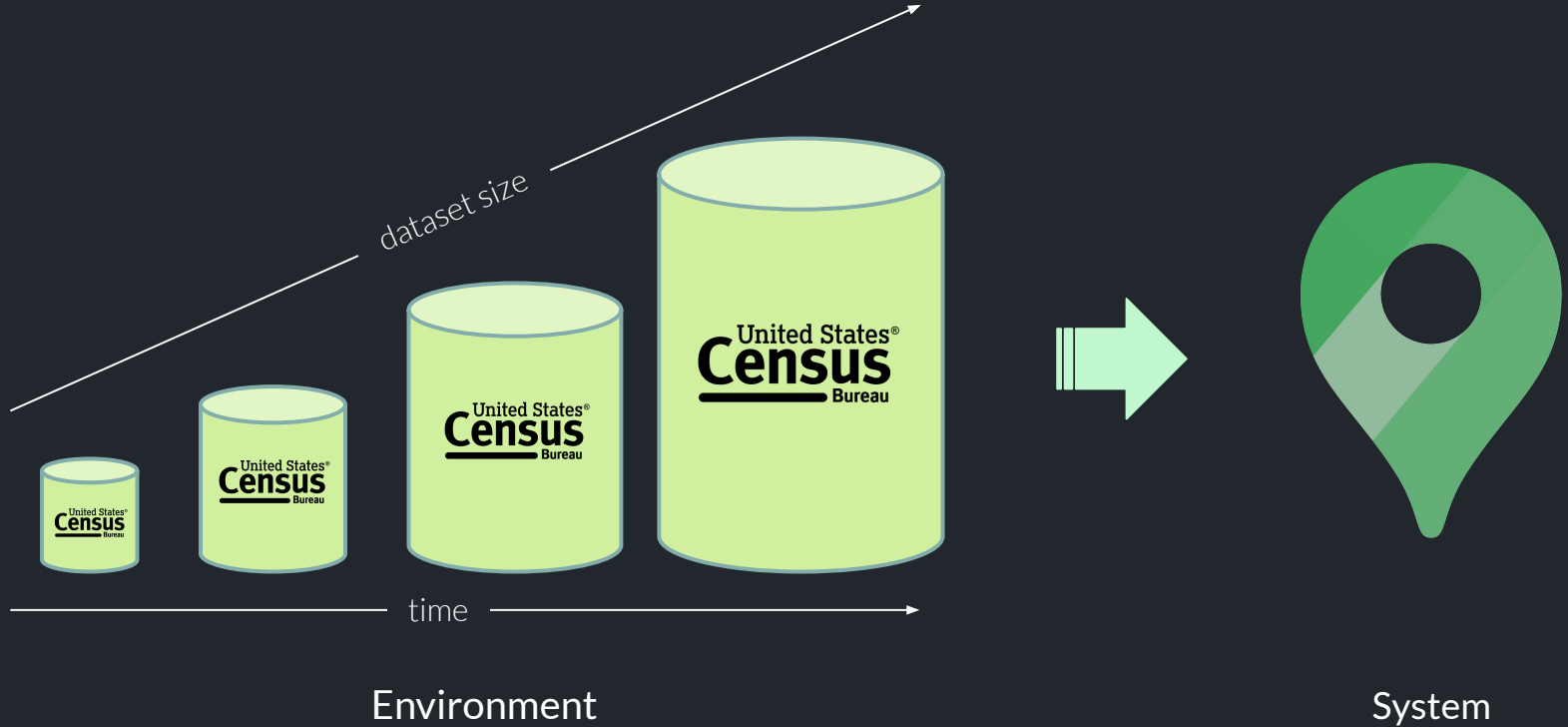
# Contribution of Engineering



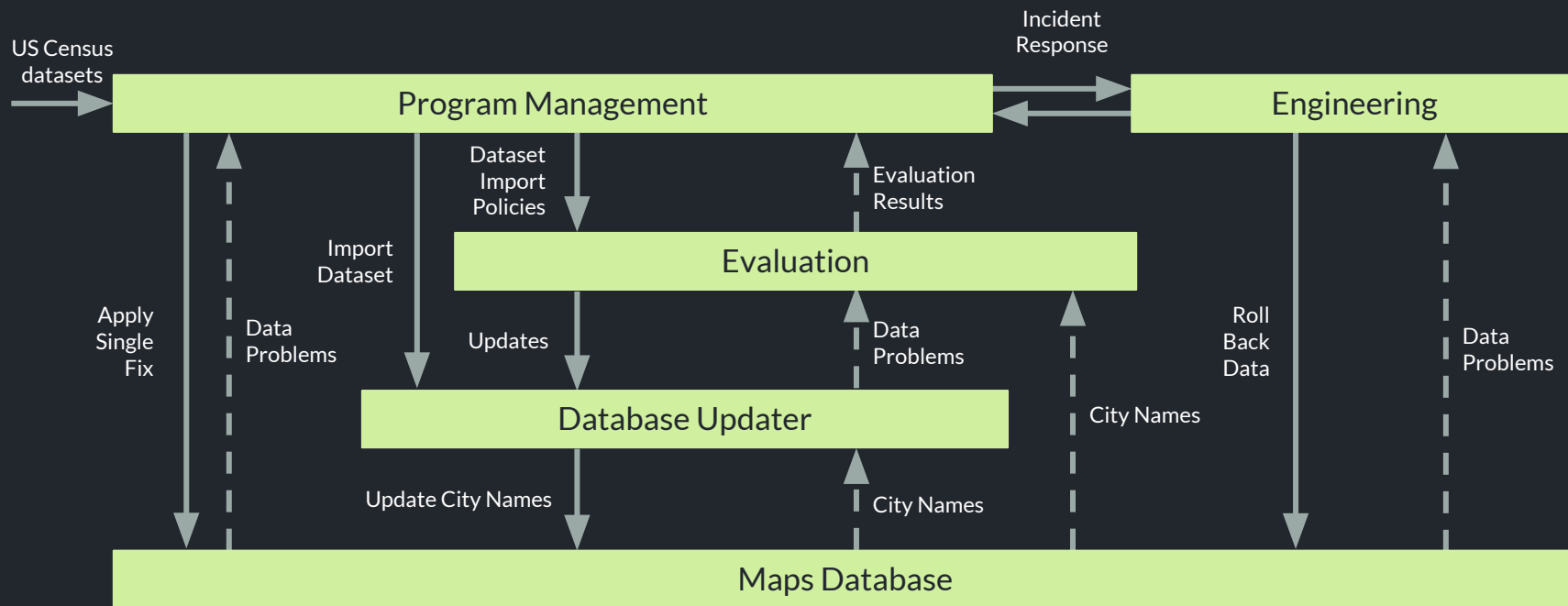
# Contribution of Engineering



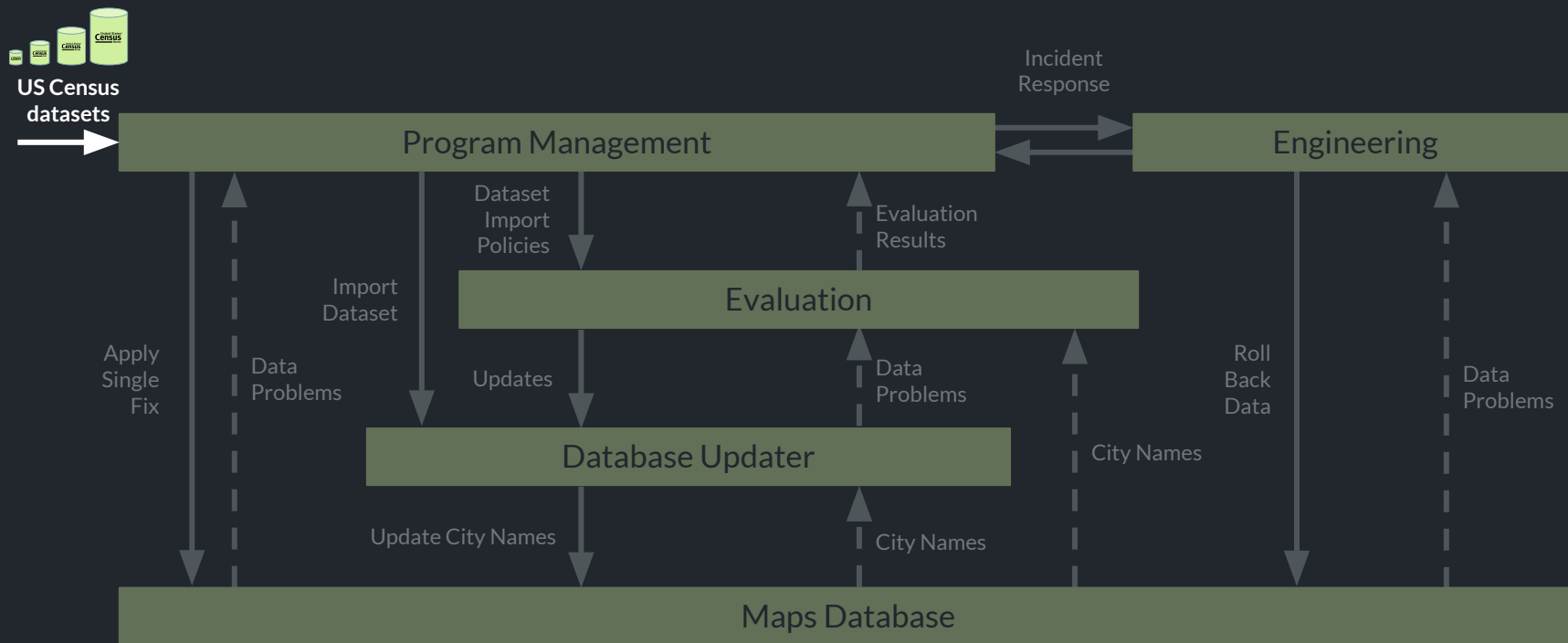
