CHARIOT UPDATES:
WHERE WE ARE, WHAT WE
DID, WHERE WE'RE GOING

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SESSION AGENDA

- Introductions
- CHARIOT Challenge Recap
- Importance of Prototyping 3D User Interfaces (UI)
- Benefits of Prototyping with Public Safety
- Augmented Reality (AR) Development Playground

WHAT WE DID

UP NEXT

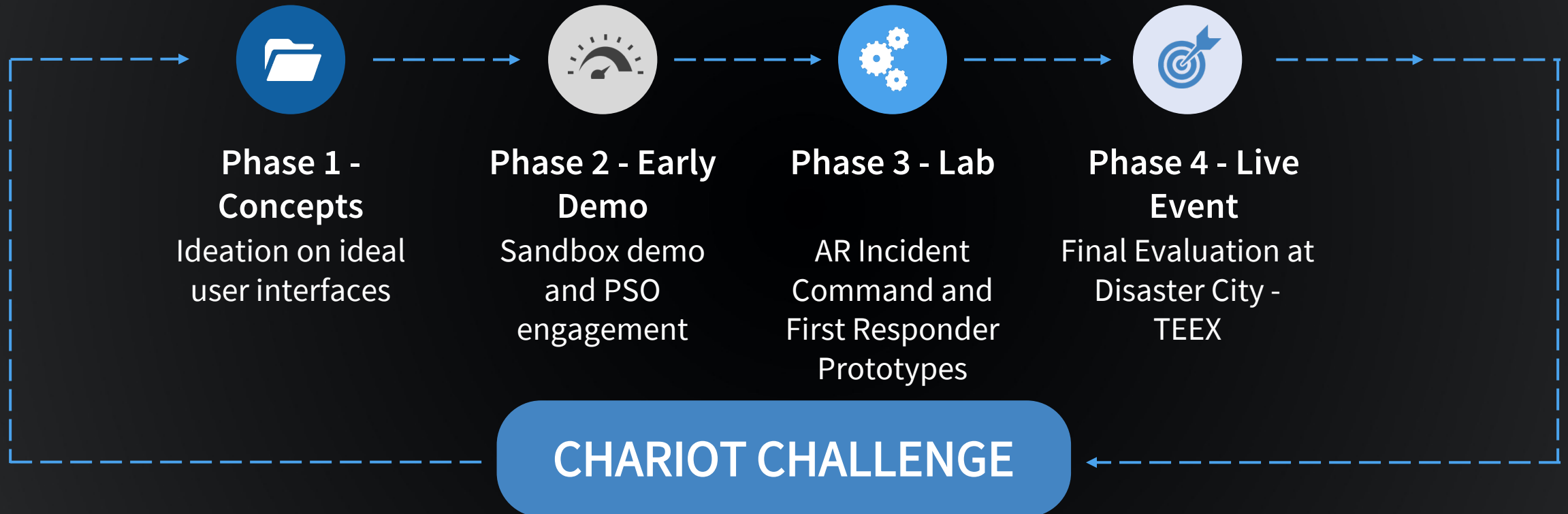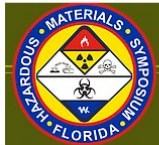## CHARIOT CHALLENGE RECAP

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AUGMENTED REALITY FOR PUBLIC SAFETY

•Developers have the opportunity to leverage augmented reality (AR) technology, such as heads-up display and holographic interfaces, to convey actionable information to first responders without distractions or cognitive overload.

•These solutions can significantly improve a first responder's situational awareness allowing them to more effectively plan and respond during incidents. Today, however, current advancements in AR technology have been largely unavailable to first responders.

Contestant & Public Safety Collaborations

Phase 4: User Tasks
for the Four Emergency Scenarios

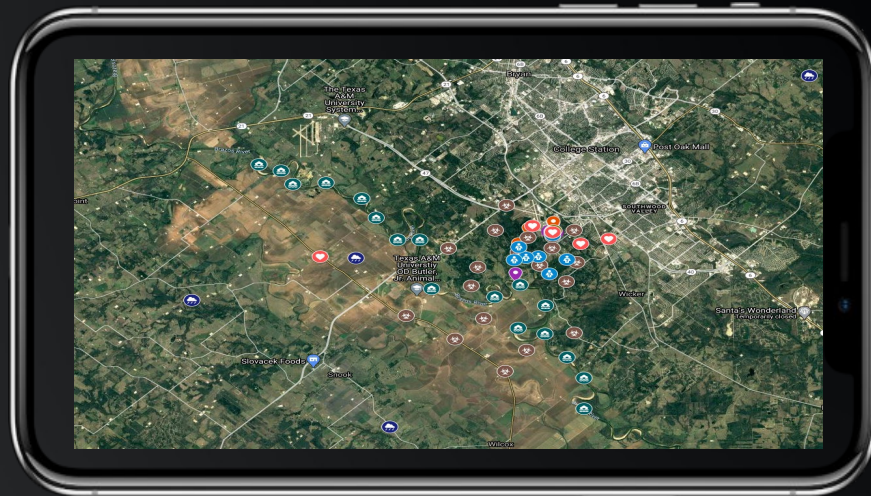Designing the Final Event for the CHARIOT Challenge

