PerspECCtive

Theme:
Win Together to Share Success NOW!

Moving from Innovation to Implementation: Let's Start with Safety

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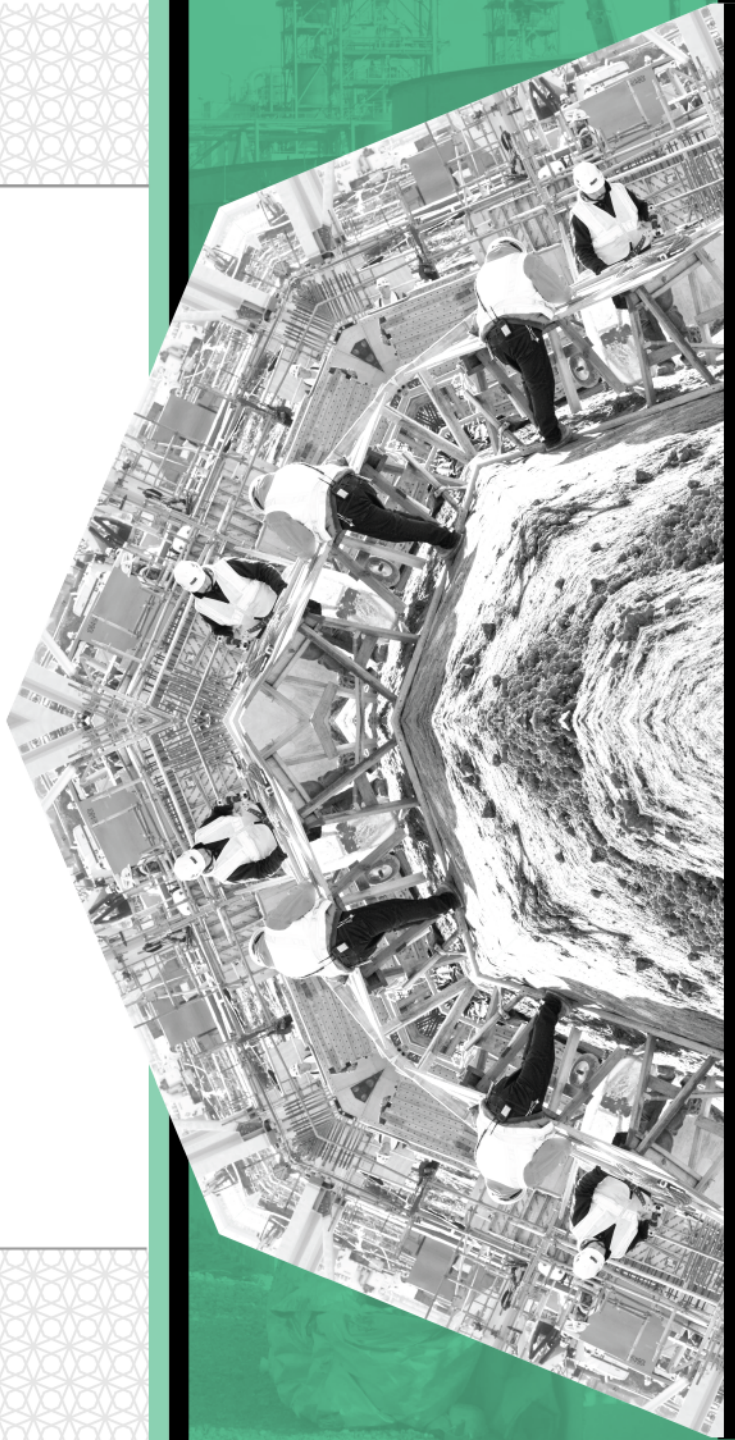