# Systemic Factor: Dynamic Environment



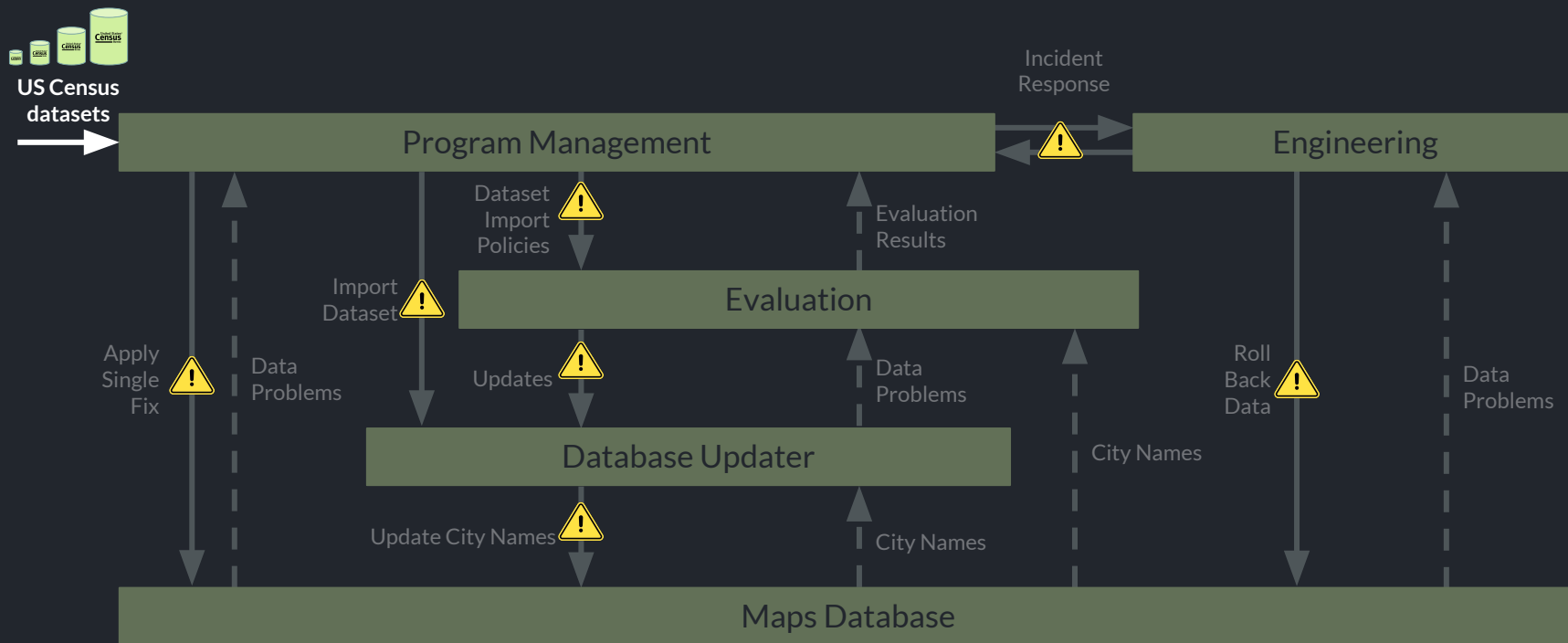
# Dynamic Environment



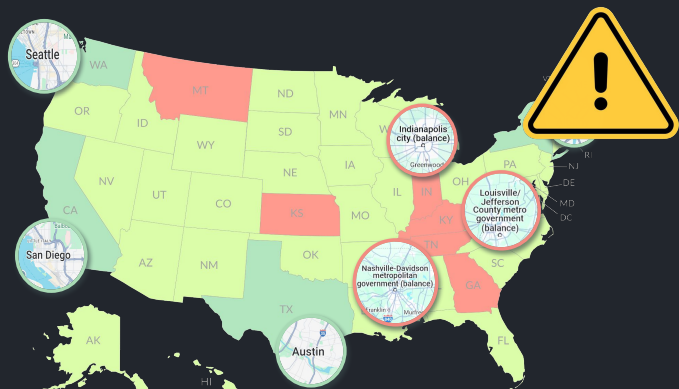
