



# Reducing Risk and Improving Collaboration with Construction and Technology

May 2, 2023, 4:00 p.m.



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# MODERATOR



## Liz Krick

Harkins Builders, Inc  
Government BD Manager

### Fun Facts

- Favorite vacation: Paris
- Hobbies: cooking for my husband and hanging out with my toy poodle Teddy
- All women's college graduate



This is an interactive session.

To participate, go to:

# Slido.com

Enter the event code: #2729992

Or scan the QR code

- Pick your room/session.
- Polls will show on your device when they appear on the in-room screen.
- Please complete the brief Evaluation Survey at the end of the session.



# HOUSEKEEPING NOTES & TIPS

- ✓ **Take Note of Emergency Exits**
- ✓ **Silence Your Mobile Devices**
- ✓ **Thank You to Our Sponsors!**
- ✓ **Questions will be addressed in the allotted time**
- ✓ **Presentations will be posted in the Attendee Service Center (ASC) post conference**





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# Reducing Risk and Improving Collaboration with Construction and Technology

Moderator: **Liz Krick**, Harkins Builders, Inc.

Speakers:

- **Patrick Scarpati**, Virtual Design and Construction Manager, Harkins Builders, Inc.
- **Aaron Edmonson, PE, PMP**, Chief of Engineering and Construction Division, U.S. Army Corps of Engineers, Norfolk District
- **Ed Chamberlayne, PE, PhD, F.SAME**, VP Federal Programs, PRIME AE Group
- **Rob Tirocchi**, Government Project Executive, Harkins Builders, Inc.





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# SPEAKER



## Patrick Scarpati

Harkins Builders, Inc  
Virtual Design & Construction  
Manager

### Fun Facts

- Family of 7 that includes my wife, 3 kids and 2 dogs
- Baltimore Ravens fan—I attended the last ever sporting event at Memorial Stadium in Baltimore (Ravens vs Oilers)
- My Great Grandfather was played by Al Pacino in a 2021 movie





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# SPEAKER



## Aaron Edmonson

Norfolk Division, US Army Corps  
of Engineers

Chief, Engineering & Construction  
Division

## Fun Facts

- All the teams my kids play on
- Favorite Vacation Spot :  
Greece-Kefalonia
- Biggest adventure: Teaching  
Kids to Drive





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# SPEAKER



Ed Chamberlayne,  
P.E., PhD, F.SAME, USA Ret.

PRIME AE Group  
VP for Federal Programs

## Fun Facts

- 3 x Hokie
- German Shepherd Nut
- Recent vacation in Belize
- Trying to get back into swimming and biking



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# SPEAKER



## Rob Tirocchi

Harkins Builders, Inc.  
Government Project Executive

### Fun Facts

- Favorite sport: Changing my 1year old's diapers
- Did you know? I have a twin sister
- Hobbies: Trying to find quiet time



# Reducing Risk and Improving Collaboration with Construction and Technology

## Objective 1

What technology is being used now to simplify construction quality control and track progress on a job site?

## Objective 2

What challenges are A/E firms and construction contractors having with implementing some of the technological advances with federal government clients?

## Objective 3

What advances has the federal government made with the use of this technology?

## Objective 4

Is this technology just really cool or does it also save money and increase revenue?



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# VDC Tool Chest

## SOFTWARE



**CM BUILDER**



## HARDWARE



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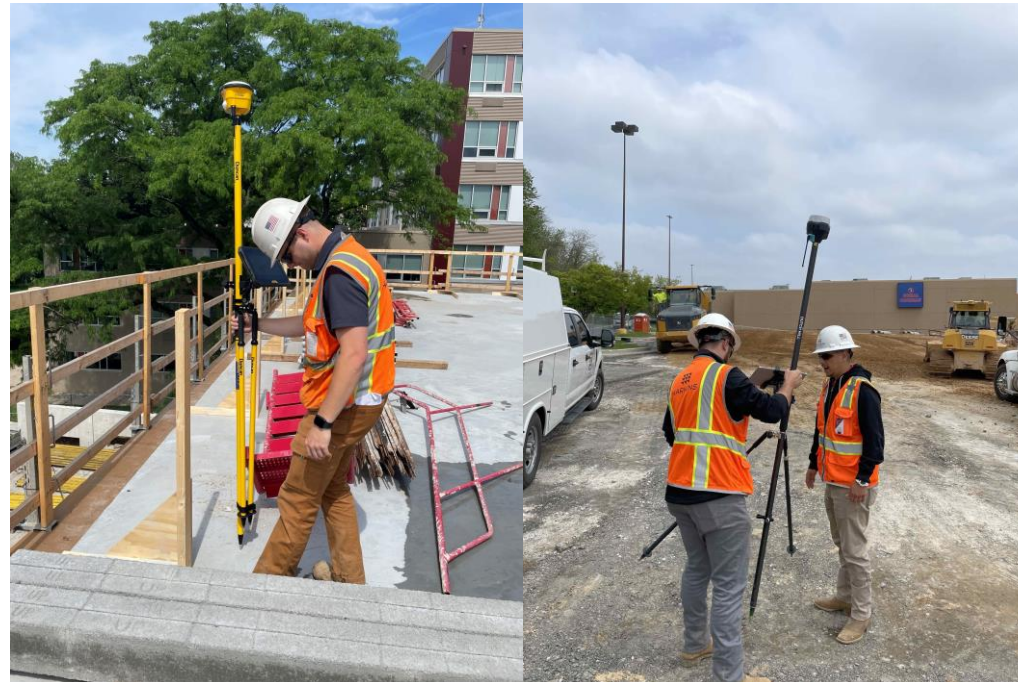