ECC

Year: **2019**

Date: **Aug. 28-31**

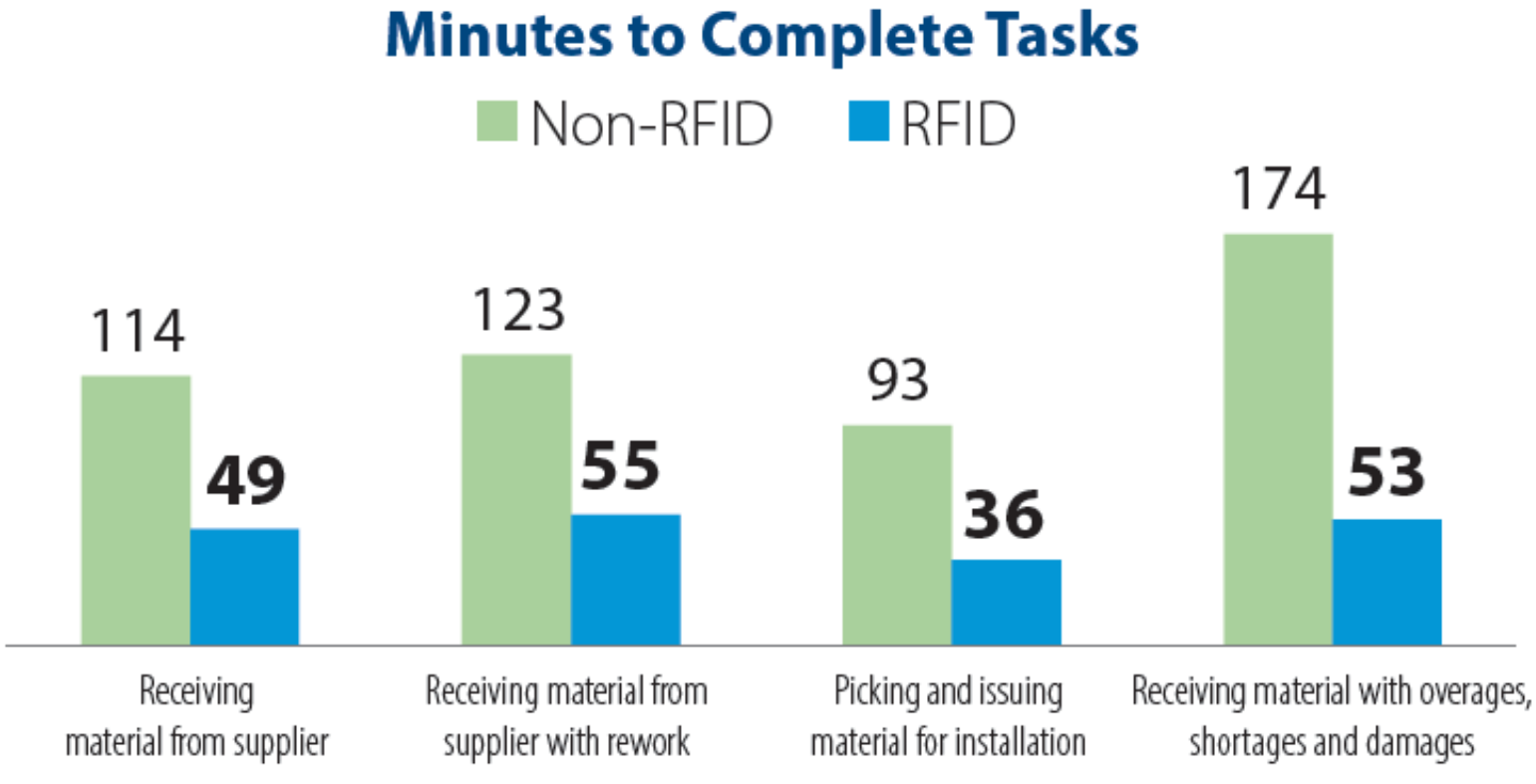
Location: **The Broadmoor Colorado Springs, CO**