# Dynamic Environment



# Dynamic Environment



# Weakened Controls



Evaluation



Tooling



Incident Response

# Weakened Controls



Evaluation



Tooling



Incident Response

# Weakened Controls



Evaluation

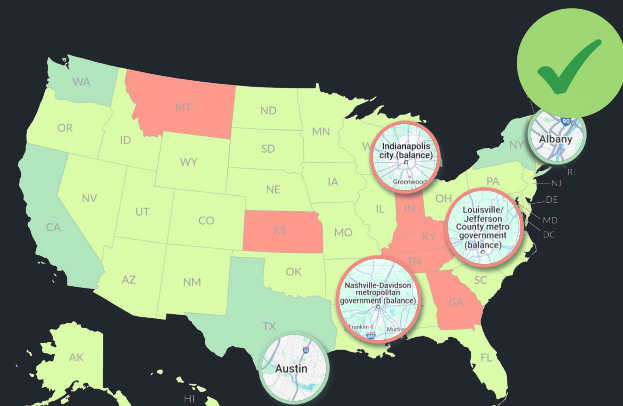


Tooling



Incident Response

# CAST Improvement Plan



Evaluation

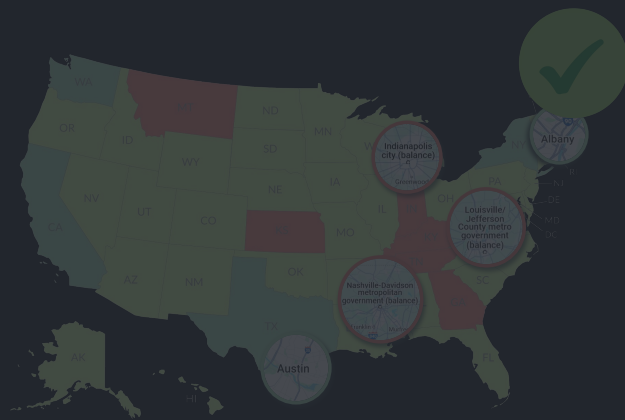


Tooling



Incident Response

# CAST Improvement Plan



Evaluation

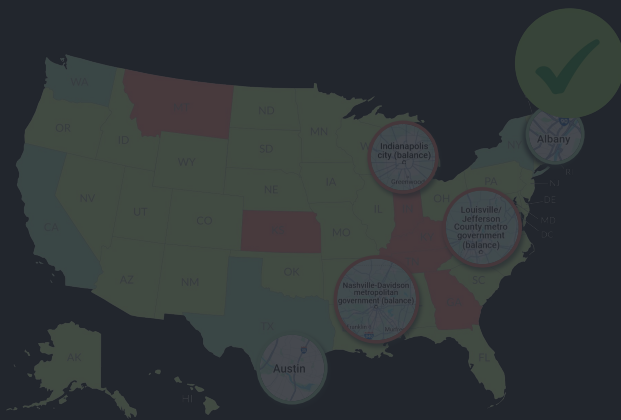


Tooling

