

# Deloitte.



**Ideas to action: Six innovative  
concepts to sell to your customers**

2017 Engineering and Construction Conference  
June 27, 2017

# Ideas to action: innovative sales opportunities for E&C

## **Objectives**

- Help your sales team understand Ideas to Action in the industry that will allow for innovative discussions with owners to create new opportunities
- Use a selling approach to learn more about digital transformation and what is on the owners minds
- Define and create new opportunities you can share and support with owners

# Agenda

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## Module/Topic

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1. Autonomous construction techniques
  2. Advanced techniques for managing safety
  3. Robotics controls repeatable office processes
  4. Managing the shortage of skilled labor
  5. Next Generation Asset and Facilities Management
  6. New Markets Tax Credits
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Q&A

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# Autonomous construction techniques

Autonomous construction techniques for equipment enables remote operation to reduce owner cost, improve sustainability and increase productivity and profit. Autonomous equipment is available now compared to other road vehicles.

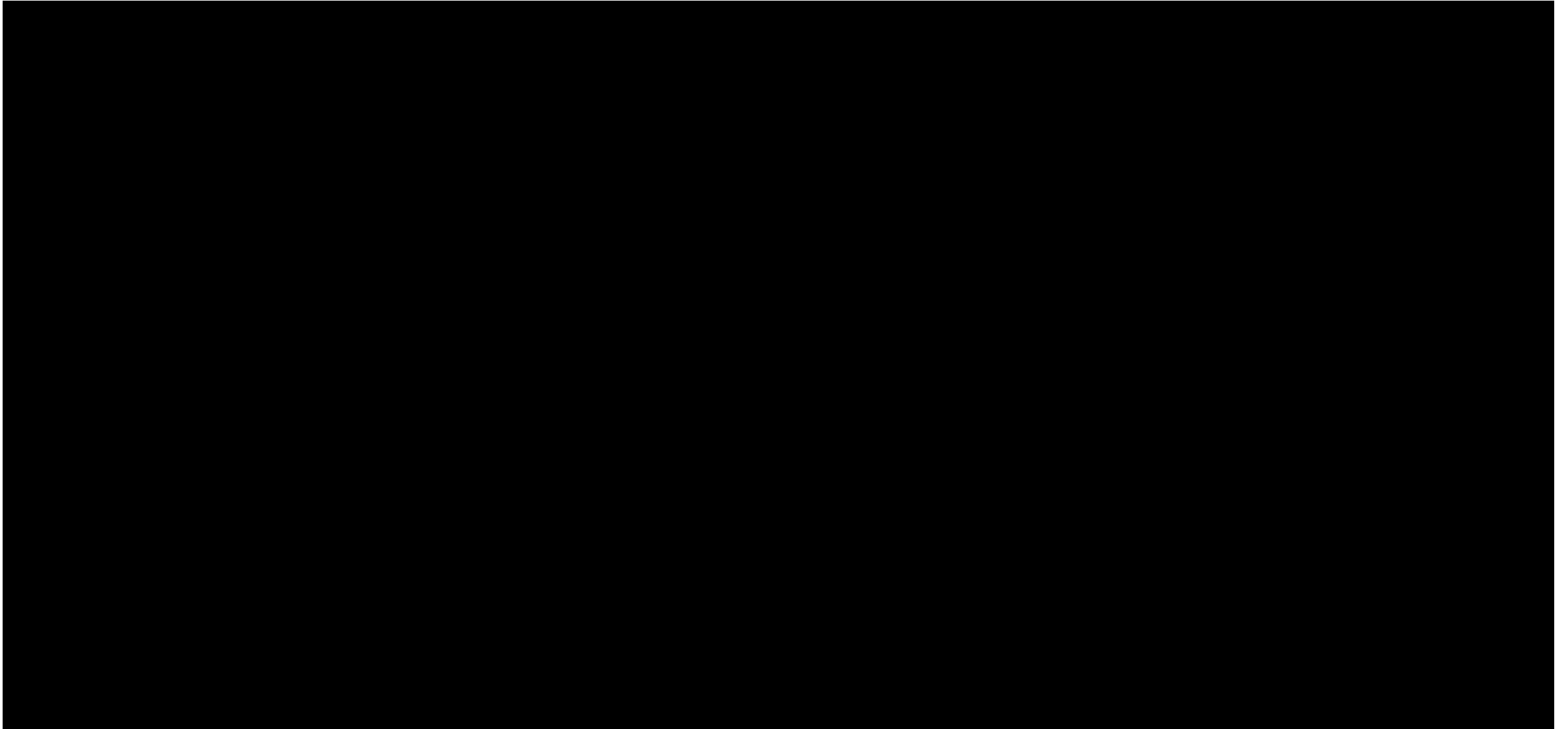
Idea to Action	Technology	Benefit
Operate equipment using electric power and reduce the use of diesel power	MINIDOZER from Movex Innovation with a remote control from 300'	Reduction of carbon footprint is more sustainable, reduces fuel cost and improves safety
Utilize automatic resource "people" movers on site made from a 3-D printer and includes cognitive capabilities	Fully electric and 3-D printed Olli from Local Motors with IBM Watson and powered with solar charging panels	Auto driving and cognitive technology moves site resources automatically, answers questions and queries, and reduces power consumption
Use automated mobile robots to enhance productivity of repetitive construction tasks	Meet Sam, inspired by the activities of ants to build precise structures according to pre-defined plans	Create support for construction workers in tedious, repetitive and dangerous tasks and increase productivity