Audience Polling – Question #1

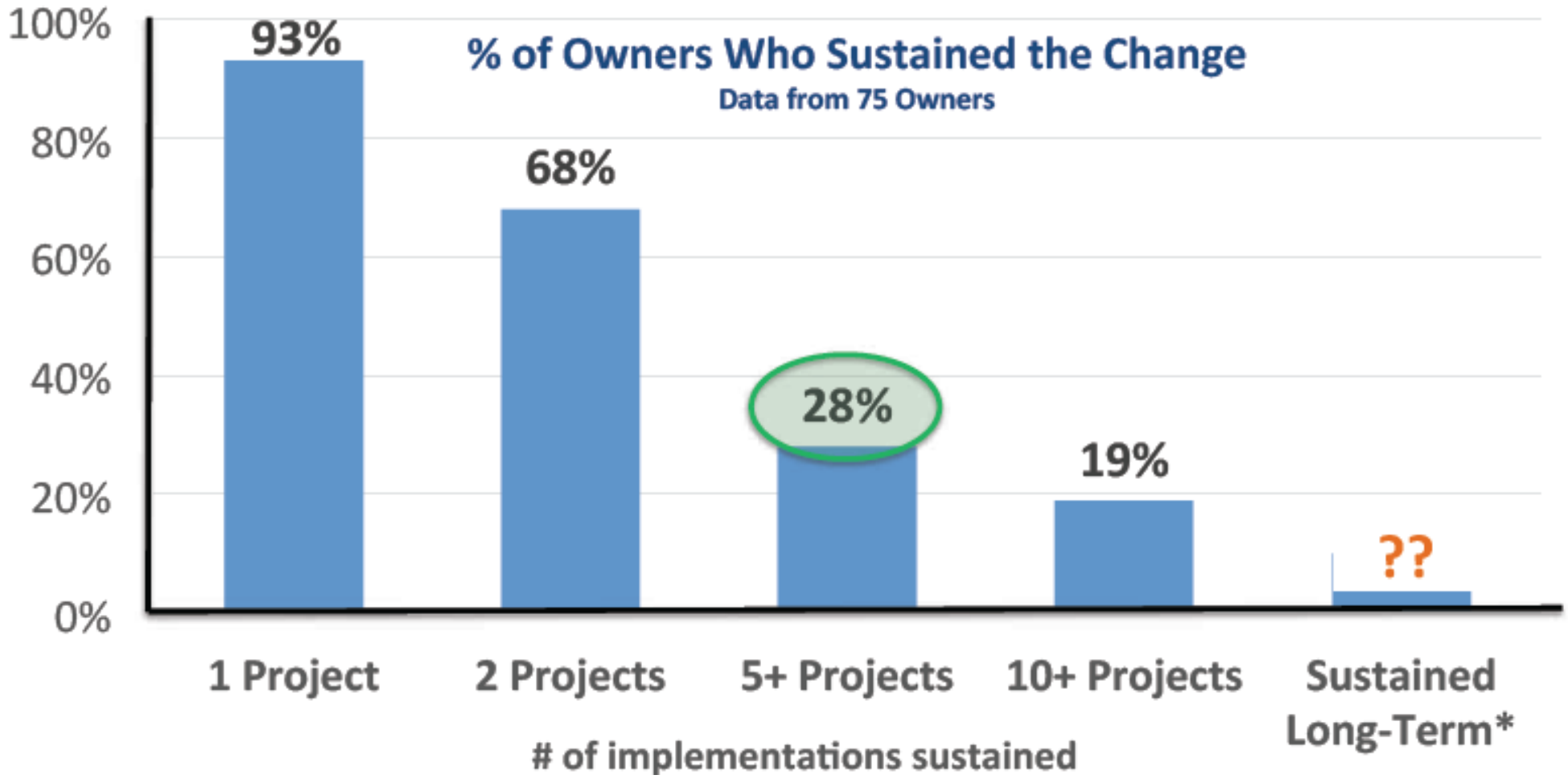
- Think about a construction job site, where have you seen the most progress with technology adoption?
  - Worker productivity
  - Safety
  - Material/equipment tracking
  - Progress tracking
  - I haven't seen any meaningful technology adoption
- Keeping that same technology in mind (where you've seen real implementation), did it make a difference in outcomes?
  - Yes
  - No

Results: More Efficient Field Material Management

* Actual data from Fluor implemented Atlas Jovix® deployment on large-scale Oil and Gas project. Data was collected using time studies.