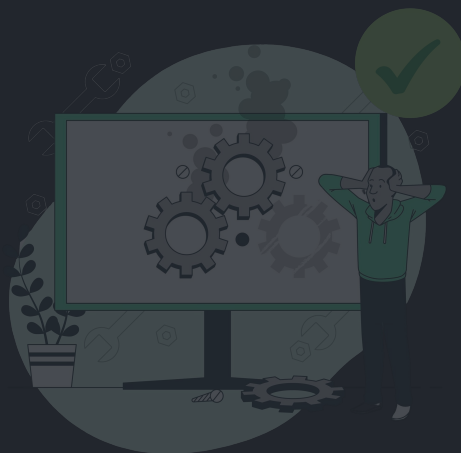


Incident Response

# CAST Improvement Plan



Evaluation



Tooling

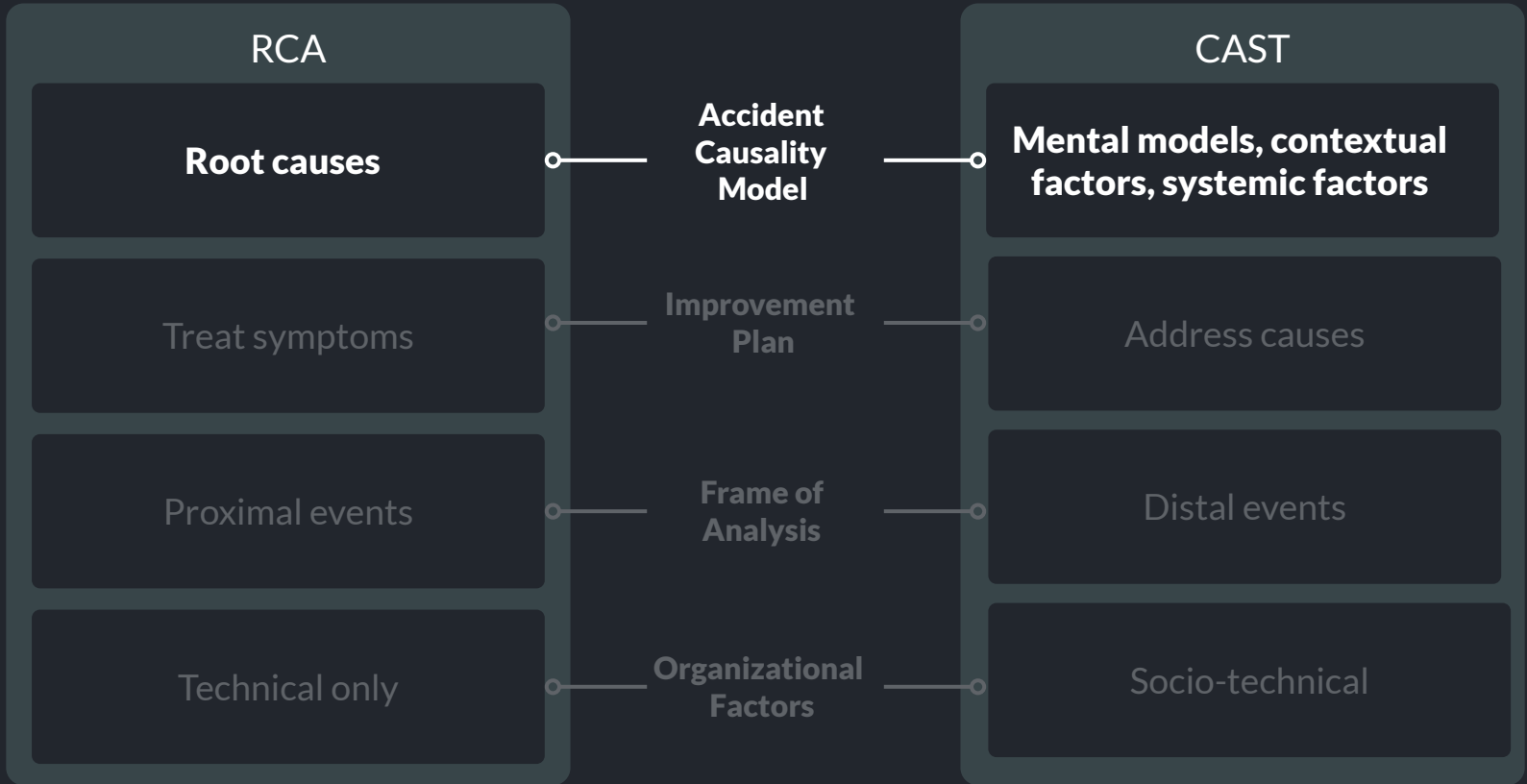


Incident Response