# Geospatial Layout

TRIMBLE SPS 986



EMLID REACH RS2



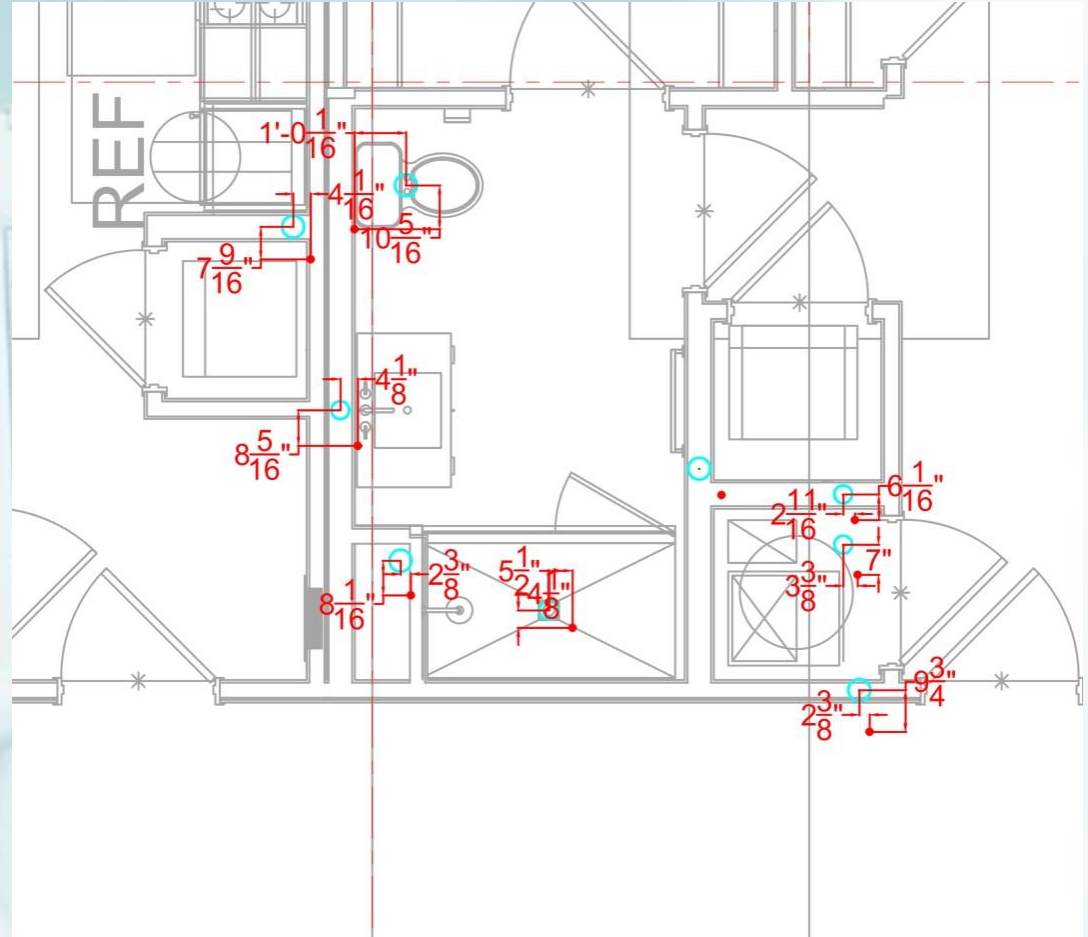
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# Geospatial Layout

