

Soup to Nuts Remote Site Management, With a Dash of AI

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TABLE OF CONTENTS

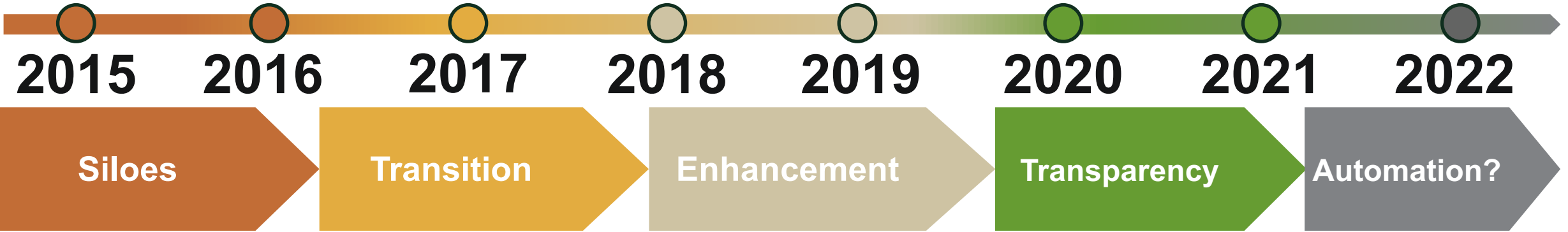
- Modernization of Project Planning
- Problem Analysis of Historical Reality Capture
- Autonomous Robotic Implementation Case Study with





Our Scheduling Journey

ENR FutureTech
Engineering News-Record
CONSTRUCTION'S LEADING TECHNOLOGY FORUM



Problem 1

**Schedule
Development &
Management
Variability**

Problem 2

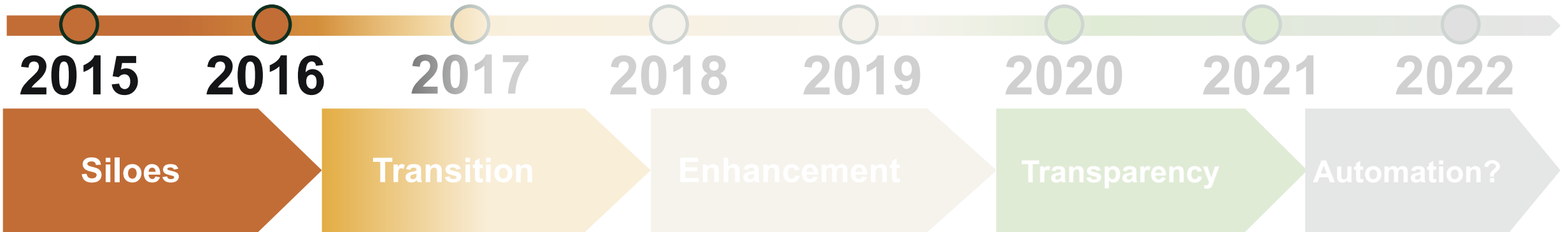
**Schedule
Accessibility,
Quality, &
Standardization**

Problem 3

**Automation and
Simplification**



Siloed Era



Utilization of On-Prem Scheduling Software

- Supt. Update / Manage
- Direct Manager Reviews (report up)

Resulted In

- Poor Quality Schedule
- Inconsistencies (for us and clients)
- Siloed Performance Reporting
- Time Consuming



Implementation of Web-Based Scheduling Solution

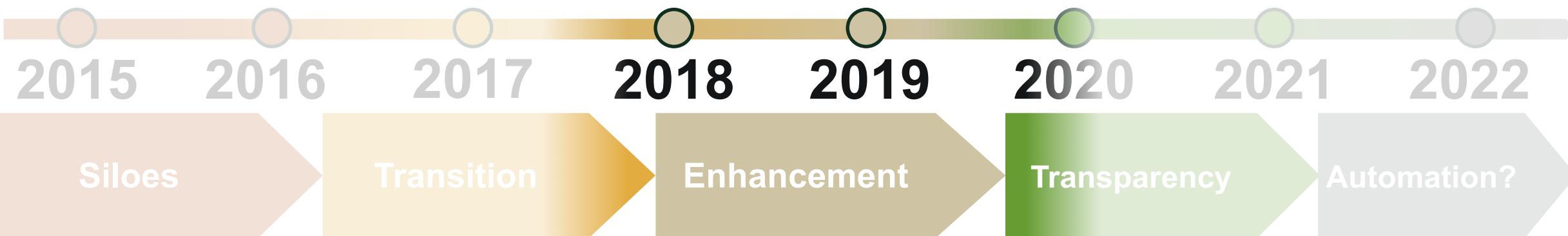
- Anyone With Permissions Update / Manage
- Operational Leadership Permissions (for reviews)
- Enterprise Management Capabilities
- Customizable

Resulted In

- Scalable, Standardized Enterprise Solution
- Less Effort To Build (templates, views)
- Less Effort To Manage (multiple user functionality)
- Operational Visibility Into Schedules (saves time)
- No Perspective On Progress Or Quality



Enhancement Era



In-House Quality & Performance Monitoring App

- Alignment With Industry Best Practices
- Utilization Of Schedulers & Site Capture Tools
- Semi-Automated Process

Resulted In

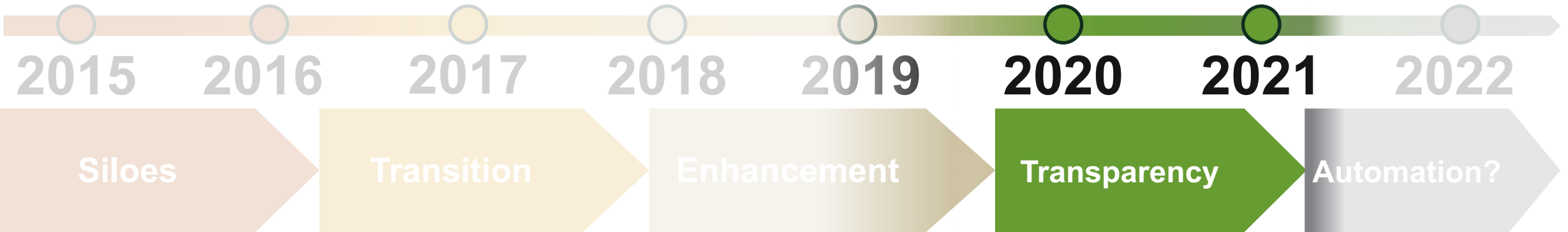
- Full Operational Visibility (reporting DBs)
- Actionable Indicators For Schedule Quality
- Limited Visibility Into Schedule Performance
- Still Requires Significant Efforts By Staff

**10% of Projects
= Profit Loss**



Transparency Era

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Engineering News-Record
CONSTRUCTION'S LEADING TECHNOLOGY FORUM



Implement Schedule Analytics Platform (SaaS)

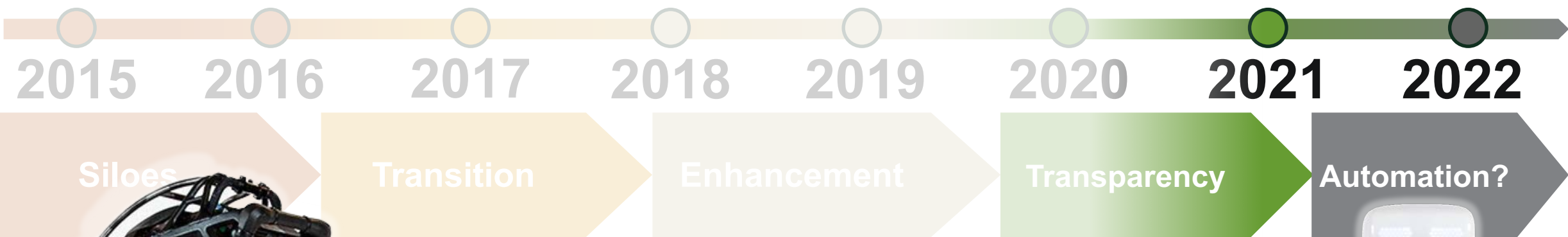
- Fully Automated Integration (between field and reporting tools)
- 1-Step Process For Teams
- Realtime

Resulted In

- Comprehensive Schedule Intelligence (quality and performance)
- Enterprise-Wide Visibility
- More Time For Managers To Manage
- Sets our Stage For Reality Capture Integration



Automation Era?

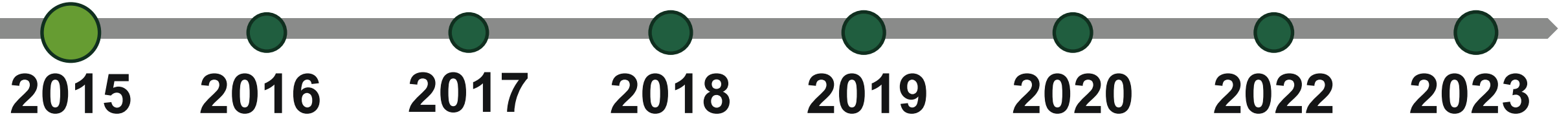


What Would Automation Look Like?