Reverting to the Status Quo



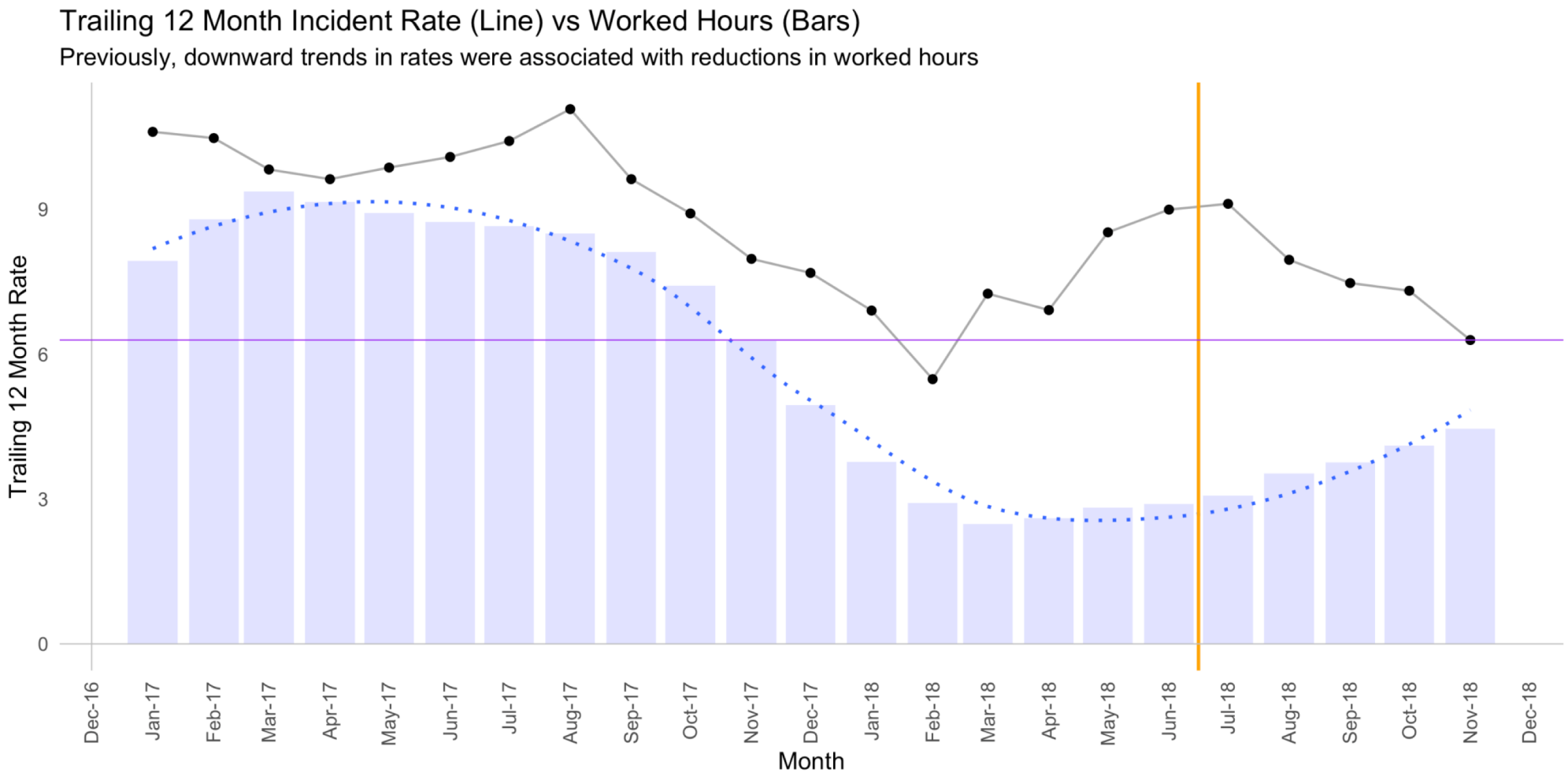
Audience Polling – Question #2

- What's preventing us from moving from incremental implementation to disruptive implementation?
  - Too difficult to quantify/justify the benefits
  - Fragmented industry, we just can't agree on any standard
  - Lack of interest/support (financial) from Owners
  - Lack of interest from the target end-users (e.g. craft)
  - "Innovation Overload" – tired of chasing shiny objects

Why Should We Stay Focused On This?