CHARIOT SCENARIOS

Wildfire

Mass Transit Accident

Flood

Active Shooter

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MASS TRANSIT ACCIDENT

Establish Situational Awareness

Identify Train Car Location

Status of Train Car Damage

Track Voltage Active/Safe to Approach
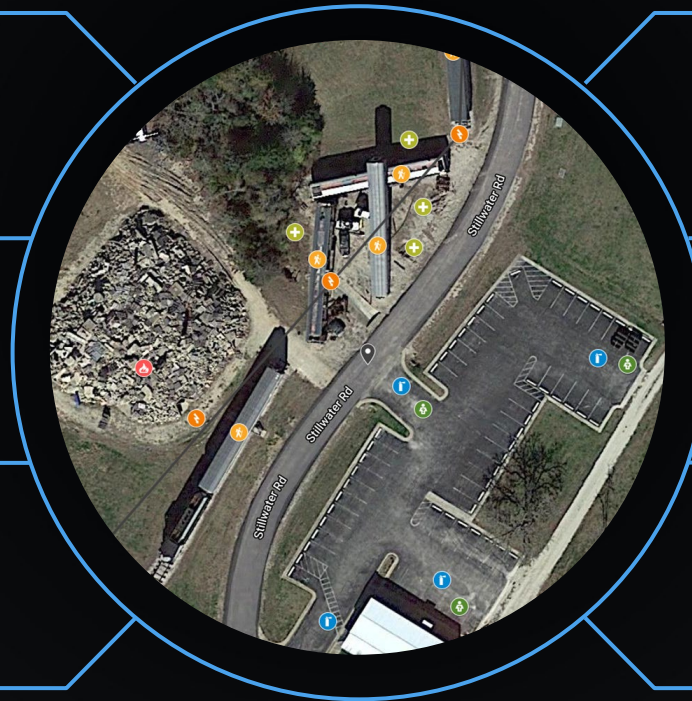
Environmental Risks – Smoke or Hazards

Particulates in the Air

Train Car Occupancy

Vitals and Status of Victims

Approaches to the Challenge

AUGMENTED REALITY THEMES

Human Interactions

Gestures
Eye Tracking

HUD vs Hologram

Boots on the Ground vs Incident Command views of the scenario

Visualizations

Location and Vitals - most important

WHERE WE ARE

IMPORTANCE OF PROTOTYPING 3D UIs

To design effective 3D user interfaces that support first responders, we need to understand the **operational environment** and **their technology needs.**

BENEFITS OF PROTOTYPING WITH PUBLIC SAFETY

Limit Exposure to Hazards

- Eliminate exposure to unnecessary hazards (e.g., increased risk of cancer)
- Allow for rehearsal of dangerous incident types without risk of injury
- Create the opportunity to train for low-frequency, high-risk events

Costs of Testing for Hazardous Scenarios

- $40K-60K for testing in hazardous incidents
- $10K-30K for consumer testing firms, single-phase, complex testing
- ~$50K for rental of controlled burn facilities for single day testing

OPPORTUNITIES FOR DEVELOPMENT

User Centered Design for Public Safety
Conduct sound requirements analyses, elicit feedback early and often to design viable tools and products for commercialization

Prototyping with Public Safety
Intervention and input during the design process, iterative design cycles ensure best practices

CURRENT TECHNOLOGY GAPS: HOW DO 3D UIs MITIGATE THESE GAPS?

Collaboration

Increased efficiency of collaboration within and between agencies and disciplines

Situation Awareness

Increased situation awareness and enhanced decision-making

Communication

Different communication modalities help us avoid perceptual limitations (e.g., over-reliance on radio and increased workload)