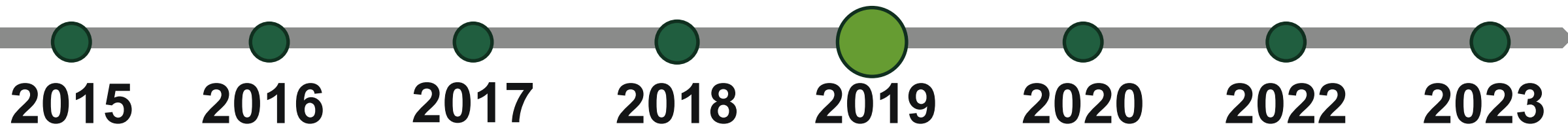


History of Reality Capture





History of Reality Capture





History of Reality Capture

2015

2016

2017

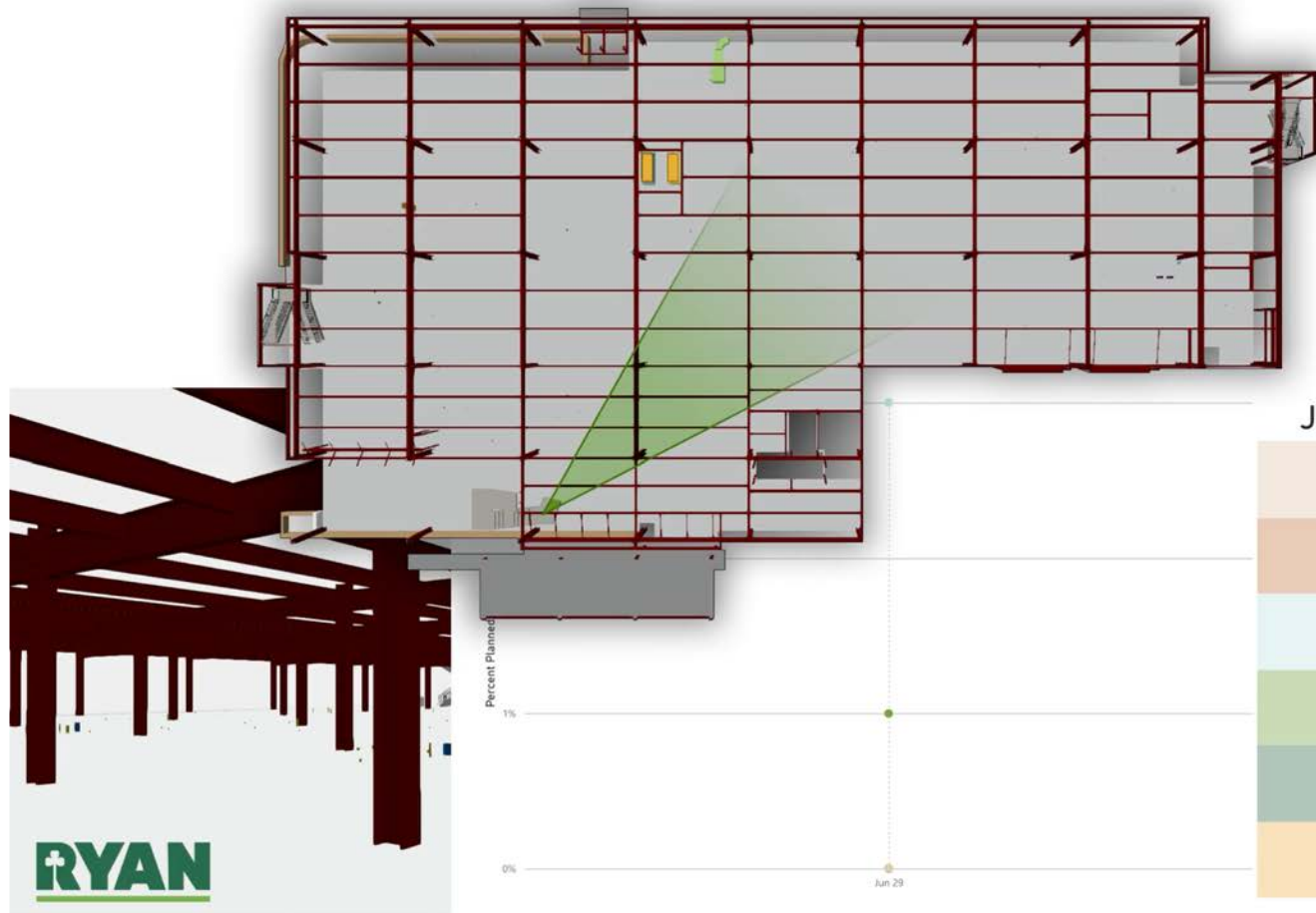
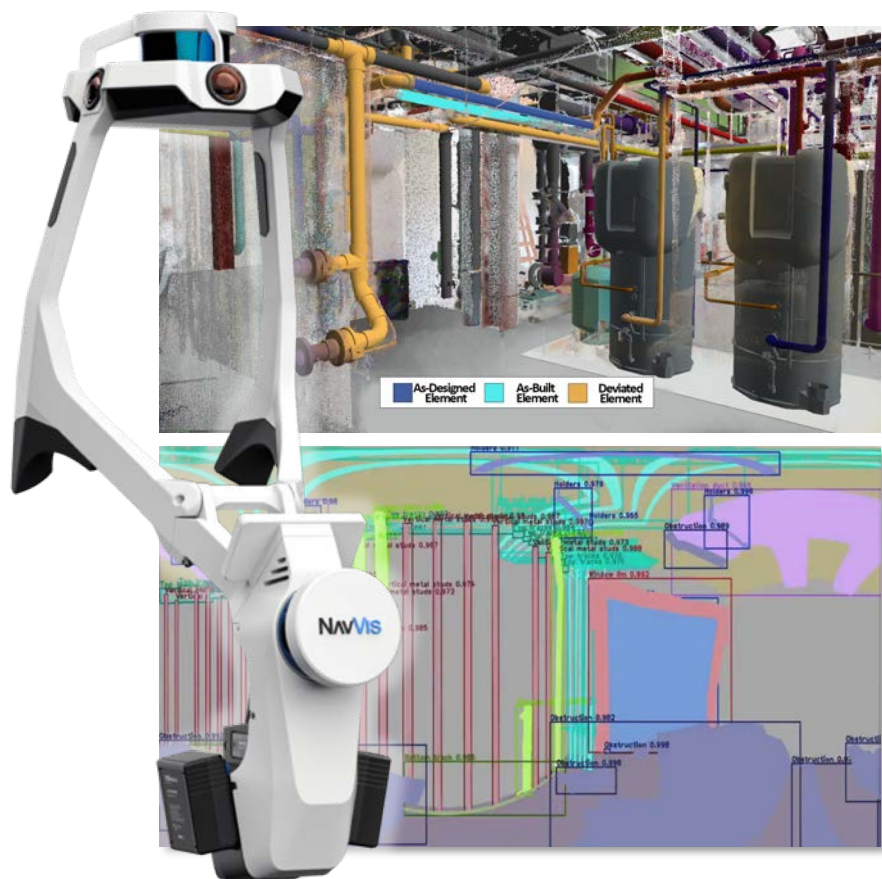
2018

2019

2020

2022

2023



June 29, 2022

Div 09 - Wall Assemblies	0%
Div 21 - Fire Suppression	0%
Div 22 - Plumbing	3%
Div 23 - HVAC Dry	1%
Div 23 - HVAC Wet	0%
Div 26 - Electrical	0%

RYAN



History of Reality Capture

2015

2016

2017

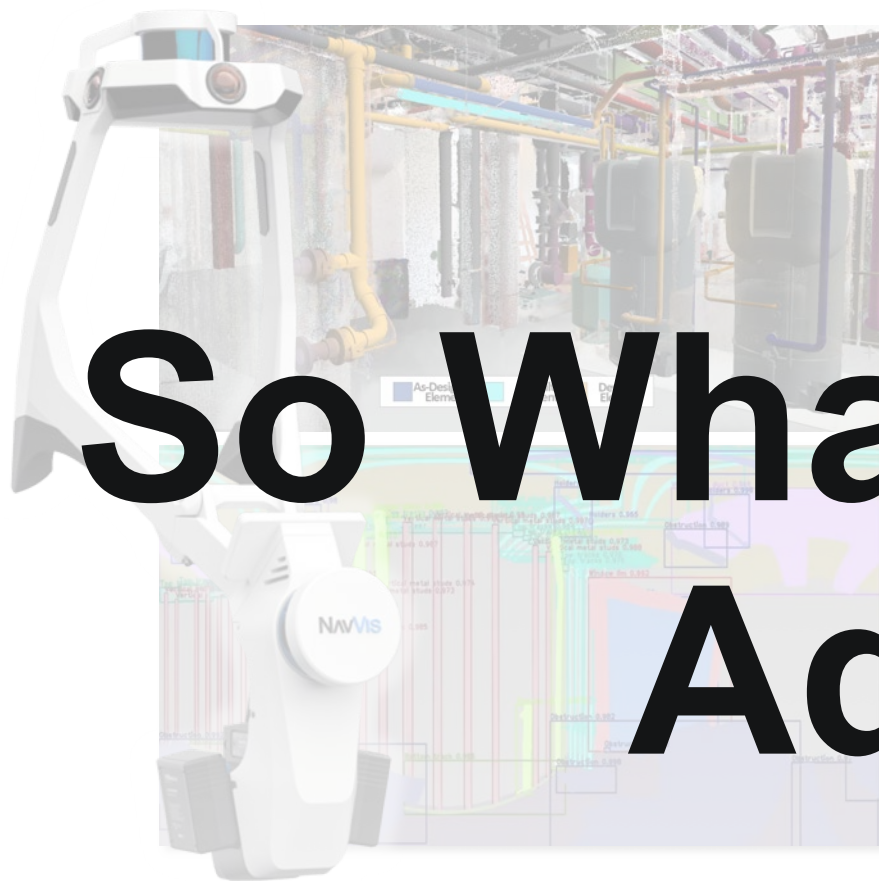
2018

2019

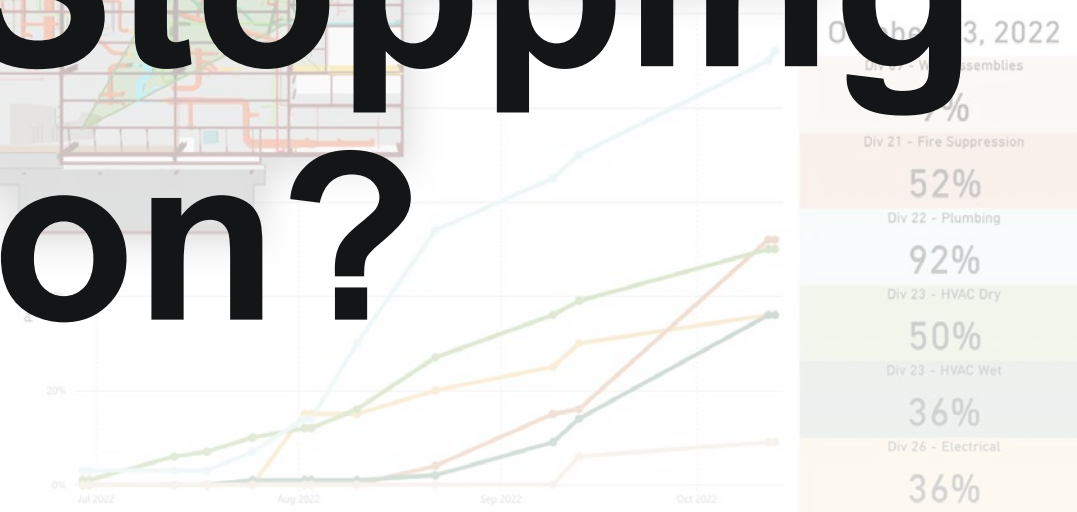
2020

2022

2023



So What Is Stopping Adoption?