- Aid in attracting and retaining talent in the industry
- Enhance project predictability and maintain “license to operate” in many communities/regions.
- Improve worker safety and well-being
- Appeal to next gen craft workers that expect technology implementation

The Problem


Trailing 12 Month Incident Rate (Line) vs Worked Hours (Bars)
Previously, downward trends in rates were associated with reductions in worked hours
Trailing 12 Month Rate
0
3
6
9
Dec-16
Jan-17
Feb-17
Mar-17
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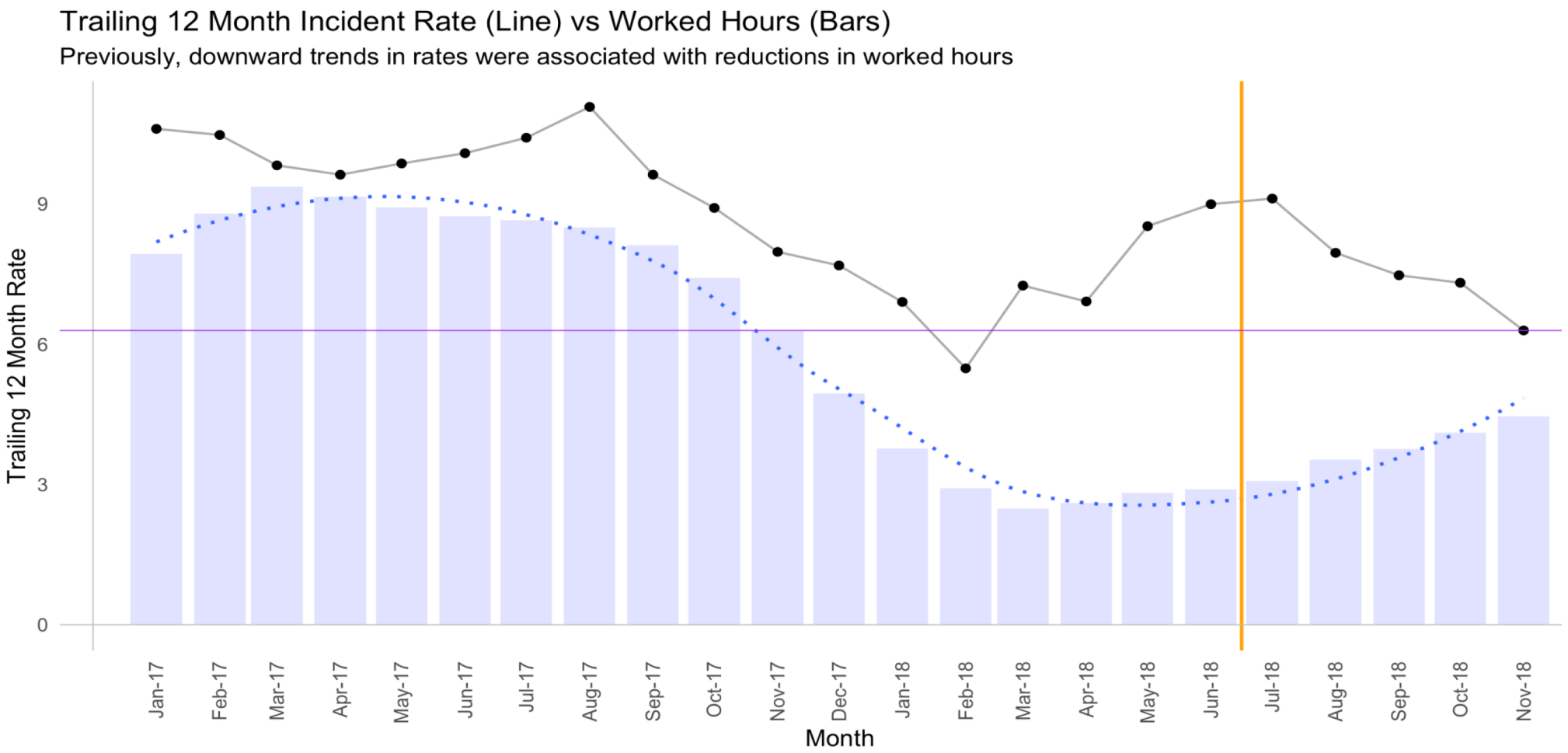
Month

