The Map is Not the Territory

Discovering what's behind your data

NERC Human Performance Conference

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Includes ST-PRA methodology pioneered by Outcome Engenuity

TEAM SIFT
Serious Injury & Fatality Prevention Team

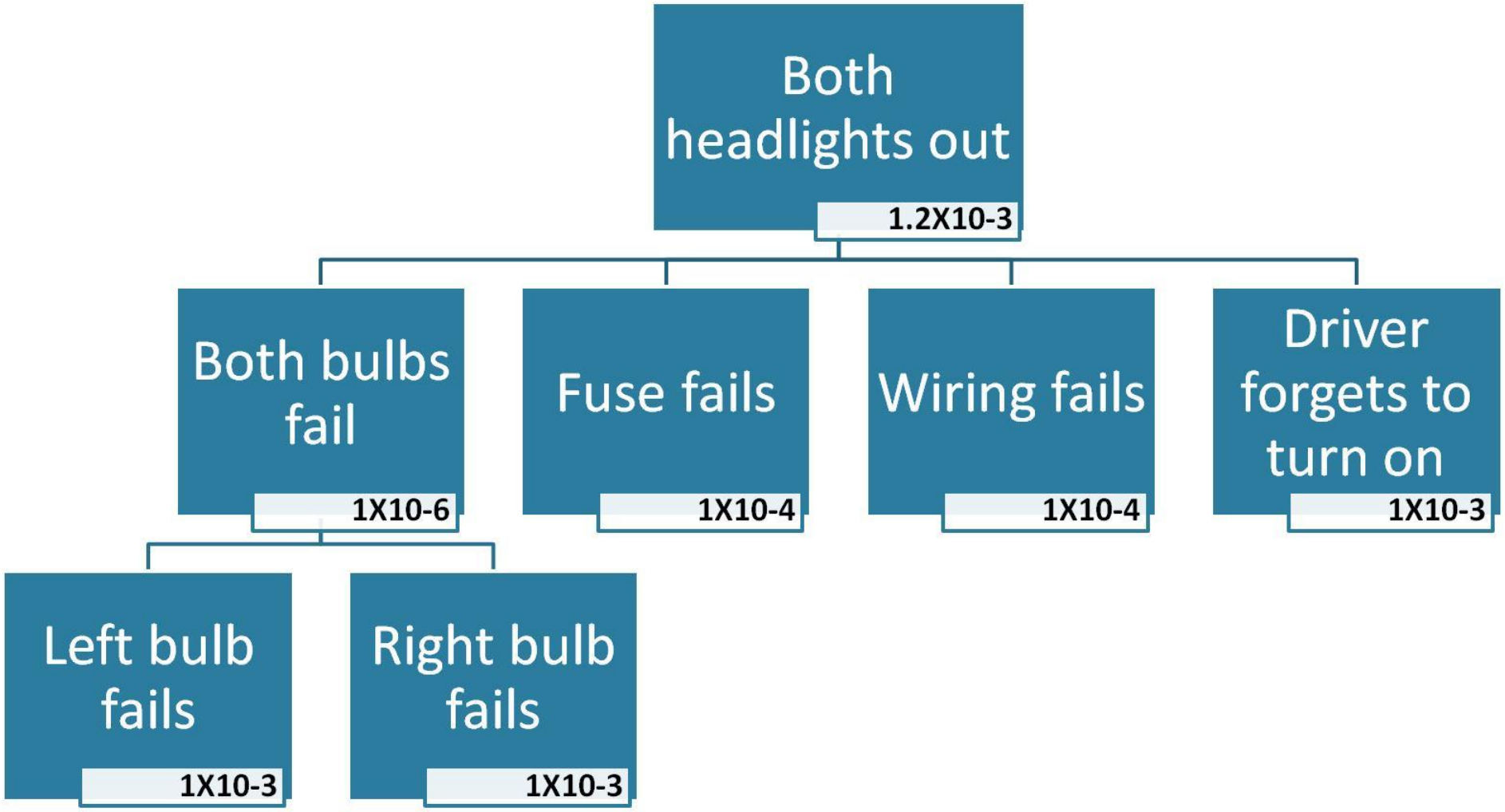
*Tool: ST-PRA**

Analyzing the socio-technical system

- Provides predictive models that show how failures occur
- Depicts the interconnectedness between systems and behaviors
- Assigns probabilities
- Reveals the primary drivers of risk
- Allows evaluation of what's available for intervention
- Enables development of effective targeted intervention designs

**ST-PRA = socio-technical probabilistic risk assessment*

ST-PRA: A simple example



Demo: Why didn't I see that?!

The risk of driving in reverse

- CONTENT REMOVED

Backing collisions

- CONTENT REMOVED

Why driving in reverse is a challenge

It's a huge error trap

130X

Why didn’t I see that?!

- CONTENT REMOVED

Multitasking?

So tired of winter

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Multitasking?

So tired of winter

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Multitasking is a myth

We cannot "multitask" on activities that require conscious thought

Instead we

"switchtask"

between tasks

What happens when we switchtask…

- Every time you switch, there are fractions of a second where your brain sees NOTHING
- Tasks take longer by 50% to 100%
- Errors increase by 50%
- Quality decreases
- Stress levels increase