Analysis Based on

513k

Frames of Data



Standalone

1.2k



Video Nodes

143k



Analysis Tools

Custom
Developed



Projects

10



Data Spanning

3 1/2
Years



Captors

31



Analyzed Area

28,840,000

Square Feet



Analysis Based on

513k

Frames of Data



Projects

10



Problem 1

Time To Capture



Data Spanning

3 1/2

Years



Problem 2

Floor Coverage



Standalone

1.2k



Video Nodes

143k



Captors

31



Analyzed Area

28,840,000

Square Feet



Problem 3

Elapsed Duration



Analysis Tools

Custom
Developed





The Problems

Problem 1

Time To Capture



Speed
1.95
ft/s



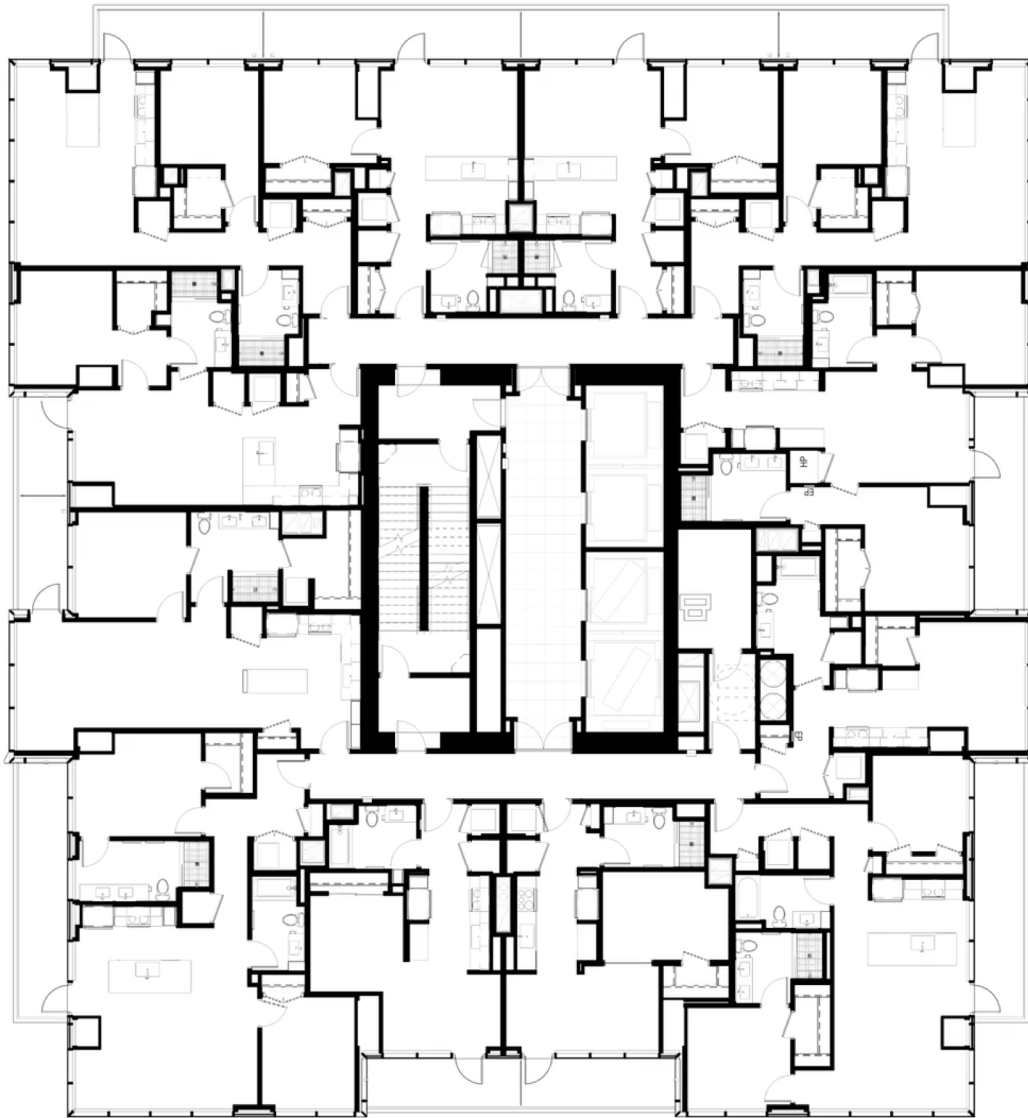
Path Length

≈ 1,200 ft

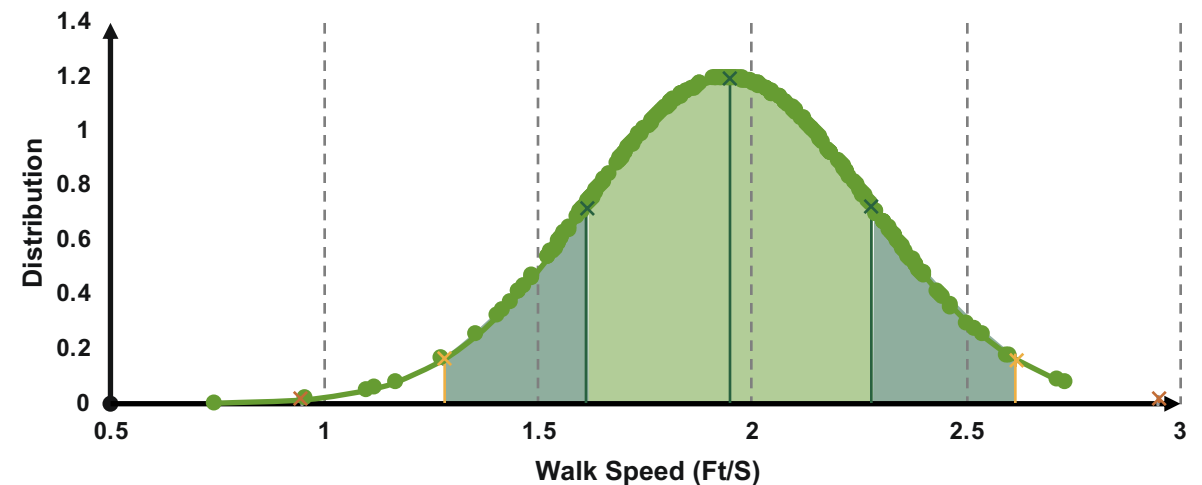


Estimated Duration

7 to 15
Minutes



Distribution Of Walk Speed¹

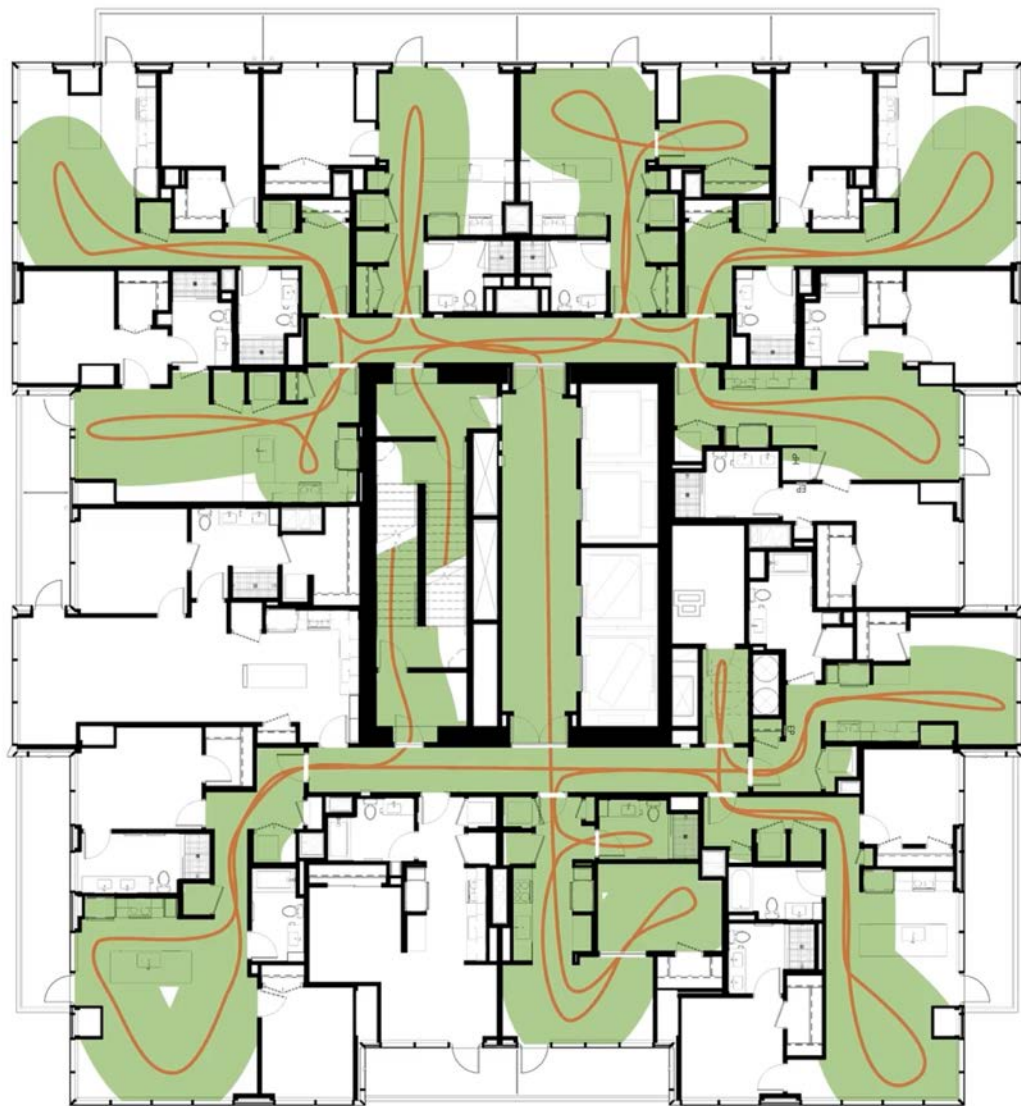




The Problems

Problem 2

Floor Coverage



Capture Coverage

Assuming each 360 photo covers about $\approx 200\text{sf}$ or a radius of $\approx 8\text{ft}$.

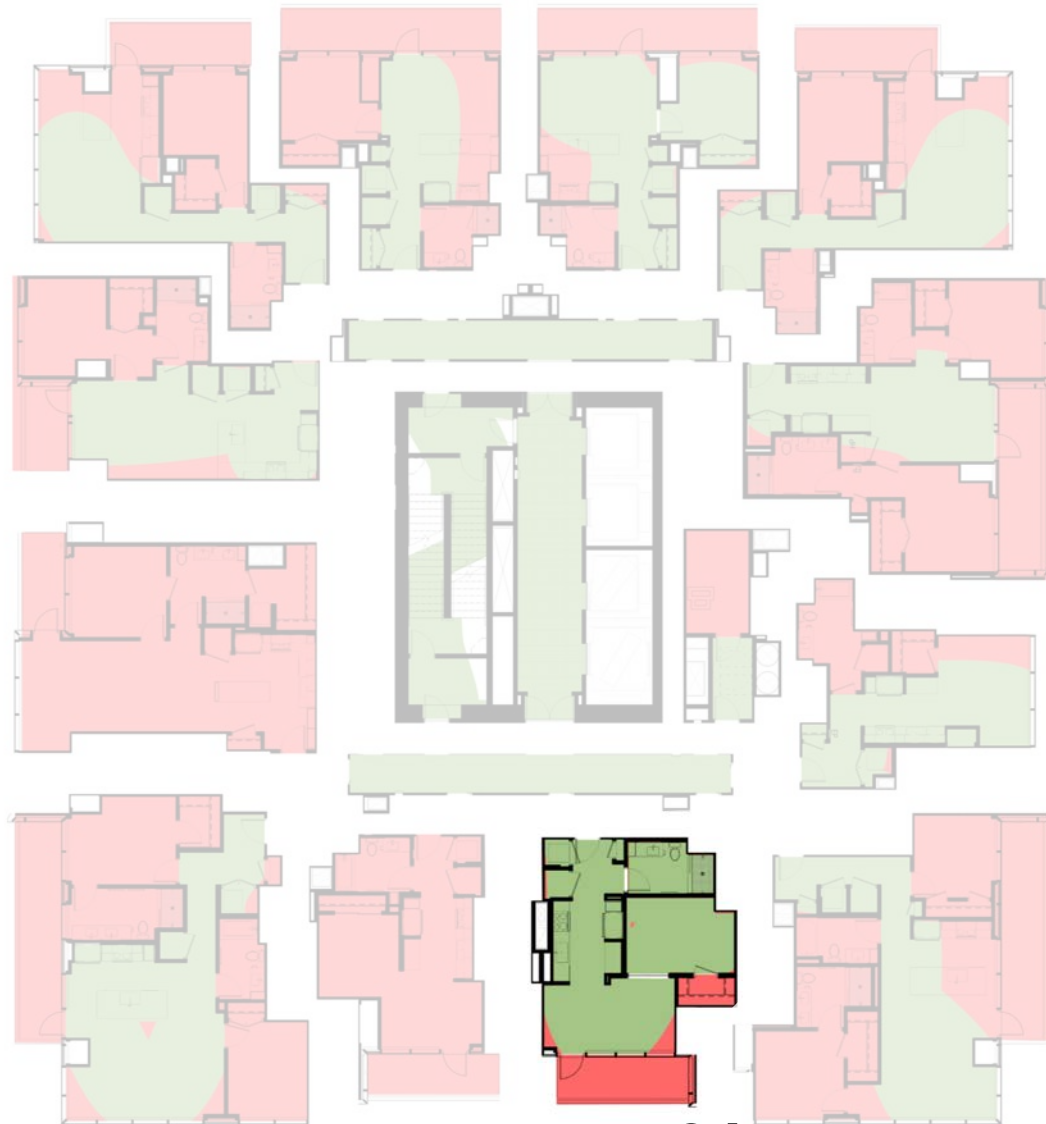




The Problems

Problem 2

Floor Coverage



80%

Capture Coverage

Assuming each 360 photo covers about $\approx 200\text{sf}$ or a radius of $\approx 8\text{ft}$.