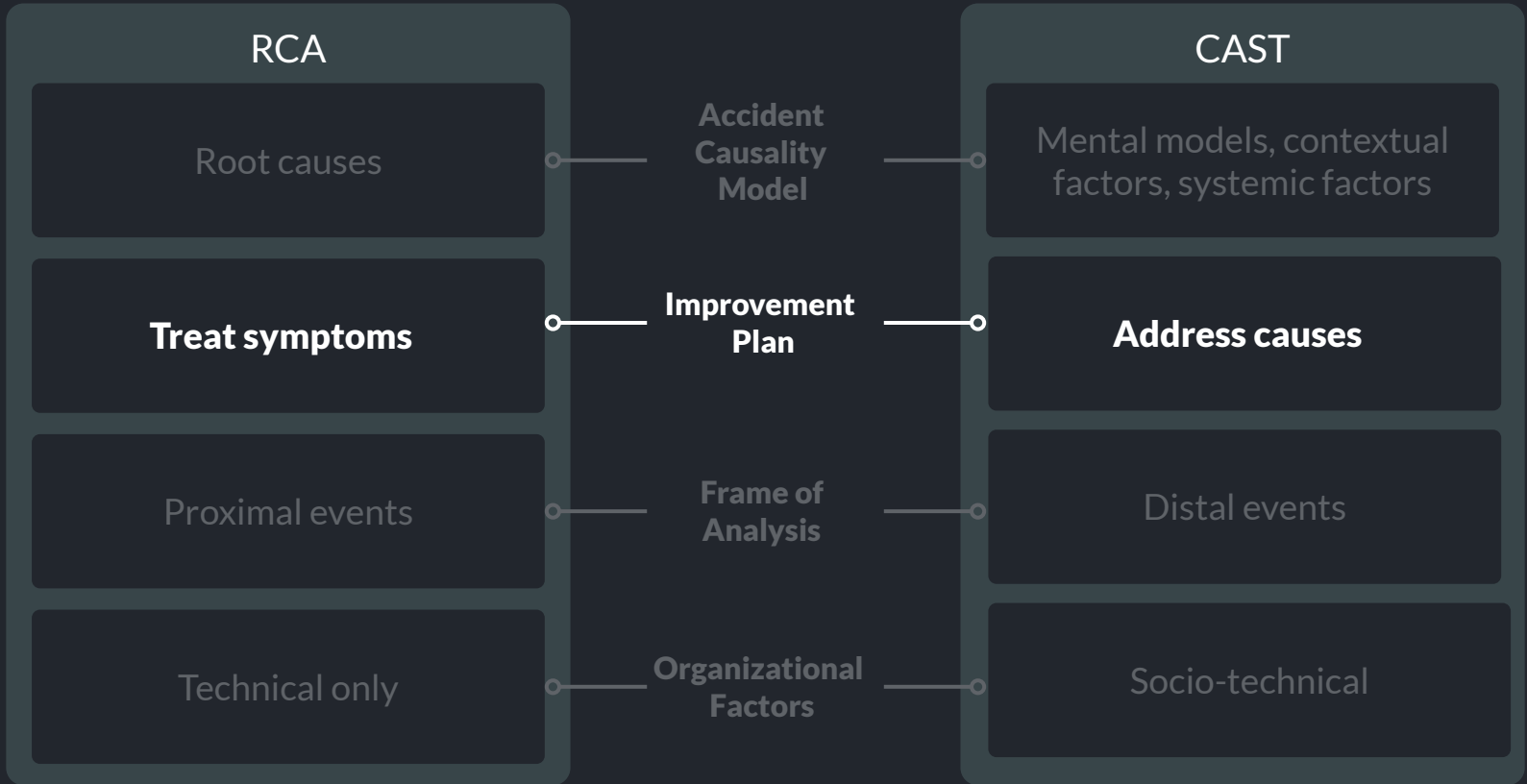
# RCA vs CAST

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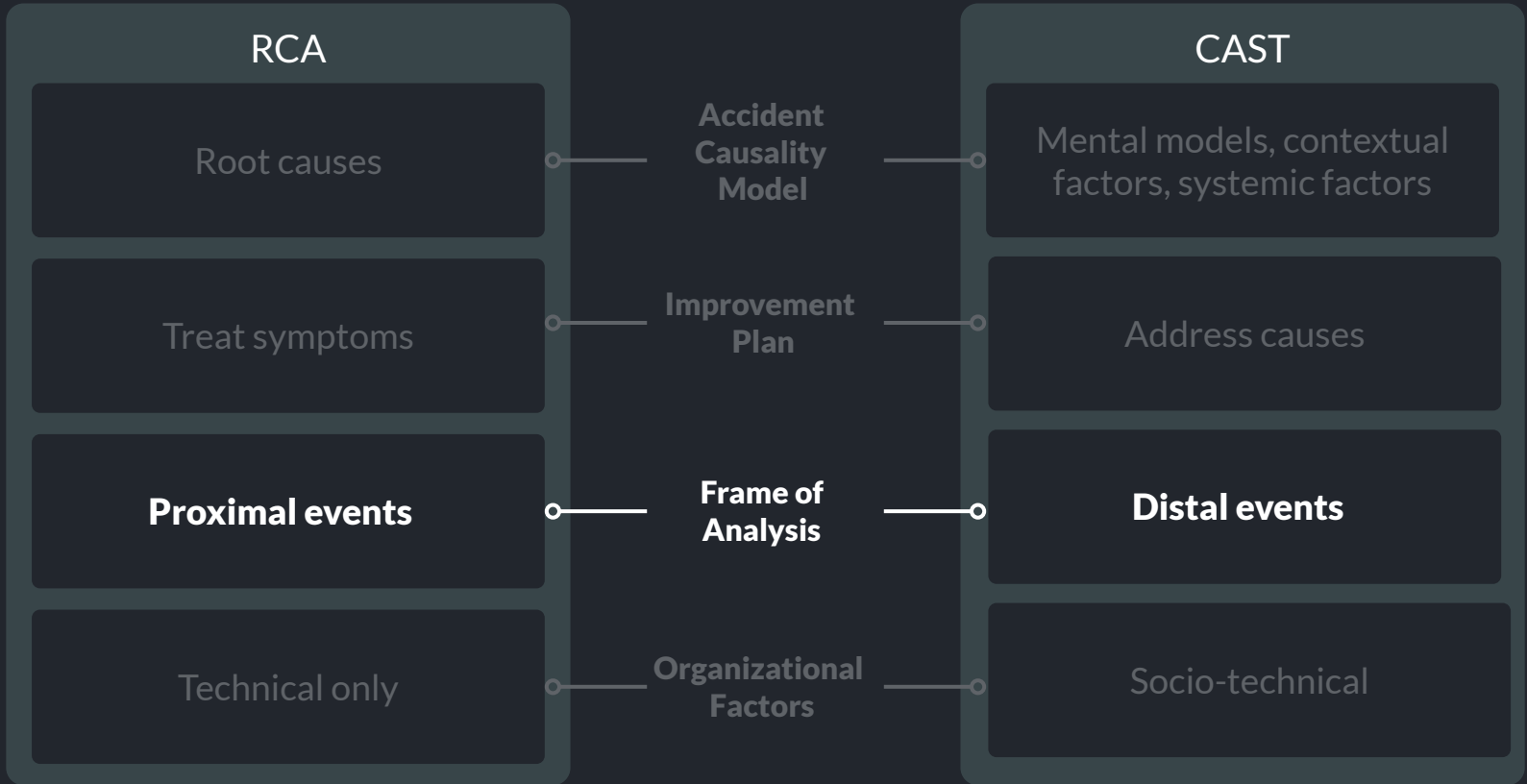
# RCA vs CAST