In a high risk industry like ours,
switchtasking can be VERY dangerous

What we did

- Risk modeling
- 3 vehicle types
- Ride-alongs and focus groups

Large trucks

Large trucks with trailers

Vans

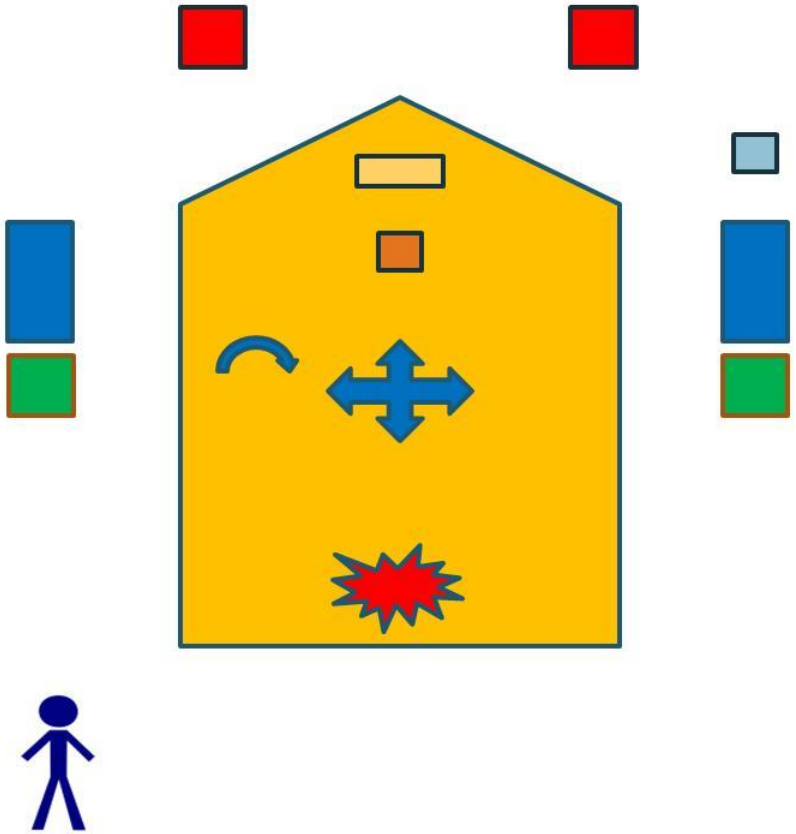
What we learned

Highest probability of failure is losing track of a known fixed object in our “mind’s eye”…

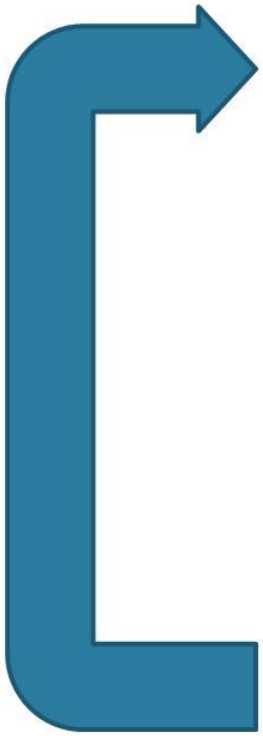
…because we are

switchtasking

across multiple sensory inputs



Solution:
Eliminate switchtasking while in reverse motion



- **STOP** before you begin backing
- While stopped, **SCAN** all desired sensory inputs to verify conditions and confirm next threat
- Once in motion, focus on **PRIMARY** sensory input until you (1) clear the threat, (2) lose sight of the threat, (3) feel the need to scan, or (4) feel the need to switch sensory inputs

What “Stop-Scan-Primary” looks like

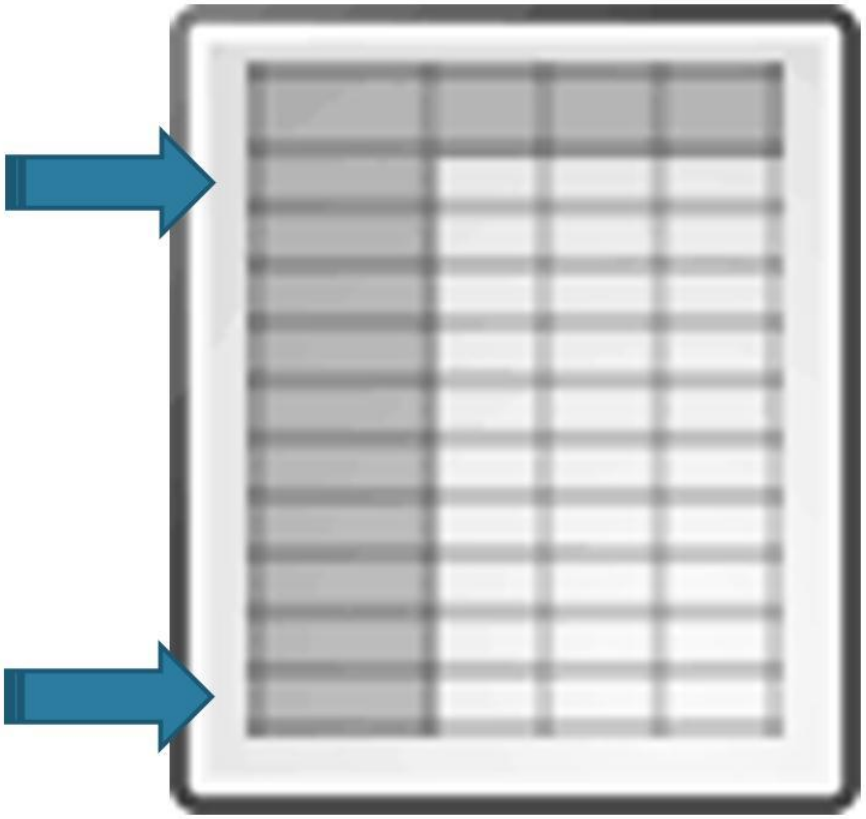
Animation

Live demo

Understanding what's behind the data, and designing interventions that work

NOW WHAT?

How it should work – First, the risk register



- Prioritized ranking of risk across the enterprise
- The basis for making risk-based decisions
- Helps ensure prudent allocation of resources
- Makes “tomorrow’s events” visible

Questions?