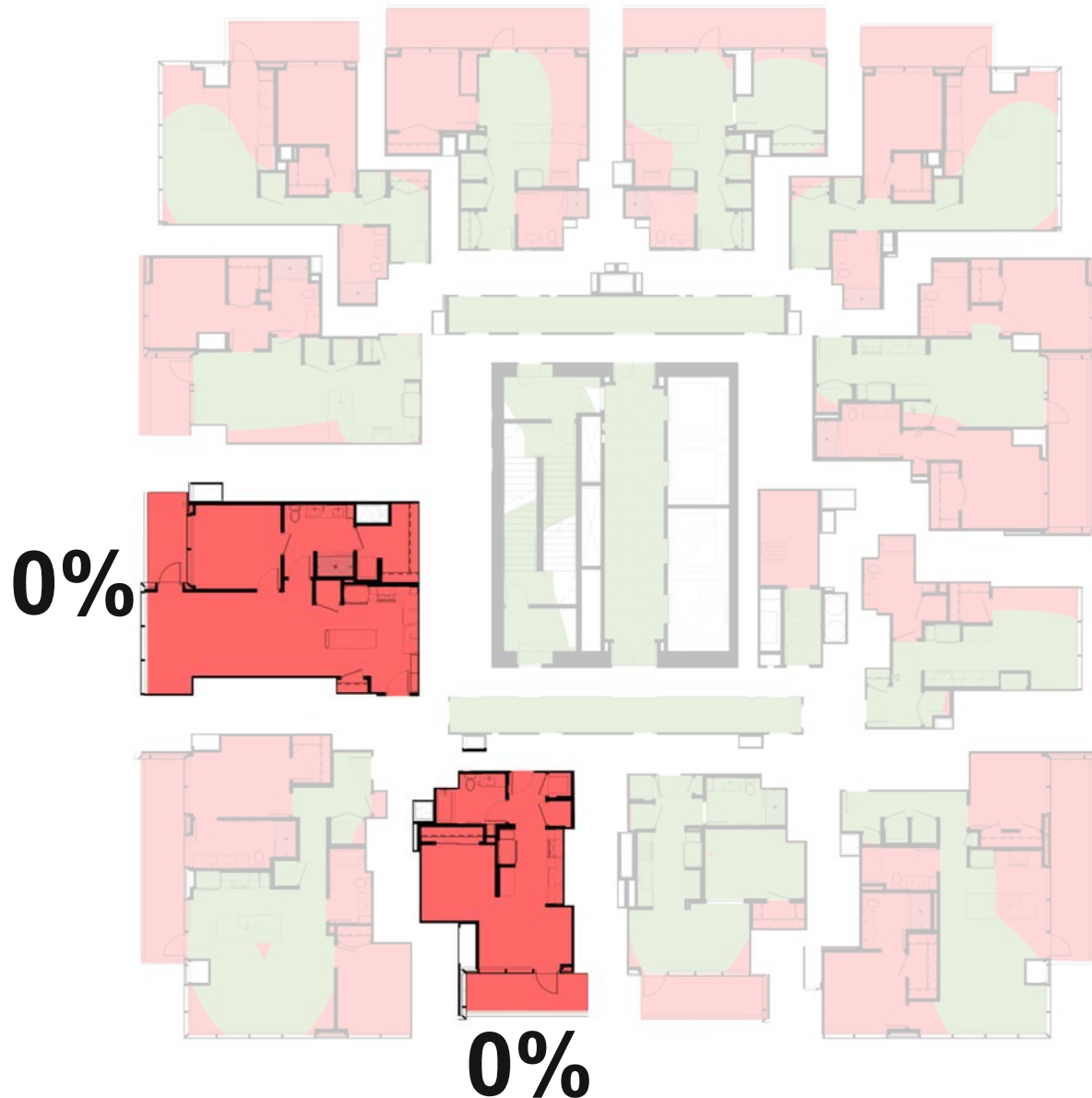




The Problems

Problem 2

Floor Coverage



Capture Coverage

Assuming each 360 photo covers about $\approx 200\text{sf}$ or a radius of $\approx 8\text{ft}$.



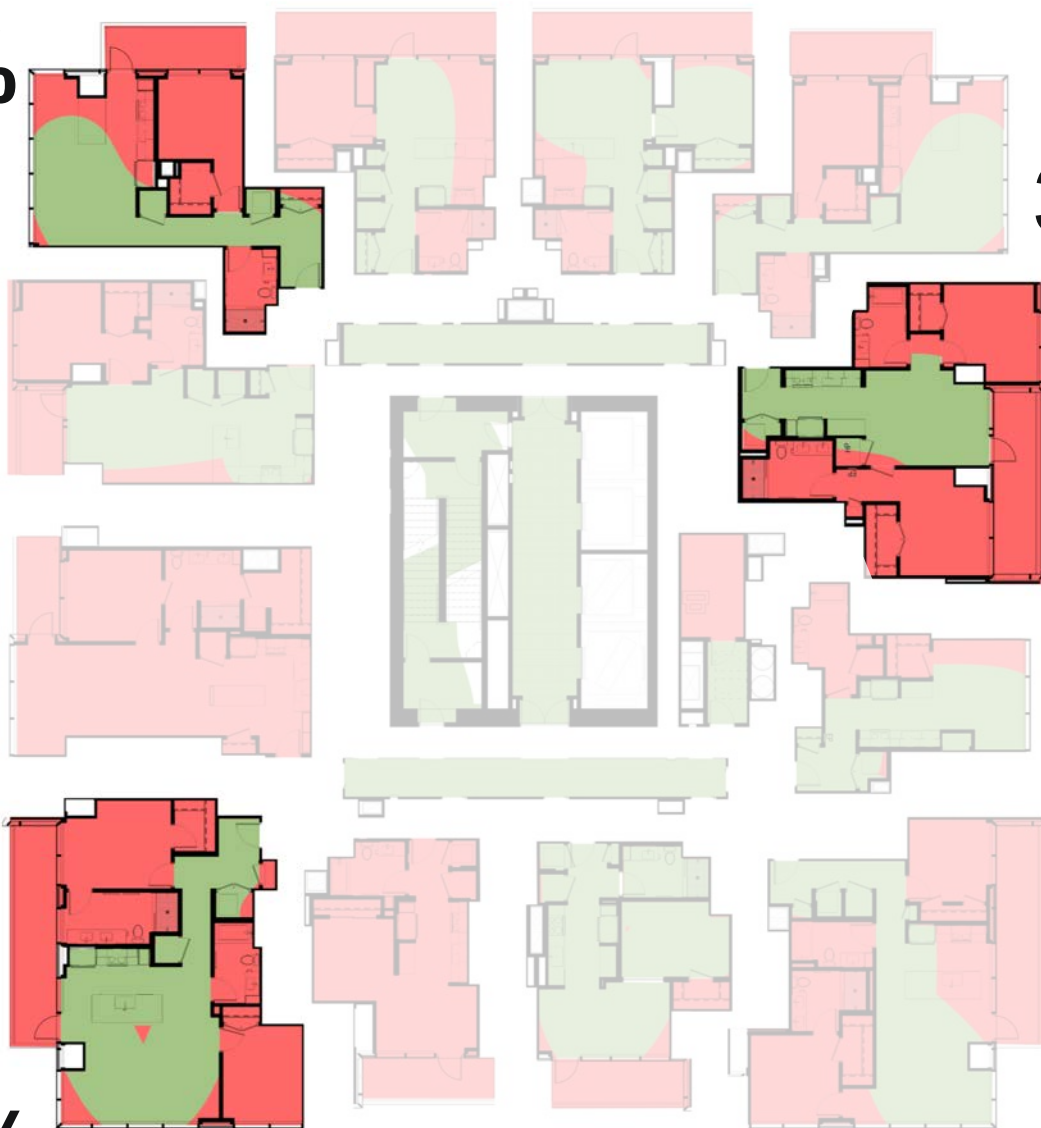


The Problems

Problem 2

Floor Coverage

42%



32%

Capture Coverage

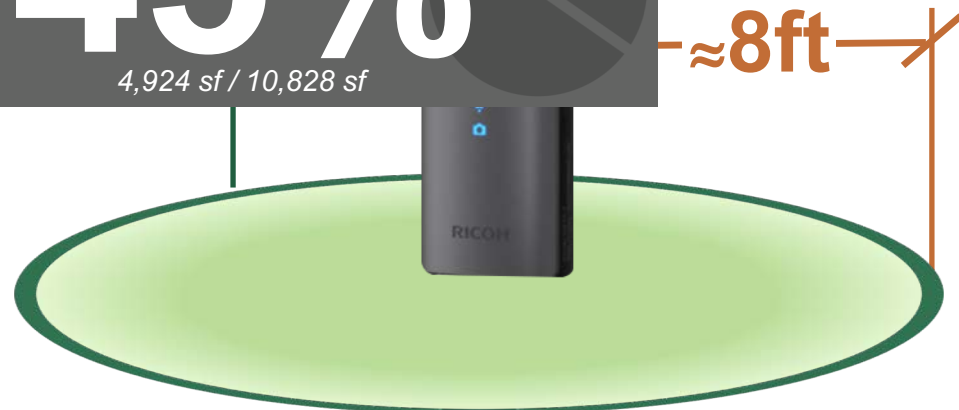
Assuming each 360 photo covers about $\approx 200\text{sf}$ or a radius of $\approx 8\text{ft}$.