## TRIMBLE SPS 986





# Harkins Drone Program



DJI Mavic 2 Pro



Skydio 2



DJI Mini 3



Autel EVO II Pro  
Enterprise



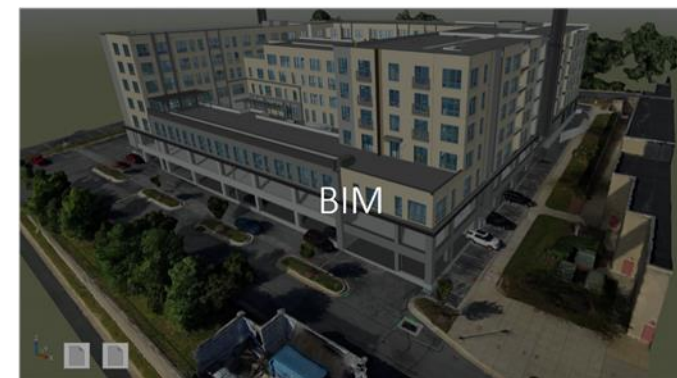
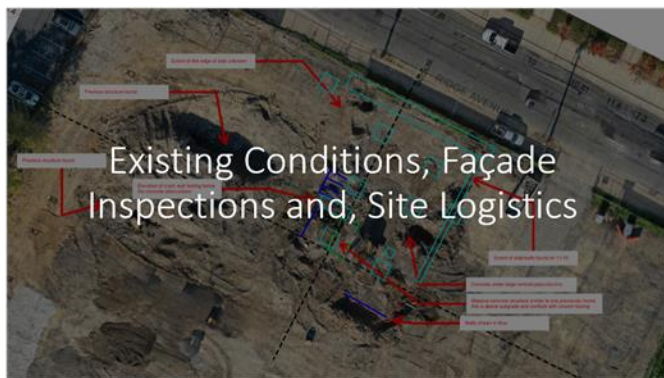
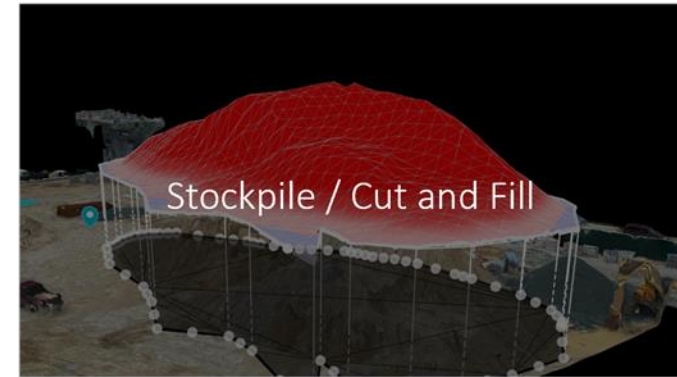
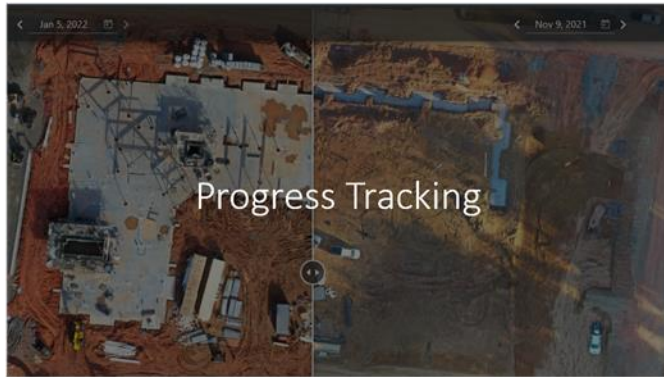
DJI Mavic 2  
Enterprise