The Result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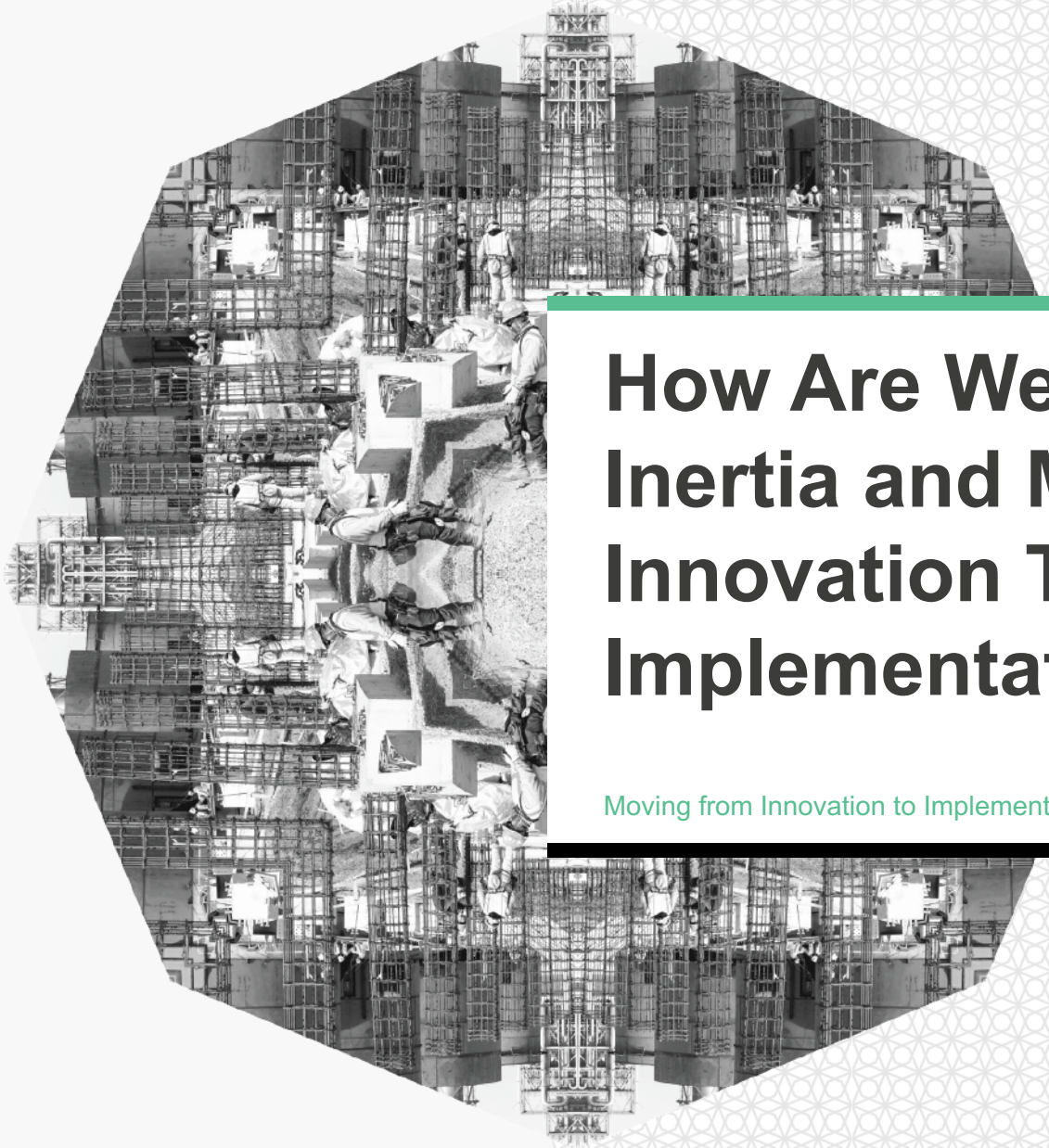
Connected Personal Protective Equipment (PPE)