Global Coverage

45%

4,924 sf / 10,828 sf

$\approx 8\text{ft}$



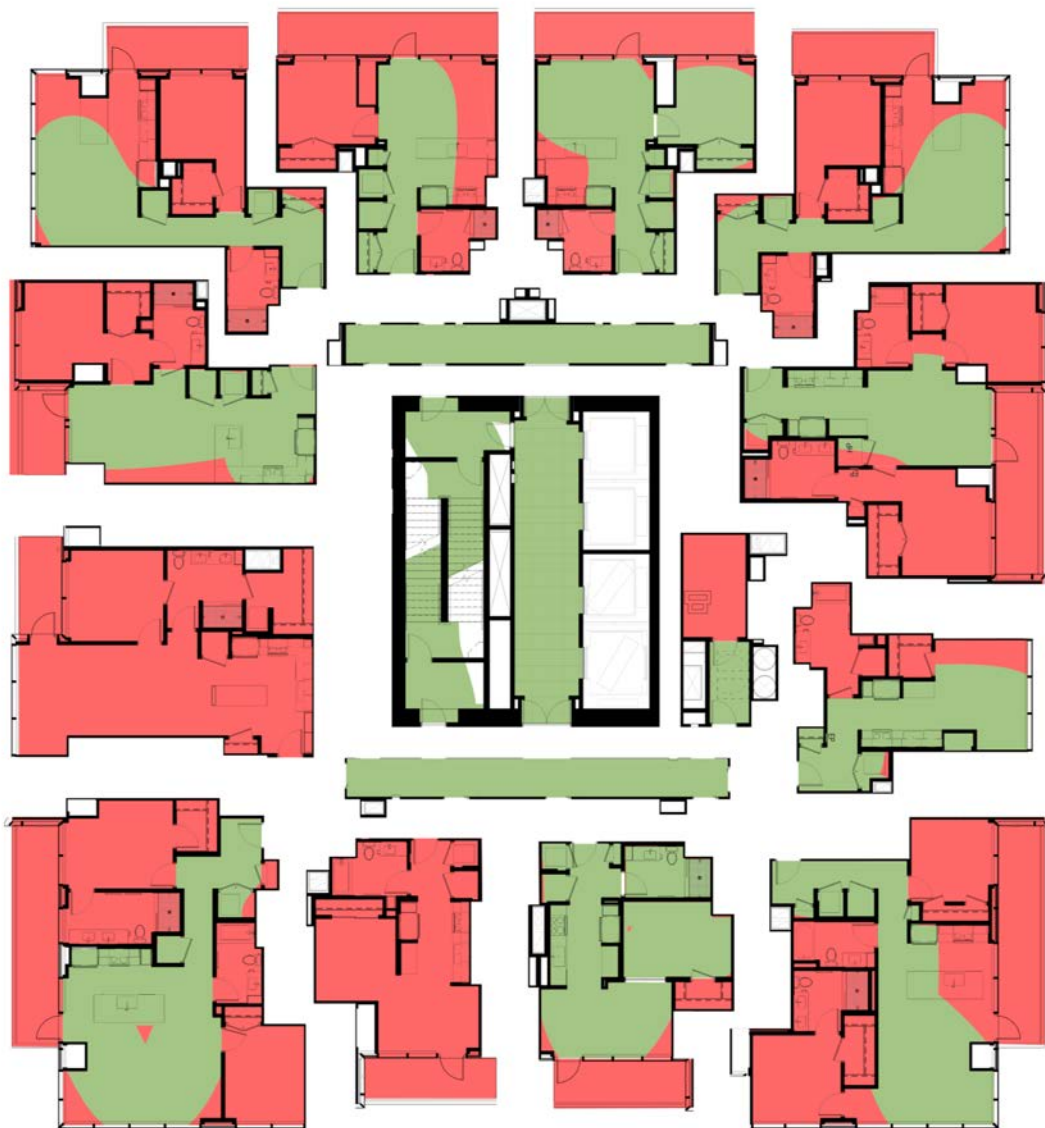
44%



The Problems

Problem 2

Floor Coverage



Capture Coverage

Assuming each 360 photo covers about $\approx 200\text{sf}$ or a radius of $\approx 8\text{ ft}$.