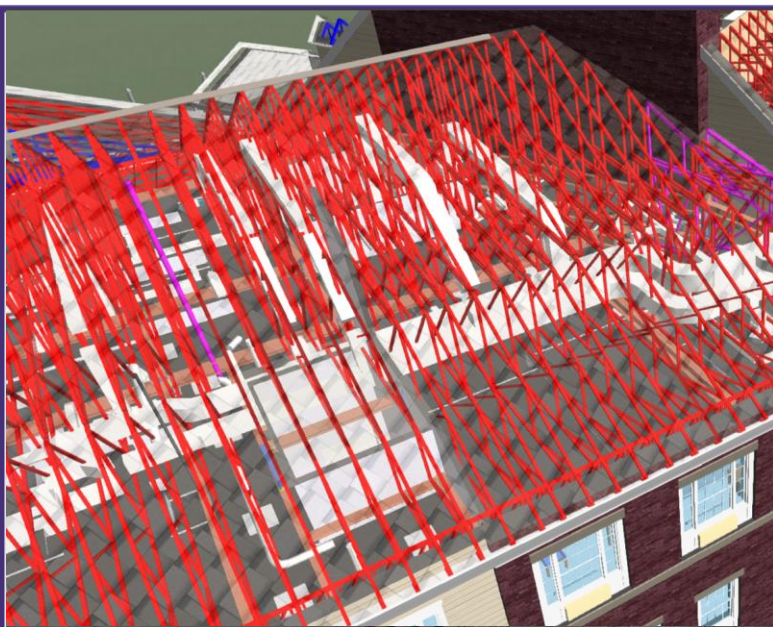
DJI Mavic 3  
Enterprise



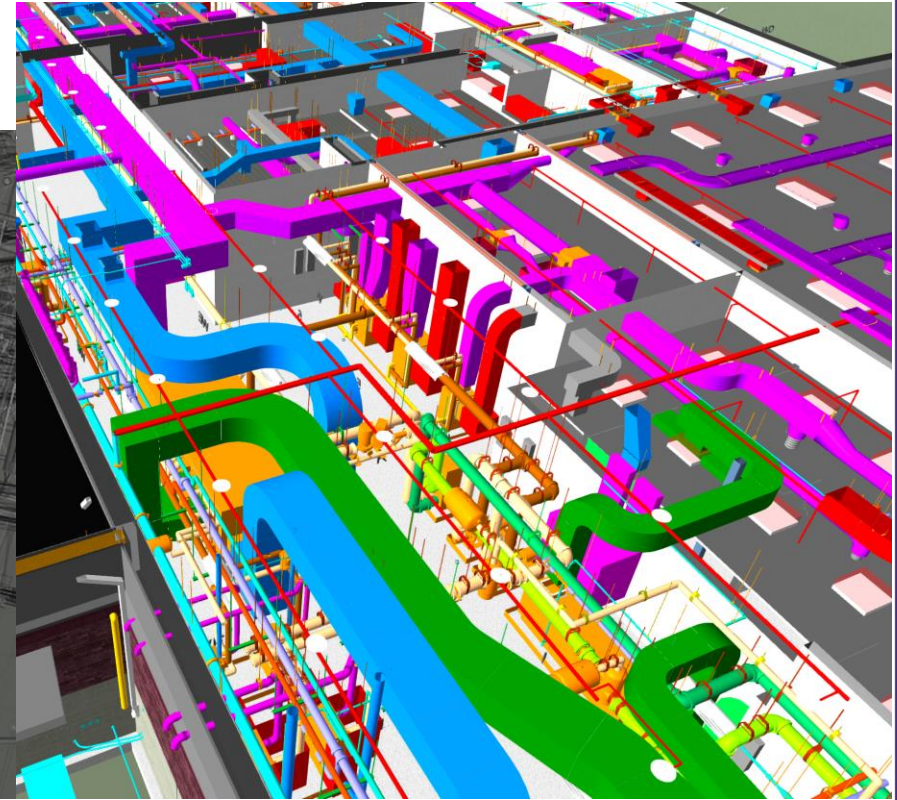
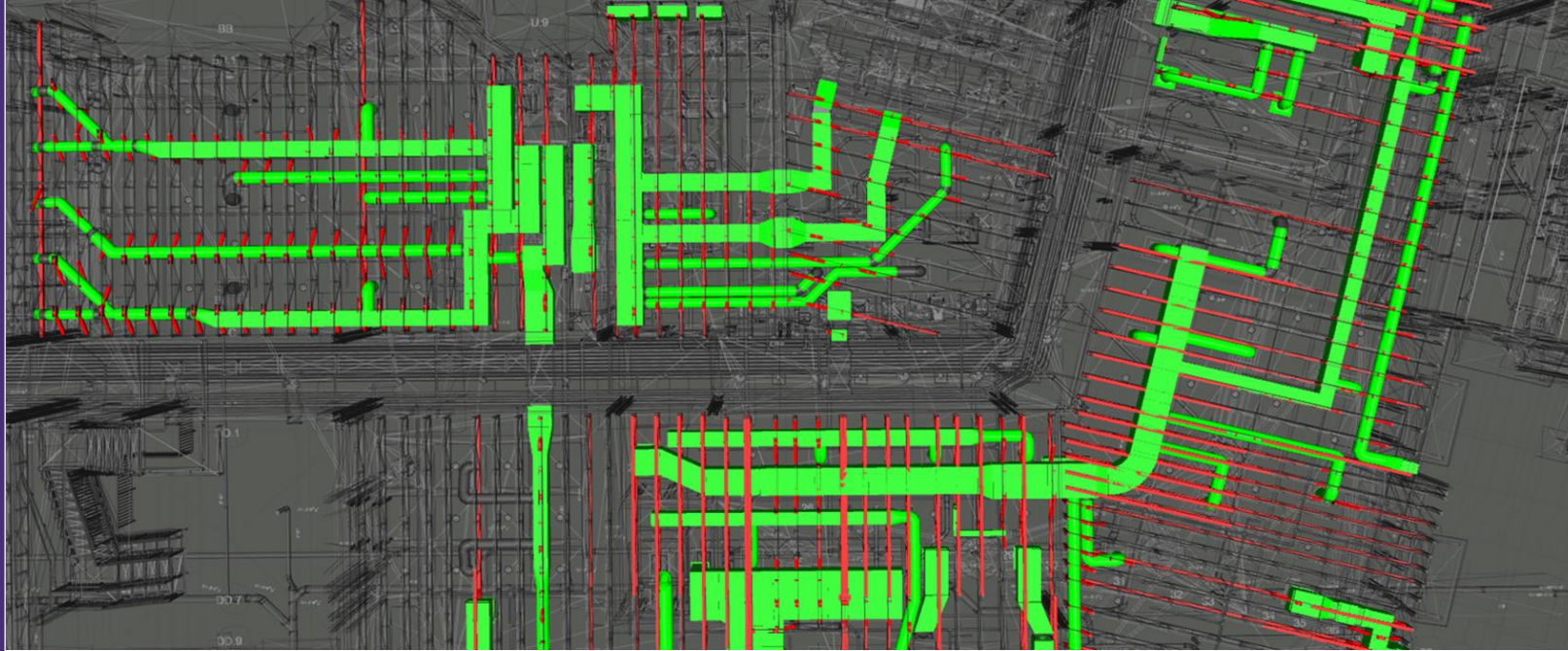
# Drone Use Cases