- Why: falls from heights continue
  - 713 fatal falls in 2017
  - Many inexperienced workers on our sites
  - Increased government oversight and regulation

- What's keeping us from adoption?
  - Site restrictions on cell phones and other alert enabling devices
  - Delay in data value
  - Challenging implementation across large multi-contractor sites

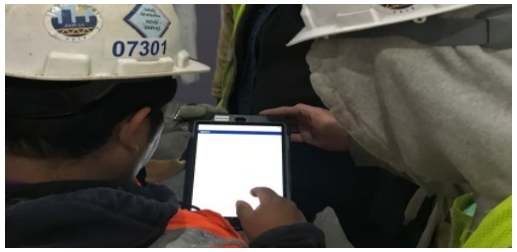


How Are We Overcoming Inertia and Moving From Innovation To Implementation?

Moving from Innovation to Implementation – Let’s Start with Safety

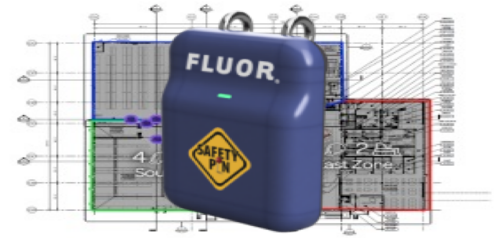
Safety Pin – Solution and Use Cases

1 Connected Safety Planning Forms



Improving the quality of safety planning

2 Location Sensing



Knowing location of people, equipment and activities

3 Visualization & Notification

Providing new insight to empower action

Potential Uses and Benefits

- Improved identification and awareness of hazards
- Streamlined planning “paperwork”
- Automated document retention processes
- Faster response to emergencies, evacuations, etc.
- Ability to quickly locate and focus resources on higher risk work areas
- Less time spent looking for people and equipment
- Automated validation of required training, certifications, permits, etc.
- Ability to maximize craft time spent in the field

Can We Prioritize Implementation?