Global Coverage

45%

4,924 sf / 10,828 sf

Living + Kitchen

71%

3,429 sf / 4,877 sf

Bedrooms

11%

249 sf / 2,289 sf

Bathrooms

6%

66 sf / 1,035 sf

Common

85%

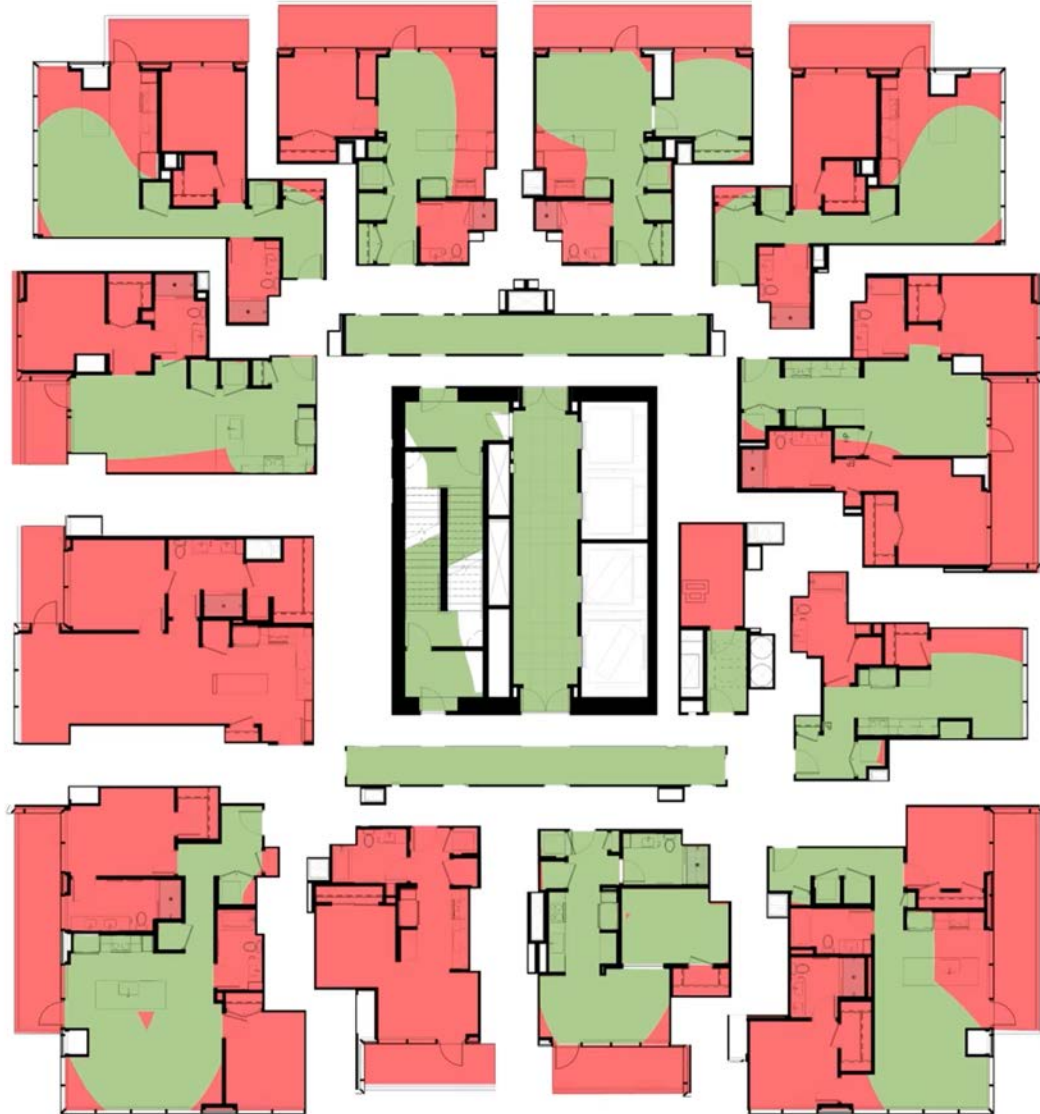
1,170 sf / 1,384 sf



The Problems

Problem 2

Floor Coverage



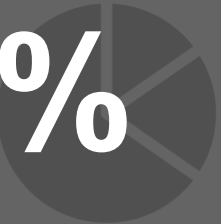
Duration Between²

40
Seconds



Coverage

91%



Overlap

4%





The Problems

Problem 2

Floor Coverage



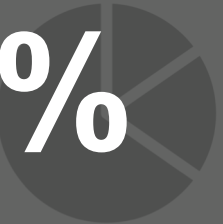
Duration Between²

40
Seconds



Coverage

91%



Overlap

4%



Efficiency²

78%



Over Capture

40%





The Problems

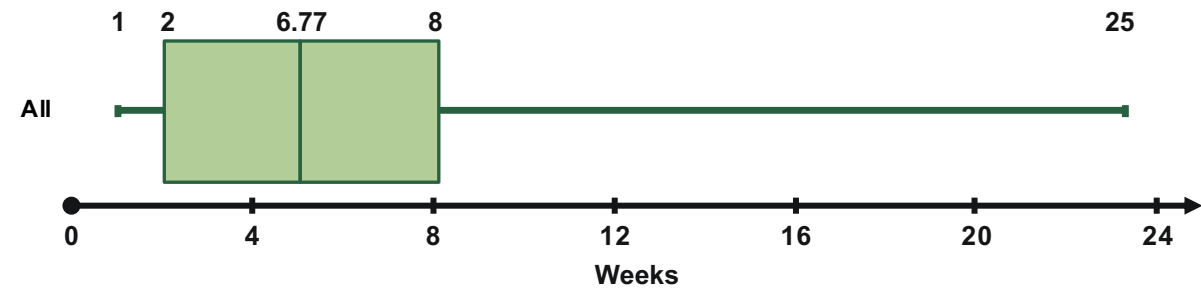
Problem 3

Elapsed Duration

Lag³
6.77
Weeks



Weeks Between Captures By Floor





The Problems

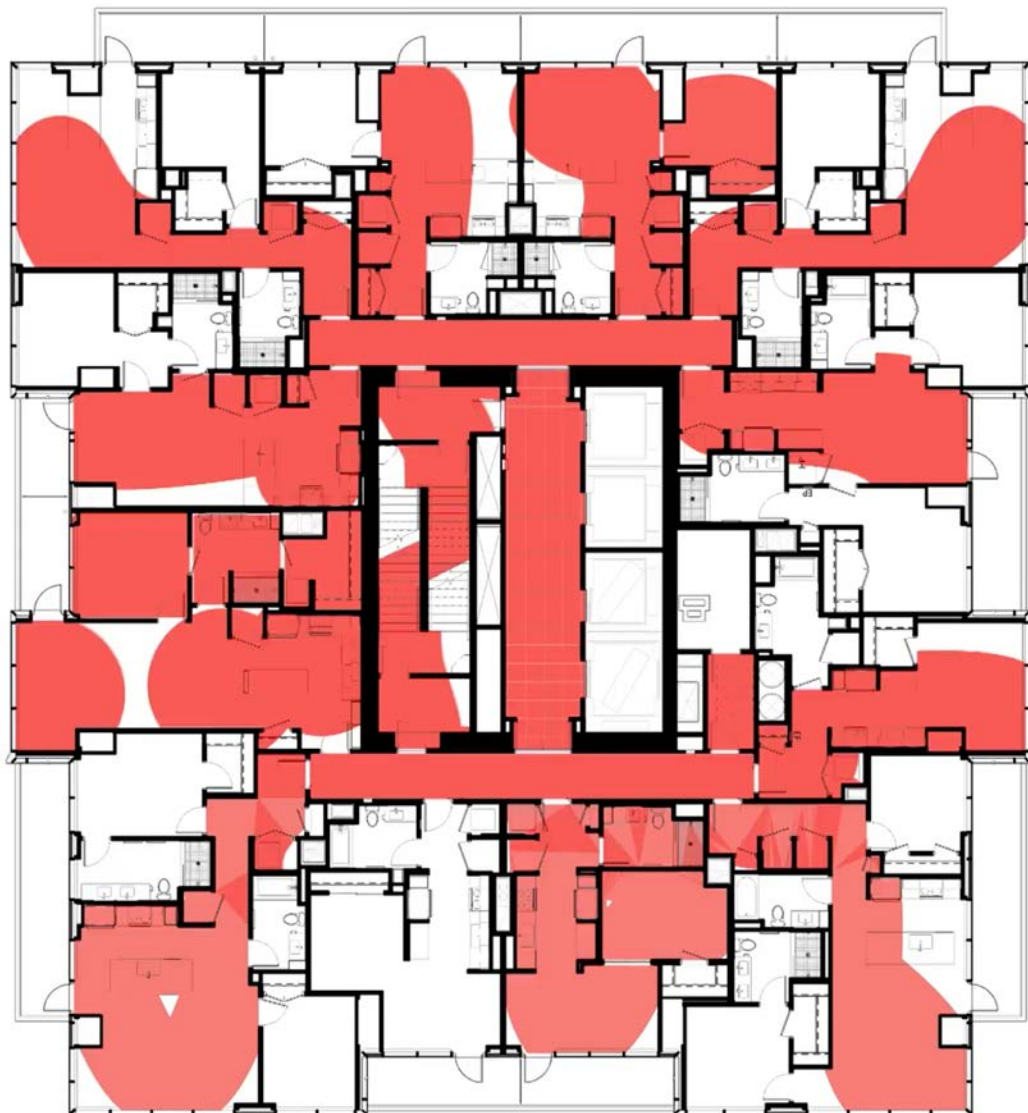
Problem 3

Elapsed Duration

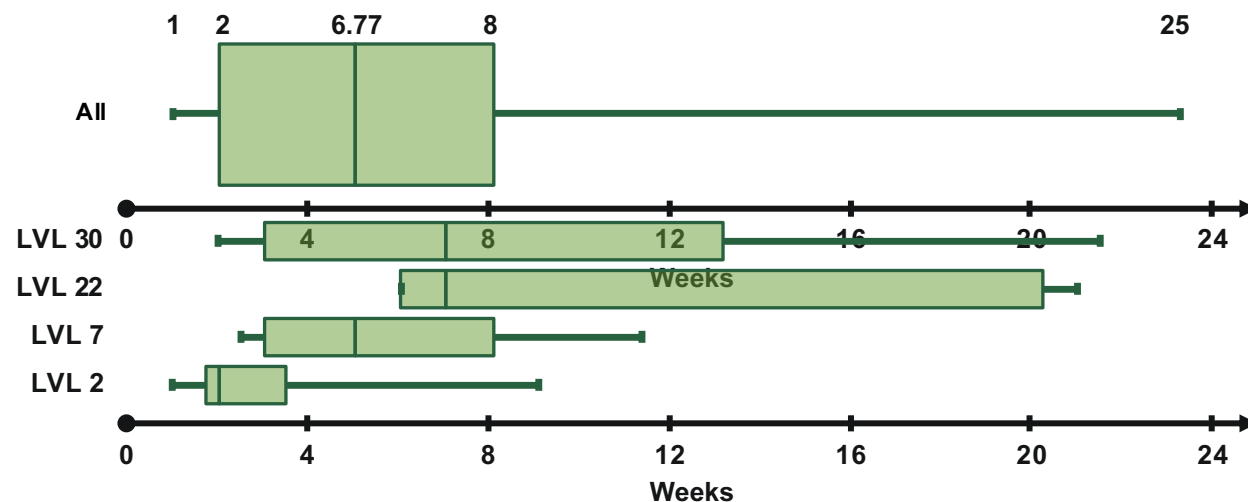
Lag³
6.77
Weeks

Floors / Capture³
5.06

Floor Covered / Capture
15%



Weeks Between Captures By Floor





The Problems

Problem 3

Elapsed Duration

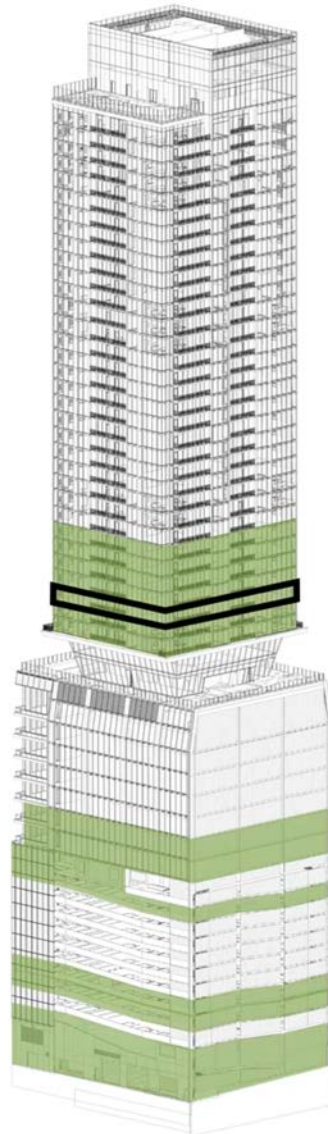
Lag³
6.77
Weeks

Floors / Capture³
5.06

Floor Covered / Capture
15%

Avg Time Spent / Capture³
270
Minutes

Total Time Spent³
212
Hours

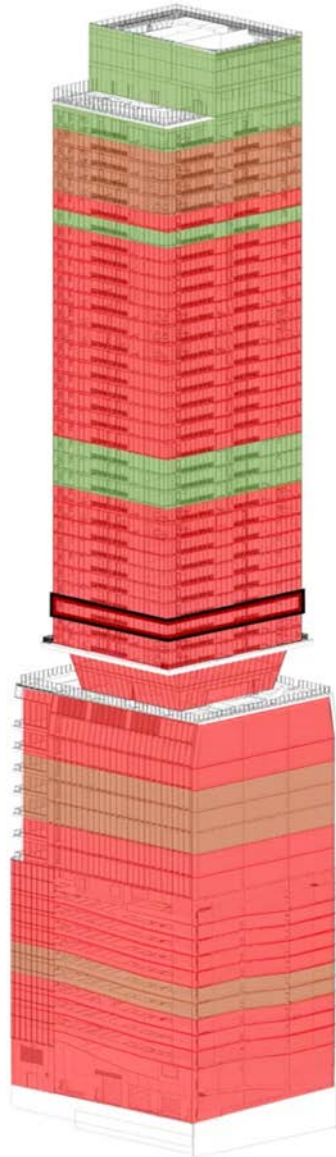




The Problems

Problem 3

Elapsed Duration



Speed
1.95
ft/s

Path Length

≈ 1,600 ft

Estimated Duration

10 to 21
Minutes

Global Coverage

64%

6,911 sf / 10,789 sf

Overlap Between Captures

41%

4,440 sf / 10,789 sf

Bedrooms

63%

1,423 sf / 2,260 sf

Bathrooms

58%

595 sf / 1,032 sf

Living + Kitchen

70%

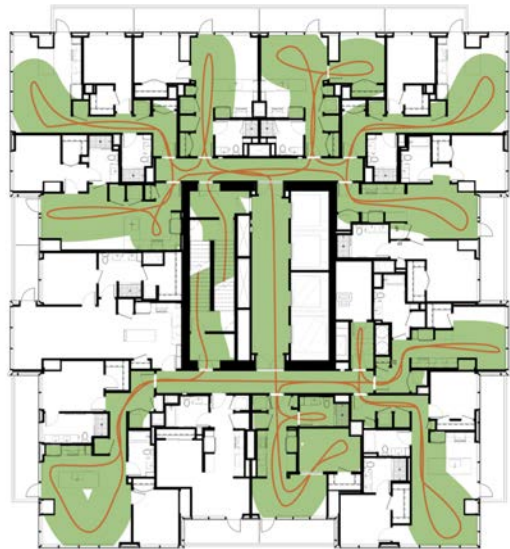
3,370 sf / 4,875 sf



The Problems

Problem 1

Time To Capture

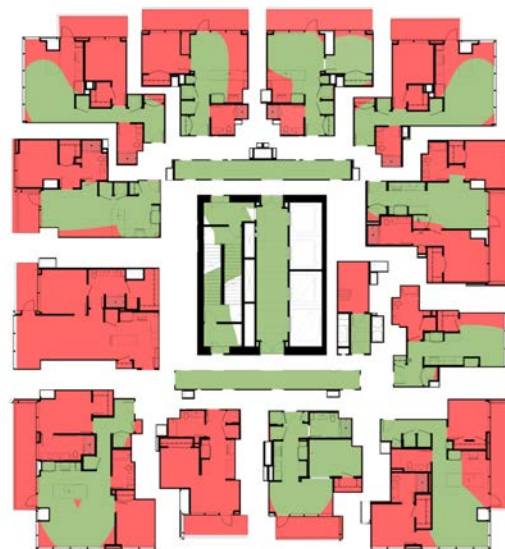


Speed
1.95
ft/s

Duration
7 to 15
Minutes

Problem 2

Floor Coverage



Coverage
45%

Efficiency
78%

Problem 3

Elapsed Duration



Lag
6.77
Weeks

Coverage
15%
/Capture



The Solution?

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ALI AGHA
CEO, Co-Founder



RYAN

ACOYA TORRANCE CASE STUDY



The Solution?