# Model Based Coordination Trade Partner Collaboration



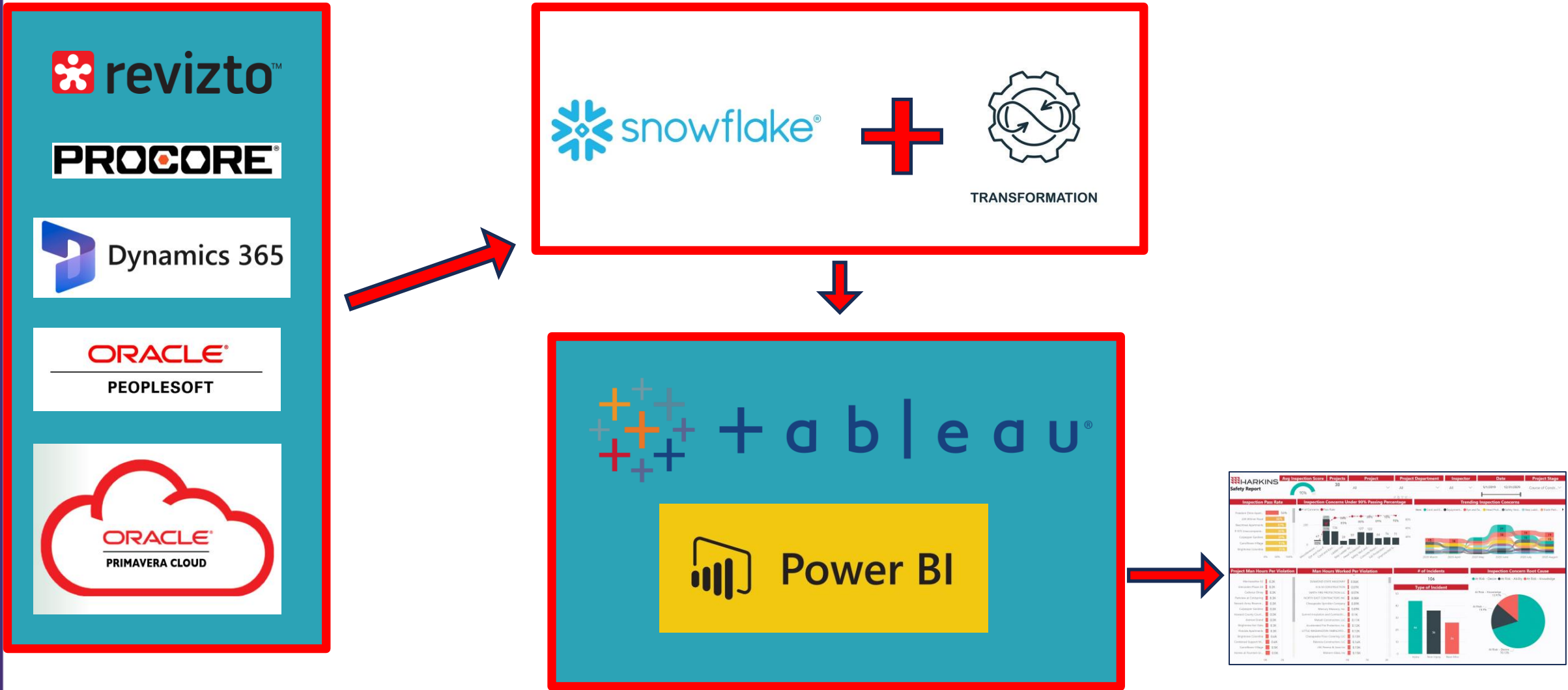
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# Harkins Data Analytics Pipeline