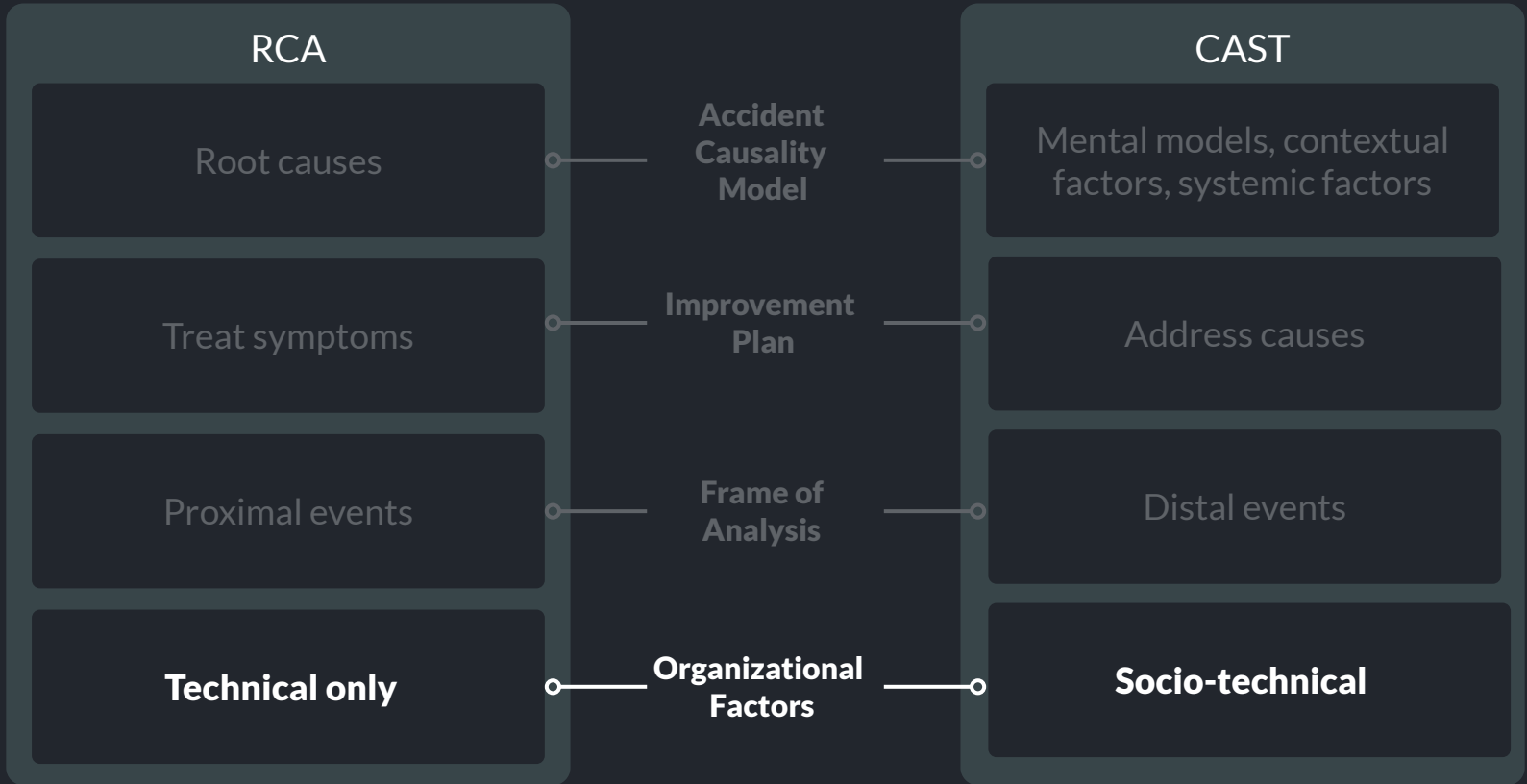
# RCA vs CAST



# RCA vs CAST



# RCA vs CAST



# Takeaways

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# Takeaways

CAST works on software systems

CAST learnings » RCA learnings

CAST recommendations » RCA recommendations

# The End

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Illustrations: [freepik.com](https://www.freepik.com) | Maps: [www.mapchart.net/usa.html](http://www.mapchart.net/usa.html) | Reddit: [thread 1](#), [thread 2](#)