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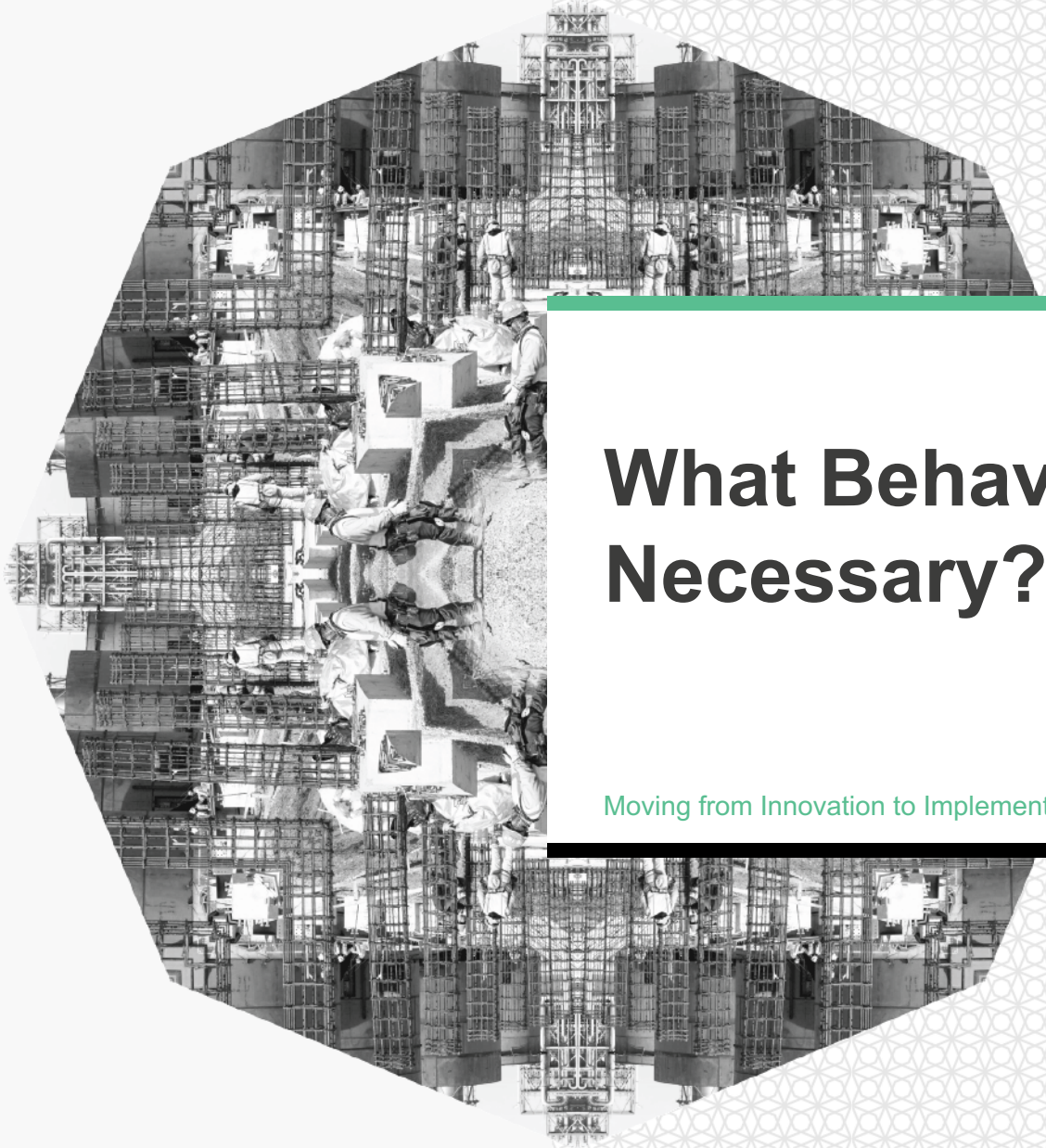

What Behavior Changes Are Necessary?

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Changing Habits/Changing Workflows

- Empower
- Enable
- Improve transparency
- Evangelists required

Audience Polling – Questions #3 and #4

- How confident are you that we will see a significant step change in technology adoption at our construction sites in the next 5 years?
  - Absolutely, we will see the desired step change
  - 50/50 chance
  - No, I expect to see minimal or incremental change
- Where do we need to invest (time and financial/human resources) to speed up the adoption/implementation of these innovative solutions (select one - where will we get the biggest bang for the buck)?
  - Suppliers
  - EPCs
  - Owners
  - Craft/end-users

Connected Safety Solutions Primarily Focus on Three Key Customer Problems

1. Improving worker safety behavior through situational awareness

EHS managers and workers would like to ensure proper safety behaviors in high hazard environments

2. Compliance automation

EHS managers and workers would like a digitally efficient solution to document and audit worker training & compliance

3. Productivity

EHS managers and workers are looking to increase worker productivity

Connected Safety Use Cases

- Exposure assessment and monitoring (i.e. heat)
- Correct PPE for a hazard
- Worker is trained to use PPE
- PPE is functioning correctly
- PPE is used correctly during work in Hazard
- Tracking indicators of unsafe worker behavior
- Safety event alert and notification during work
- Worker to Machine automation

Path Forward – What Can You Do?

- Leadership-driven – lines in the sand and own the end state (stick with your vision)
- Pilot fearlessly – fail fast
- Don’t stop – incremental change is not enough
- Create partnerships – don’t try to do it all yourself

Innovation Unwrapped 2016

Challenge: Long-term behavior change to attain zero safety incidents using the power of information.
Solution: Create immersive experience with Life Critical safety training using virtual reality technology

Innovation Unwrapped 2018

Challenge: Minimizing/eliminating the impact of change for maintenance workers in dynamic environments where conditions can change without notice.
Solution: Provide a dynamic response based on changes in workers' biometrics. This will alert the worker and their supervisor to stop and re-evaluate the conditions to consider if any action needs to be taken.