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# Discussion Roadmap



Prepare Teams for Digital Transformation



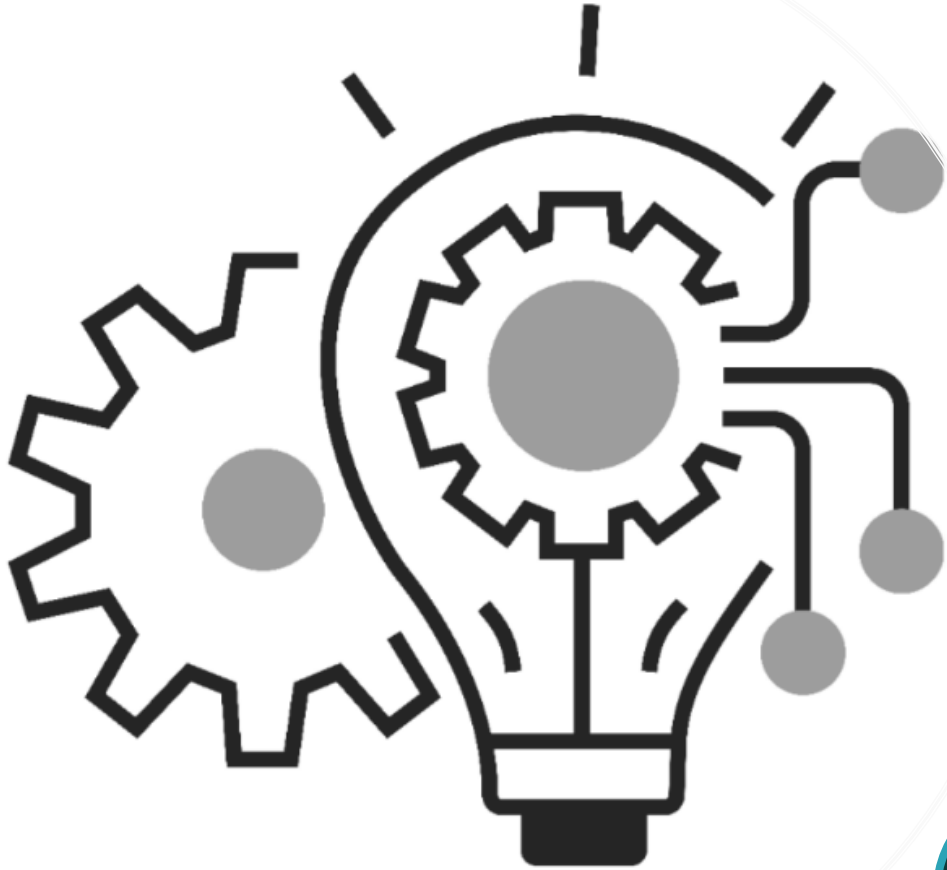
Bridge R&D Into Practical Applications



Cultivate an Innovation Mindset



Remove Barriers to Innovation



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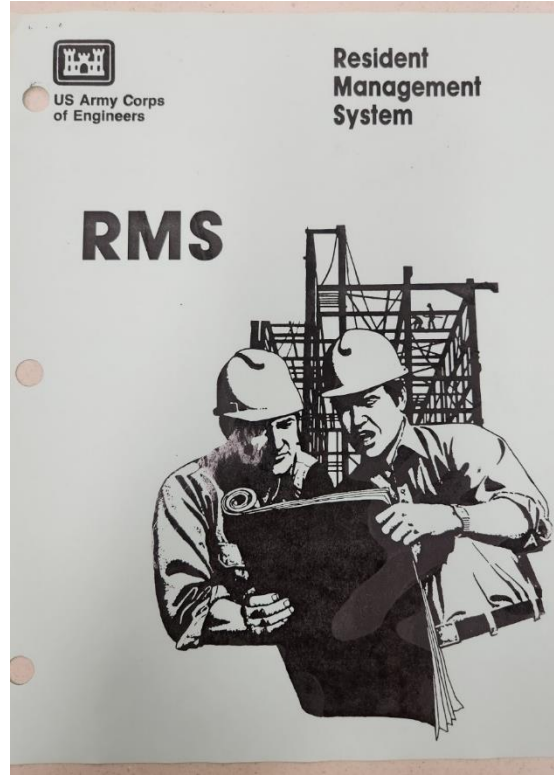


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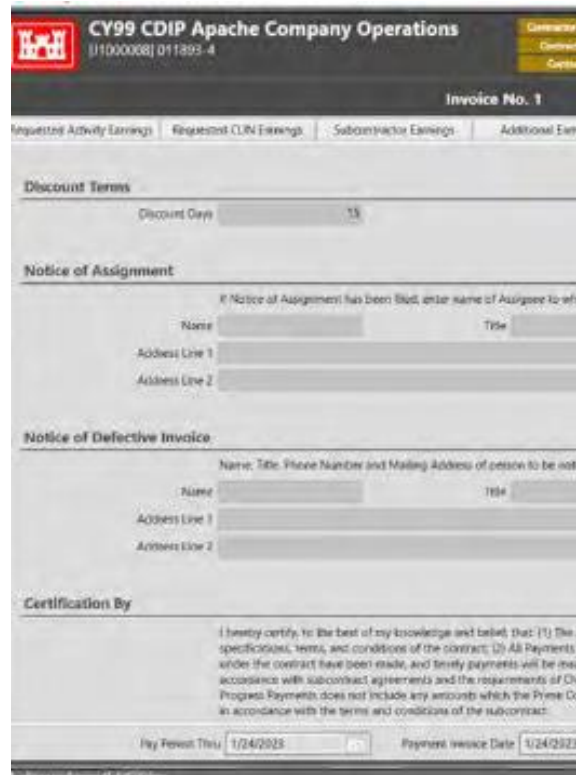
# Background: Where We've Been