Location

CA

Type

Senior Living



Size

240,493
Gross Square Feet

Units

158

Duration

97
Weeks

Completion

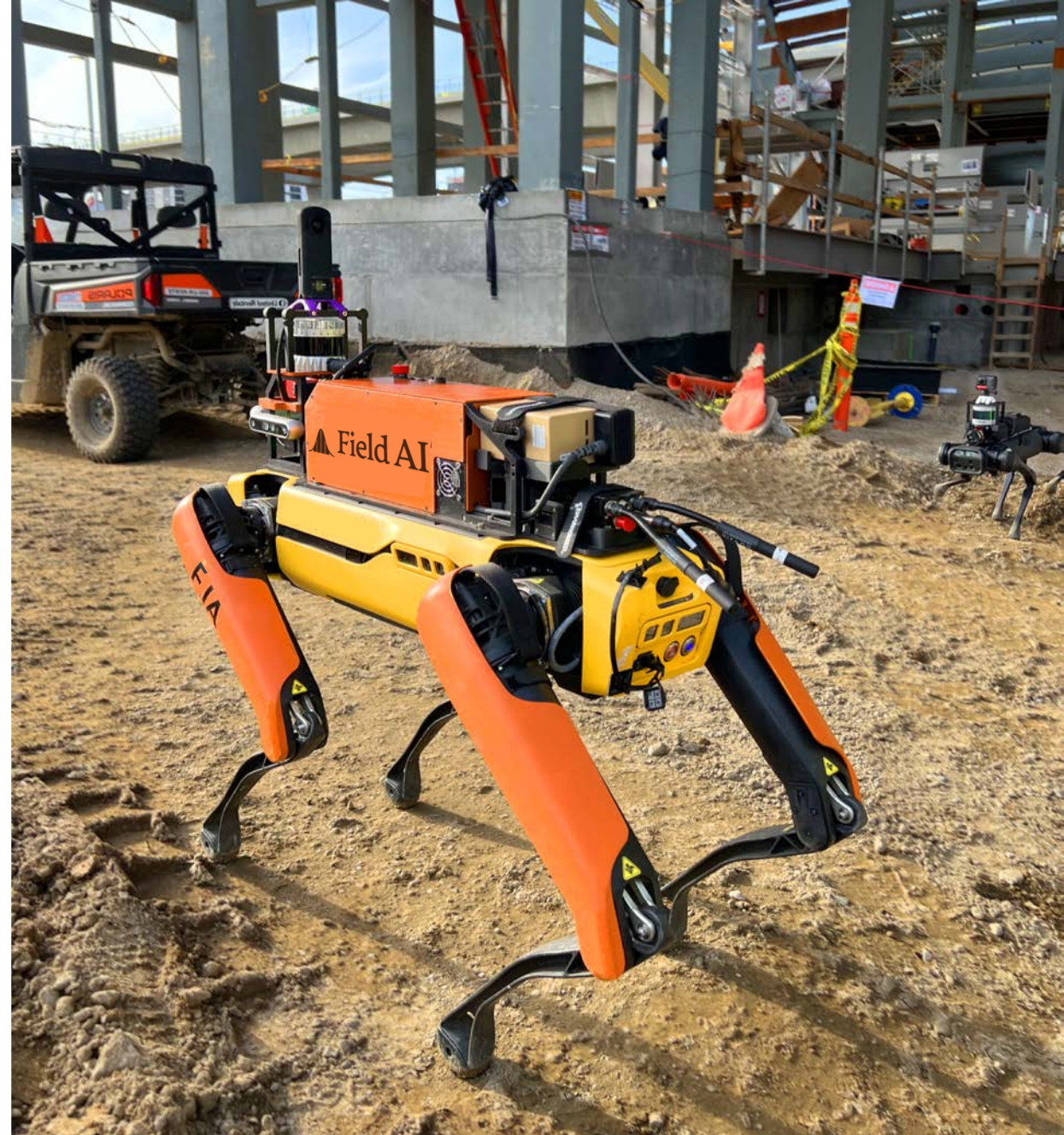
44%

RYAN

ACOYA TORRANCE CASE STUDY

Reimagining Construction Management through Superhuman Autonomy

ALI AGHA, CEO & CO-FOUNDER
ali@fieldai.com



We build brain for robots

Autonomy at the edge

01 / ANY ENVIRONMENT

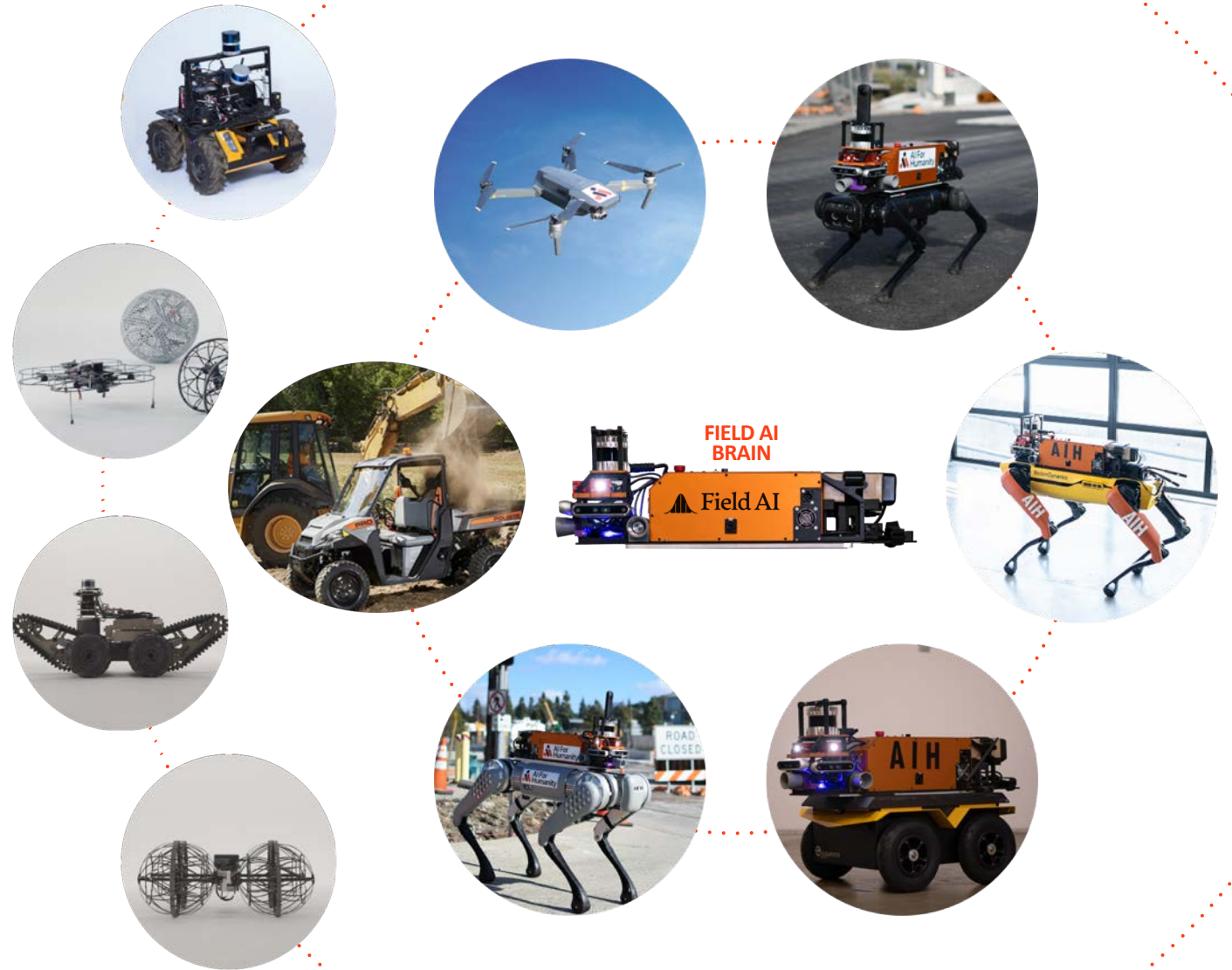
unknown, dynamic, and unpredictable real-world conditions

02 / ANY VEHICLE

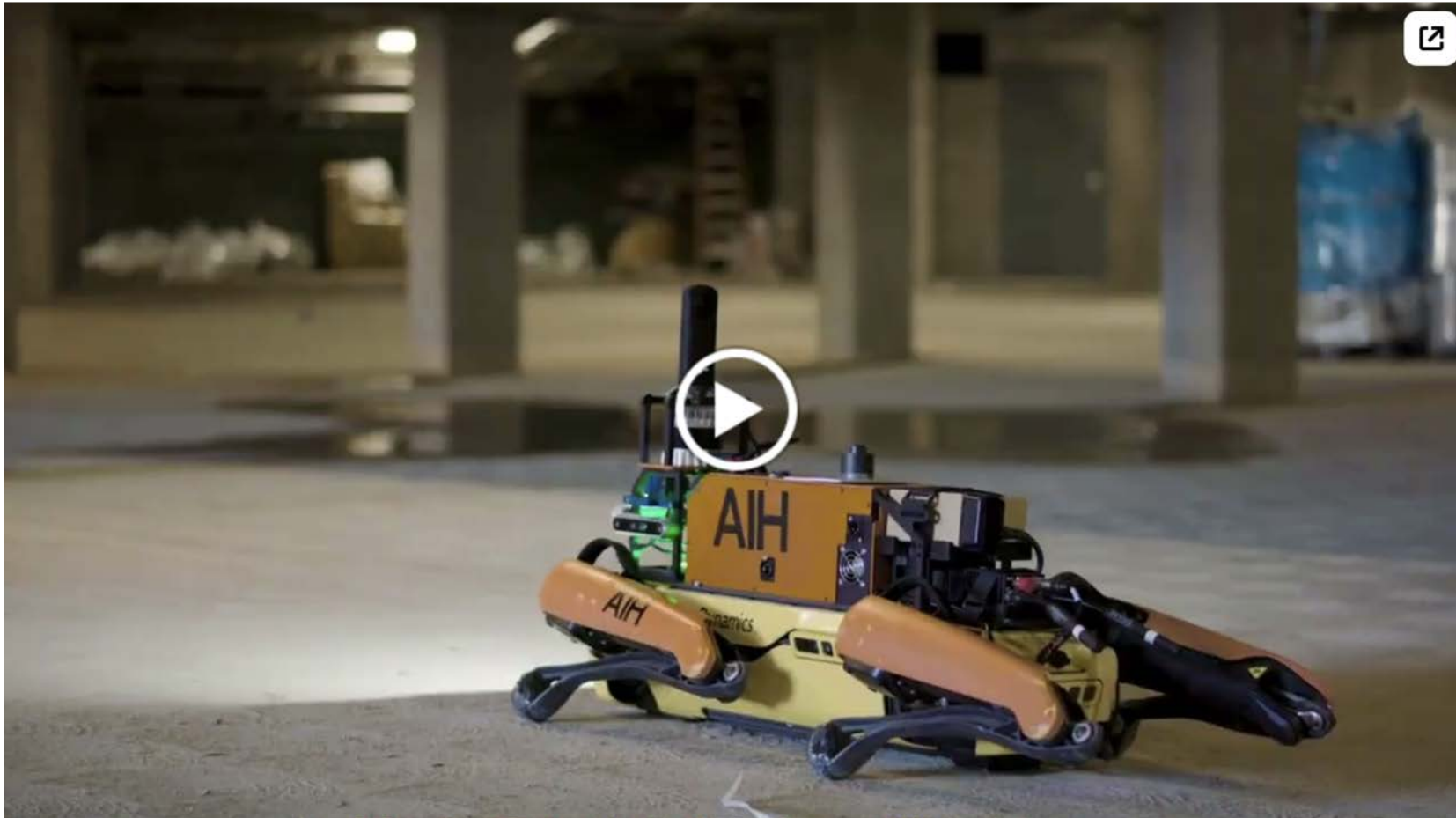
legged. wheeled. flying. tracked.

03 / ANY SENSOR

works with all major sensors.



What full autonomy looks like?



TRULY AUTONOMOUS (POGO)

- No prior map, model, or trajectory
- No human supervision, training, or teaching
- No server communication needed (all on edge)

SUPERHUMAN REASONING

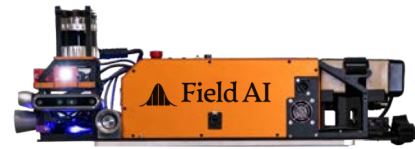
- All-terrain traversability
- Geometric
- Semantic
- Context: Risk, Sensitivity

SELF-ADAPTATION

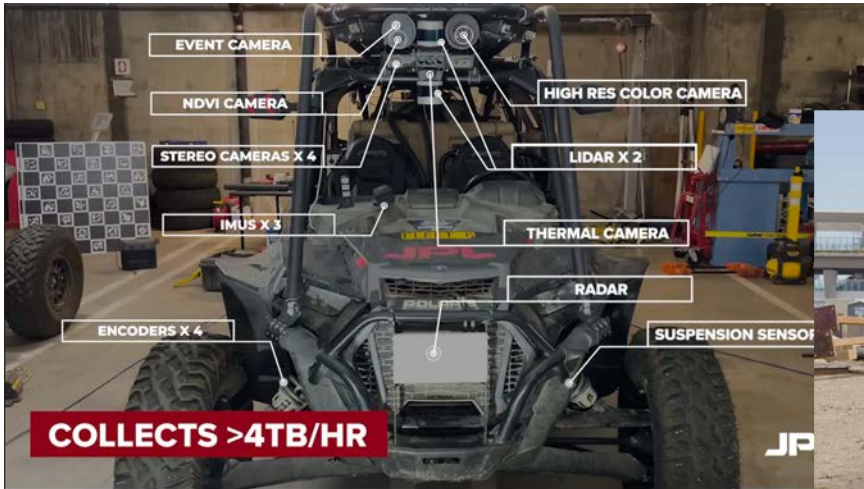
- Self-learning from various inputs (visual, thermal, audio, range, and force sensors)



