

Impact of trust in automation on human performance

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So What? Who Cares?

1. Mission: Improve checkpoint accuracy and efficiency
 - Automation efforts aim to reduce the cognitive load on the human to improve operations
 - There is a recent focus on technology solutions
2. Problem: Humans create unforeseen consequences
 - Unless a system is 100% automated, then the human **MUST** be accounted for when making each and every design and engineering decision.
 - If the humans trust the automation too much, they stop trying
 - If the humans trust the automation too little, they ignore it and it becomes a distraction
 - *Unless the automation is 100%, Humans will mess with it*
3. Next Steps: Explicit focus on human factors
 - 100% automation is unlikely in a screening environment, so OEMs must focus on human factors
 - As operators will vary greatly in acceptance and use, personnel selection is critical

Tightrope Act of Trust in Automation

Function Allocation

- OEMs need to provide a rational means of determining which system-level **functions** should be carried out by humans and which by machines. Should be conducted early in design life cycle.

Balancing the “right” amount of automation is key.

- “Too much”: Users’ vigilance and situational awareness will decline
- “Too little”: Users will be overwhelmed by the cognitive, physical, social, and behavioral tasks that need to be conducted

Mitigate Humans “messing with it”

- Ensuring users understand limitations & capabilities of the system
- Need to consider the sociological, interpersonal, psychological aspects of automation.

Automation must be assessed with the human-in-the-loop to identify any unintended consequences.

Solutions: Focus on Human at Every Step

Every phase of process must focus on the role of the human

- OEMs need to fully incorporate **human factors** into each decision
- Operational implementation must consider humans' role and conduct assessments with the human and the automation.
- Need to establish the right balance of trust for humans in the automation
- *There are individual differences*
 - Not all humans are the same, so trust in automation and ease of technology adoption and acceptance is a critical factor for personnel selection and assessment