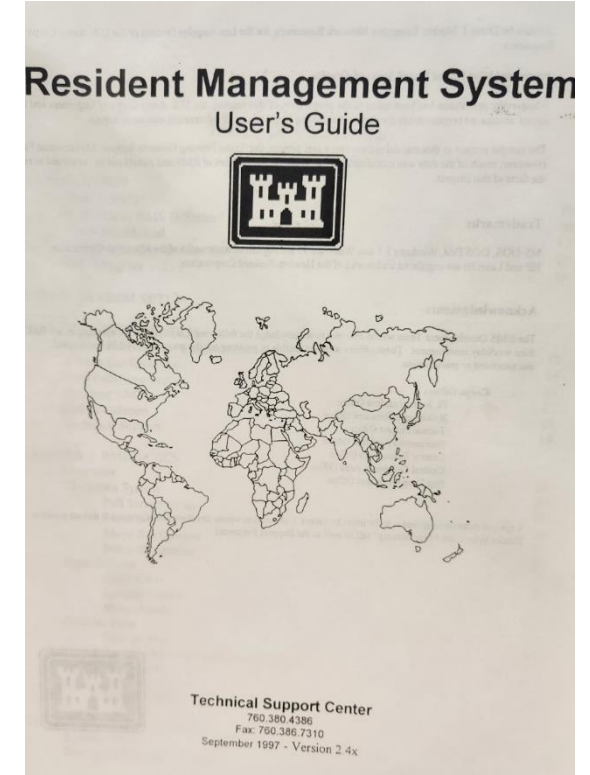
Bagram Airfield, Afghanistan  
November 2008



Resident Management System,  
User Manual



Current CM Software Solution



Resident Management System,  
User Guide



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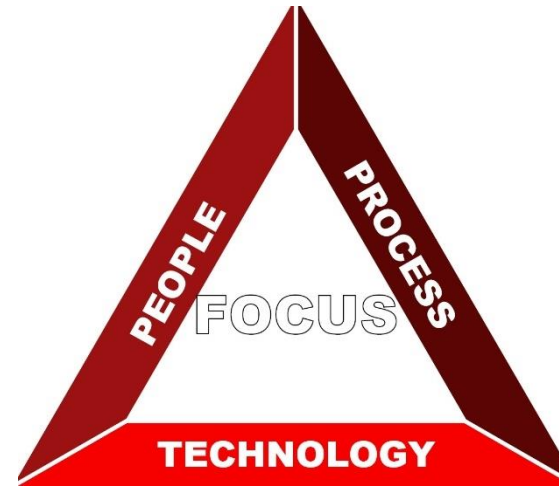
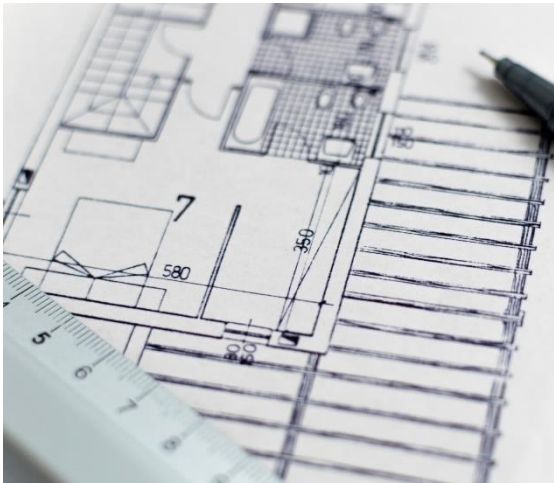


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# Preparation for Major Change



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# Preparing for Change



**COMMITMENT**

Be actively **engaged** in the innovation mission and **encourage participation** from colleagues.



**COMMUNICATION**

**Interact** and provide input regularly.  
**Share information** within your AORs



**COLLABORATION**

**Collaborate** and  
**Participate**



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# Equipping Your Organization

## *For Digital Transformation*

- Regular engagements with available tools and technology
  - Provide inspiration and set the tone to be aspirational
- Consistent Communication
  - Share the vision widely (Construction Management Innovation Strategy)
  - Engage multiple platforms and forms of communication (Goals for all levels)
- Knowledge Management
  - Let users learn on their own schedule
  - Adapting policies and process to allow for technology integration
- Identify High Performers (Champions)