Range of cost/size/capabilities



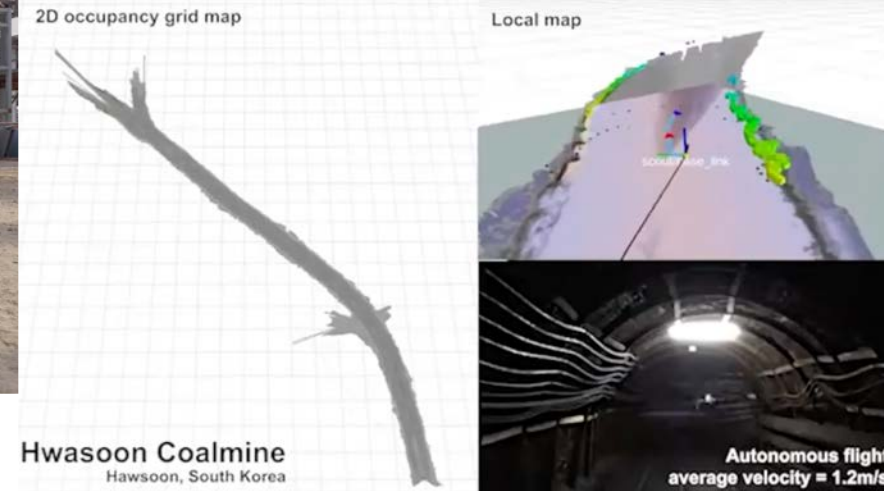
FIELD AI BRAIN



For Heavy Machinery



Cost-Affordable Platforms



Teaming with Aerial Robots

MOBILITY
legged. wheeled.
flying. tracked.

PRECISION & MODALITY
works with all major
sensors.

CONNECTED TEAMS
connected wirelessly & multi-robot ops.



Example Outputs for Torrance Acoya South Bay

FEATURES	WITHOUT FIELD AI	WITH FIELD AI	IMPROVEMENT
Problem 1 Time To Capture	Reality Capture Speed: 1.95 ft/s Total time / week: 4h	Reality Capture Speed: 2 ft/s Total time / week: 2h	96%+
Problem 2 Floor Coverage	Reality Capture Global Coverage: 45%	Reality Capture Global Coverage = 95%+	52%+
Problem 3 Elapsed Duration	Reality Capture Lag: 6.77 Wks	Reality Capture Lag: ~Daily	4739%+

Problem 4
Quality ✓

Problem 5
Active Time of Site ✓

Problem 6
Centralized ✓

Beyond Visual Documentation

Autonomous Data Collection & Mobility platform / ecosystem

Partnership w/ downstream data analysis companies



**DOCUMENTATION AND
TELEPRESENCE/OPS**

360° Photo / Video
& **3D Reality Capture**



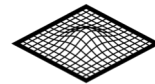
**PROGRESS
MONITORING**

BIM Comparison



**TOPOGRAPHY AND
DEVIATION ANALYSIS**

Precision 3D Scans



**SAFETY INSPECTION
AND CATALOGING**

Object Identification



MATERIAL TRANSPORT

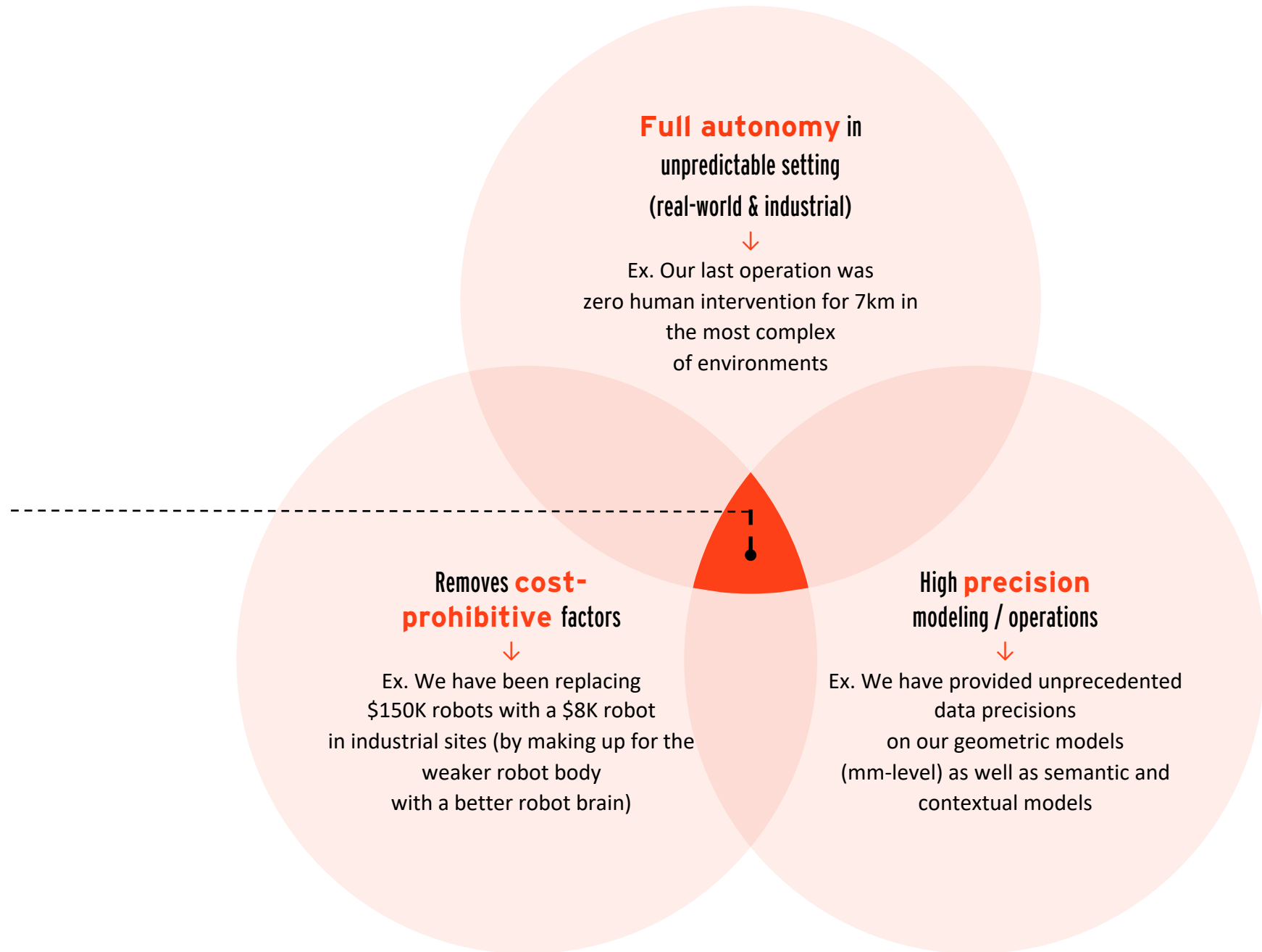
Risk Analysis and
Navigation



Scalability

Field AI is removing three key barriers of mass robotic adoption

From Vision to Reality

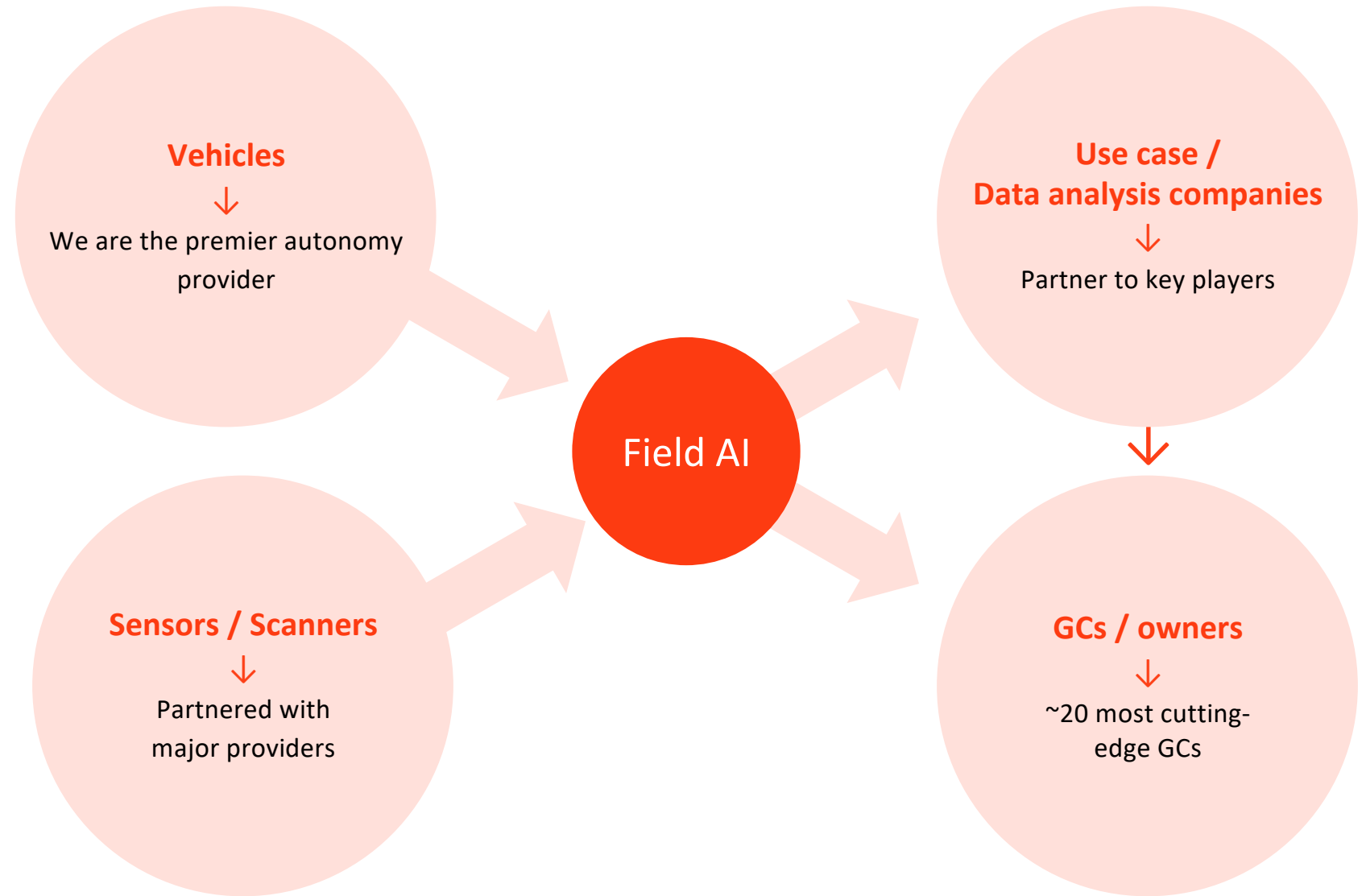


Open Partnership Strategy

Supported by amazing partners

Deployed autonomy on 40+ sites

Robots are learning from each other





Thank you!

Contact: info@fieldai.com



WWW.FIELD.AI.COM

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HILTON UNION SQUARE
SAN FRANCISCO