Information Quality

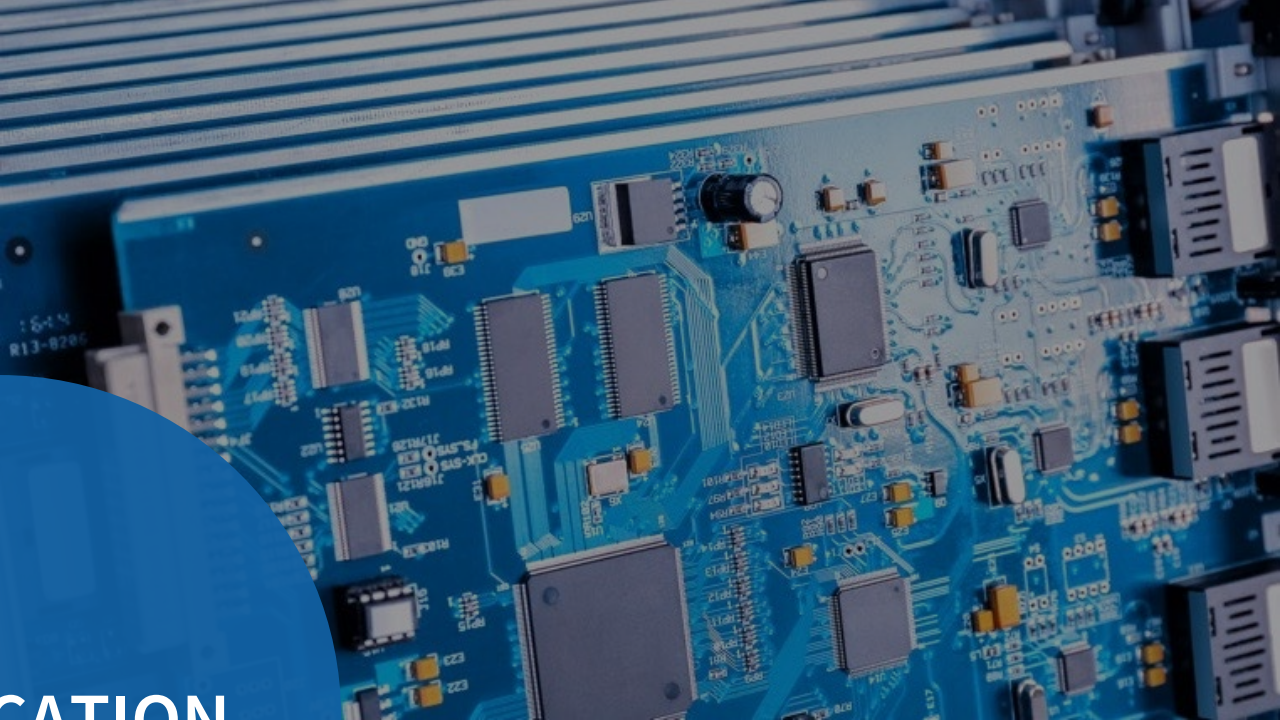Enhanced accuracy and availability of real-time information
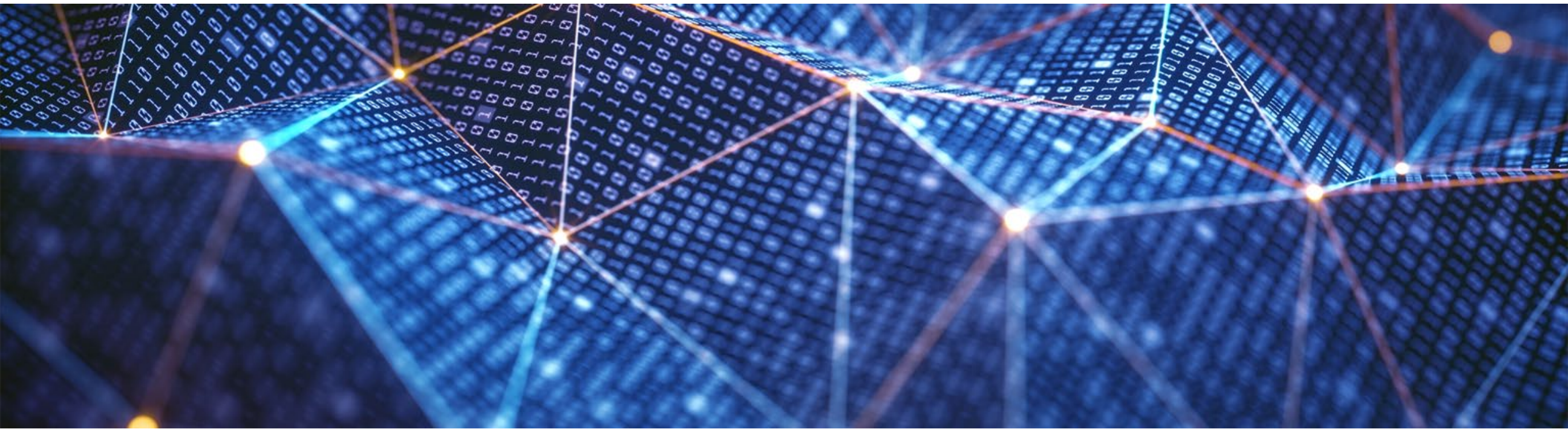
UP NEXT

THE AR PLAYGROUND

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GAMIFICATION

WHY AUGMENTED REALITY?

USING AR

Simplified UI

Effective Training

MESSAGE QUEUING TELEMETRY TRANSPORT – IOT DATA

Streaming Data

Tapping into live data streams

simply knowing the IP address and topic to subscribe to

Parsing that information in real-time

getting to what's most important for the FRs

Displaying that information

a digestible understanding of the situation

WHERE WE'RE GOING

WHERE WE'RE GOING

Sept 2021

Final Event at Disaster City

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Scenarios

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AR Finalists

35

AR Prototypes

WHERE WE'RE GOING

Challenge Analysis

Videos from Event

Ongoing Usability Research
Around XR and Future User
Interfaces for Public Safety

Q&A

THANK YOU

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