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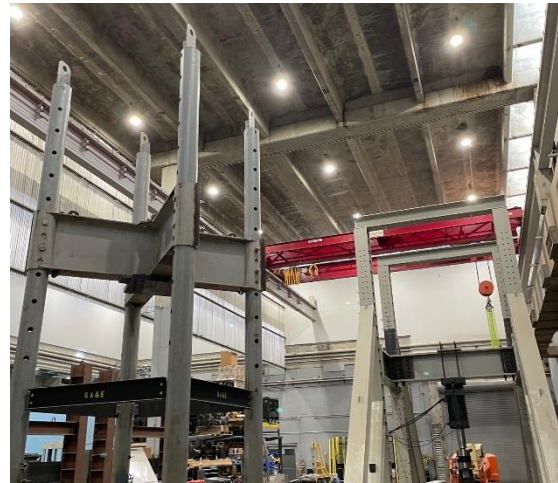


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# Bridging R&D Into Practical Applications



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# Leveraging Partnerships



## Look for SMEs

Case Study: USACE ERDC ITL



## Be an Active Participant

Case Study: Academic Research +  
Industry Engagement



## Look for Collaboration Opportunities

Case Studies: District Innovations



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# Case Study: R&D

## Utilizing the Information Technology Laboratory



The ERDC ITL conducts research and development that directly support USACE, the DoD, and other government agencies.

The ITL focuses on large-scale enterprise software engineering and follow the entire lifecycle of software development, including requirements engineering, systems architecture, software development, systems testing, documentation, and training using agile methodology.

Other efforts include mobile application development, augmented/virtual/mixed reality software development to support the warfighter, and support to USACE's civil works mission.



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# Case Study: R&D

at the Engineer Research and Development Center



Bluestone Dam  
(West Virginia)

*Digital Twin initiative, led  
by ERDC*



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# Case Study: R&D

## Unmanned Aircraft Systems, ERDC



ERDC UAS Teams  
gather topographic  
information from flights



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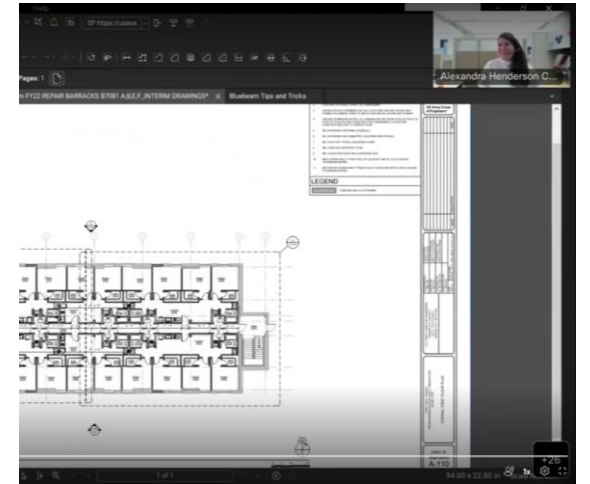
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# Create An Innovation Mindset



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# Providing Opportunities

- Crowd Source
  - Calls for idea submissions
  - Opportunities to provide feedback and input
- Regularly Engage
  - Allow for submission of input in multiple mediums
  - Create a mix of in person and online opportunities



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# Remove Barriers to Innovation



Change is a threat when done to me,  
but an opportunity when done by  
me.

— Rosabeth Moss Kanter —



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# Introducing Change

**BELIEF**  
*in the possibility of change*



*Adapted from Gartner and Nobl Academy*



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## Poll Question

If you perform design work for DoD, how much of your design is performed in BIM?

- a) 10%
- b) 25%
- c) 50%
- d) 75%+

# A/E Perspective & Trends

- Collaboration within BIM 360
- USACE & NAVFAC starting to ID BIM/CADD Manager as key personnel; BIM PxP
- NAVFAC eCMS
- Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)
- Public Health Center at Edgewood Example (next slide)
- Innovation & Collaboration vs. Cybersecurity & Contractual Requirements





# Public Health Command Laboratory Replacement: Edgewood, MD

- USACE Baltimore & DHA
- Designed 2011-2014; construction 2015-2023
- BIM in accordance with UFC 4-510-01
- Use of BIM through design, construction, commissioning, and IO&T → O&M
- Used COBie-MHS (Construction Owner Building Information Exchange – Medical Health System) data
- Facility Life Cycle Management





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## Poll Question

Which technology below have you used on a recent project?

- a) 3D Modeling
- b) Drones
- c) Augmented or Virtual Reality
- d) 3D Scanning or photogrammetry
- e) None of the above



# Q&A

- Liz Krick, [ekrick@harkinsbuilders.com](mailto:ekrick@harkinsbuilders.com)
- Patrick Scarpati, [pscarpati@harkinsbuilders.com](mailto:pscarpati@harkinsbuilders.com)
- Aaron Edmonson, [Aaron.G.Edmonson@usace.army.mil](mailto:Aaron.G.Edmonson@usace.army.mil)
- Ed Chamberlayne, P.E., PhD, F.SAME, USA Ret.,  
[ed.chamberlayne@primeeng.com](mailto:ed.chamberlayne@primeeng.com)
- Rob Tirocchi, [rtirocchi@harkinsbuilders.com](mailto:rtirocchi@harkinsbuilders.com)





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