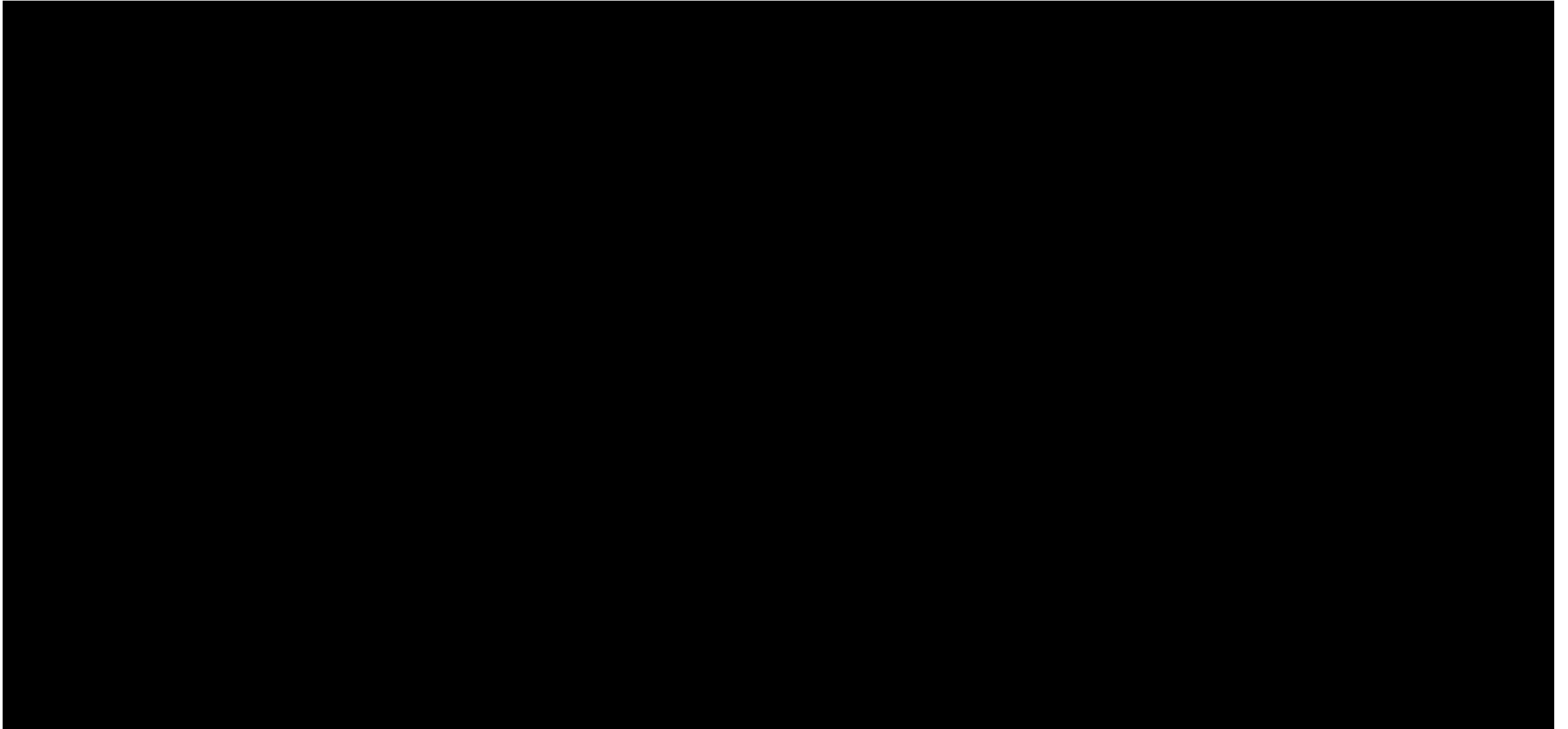
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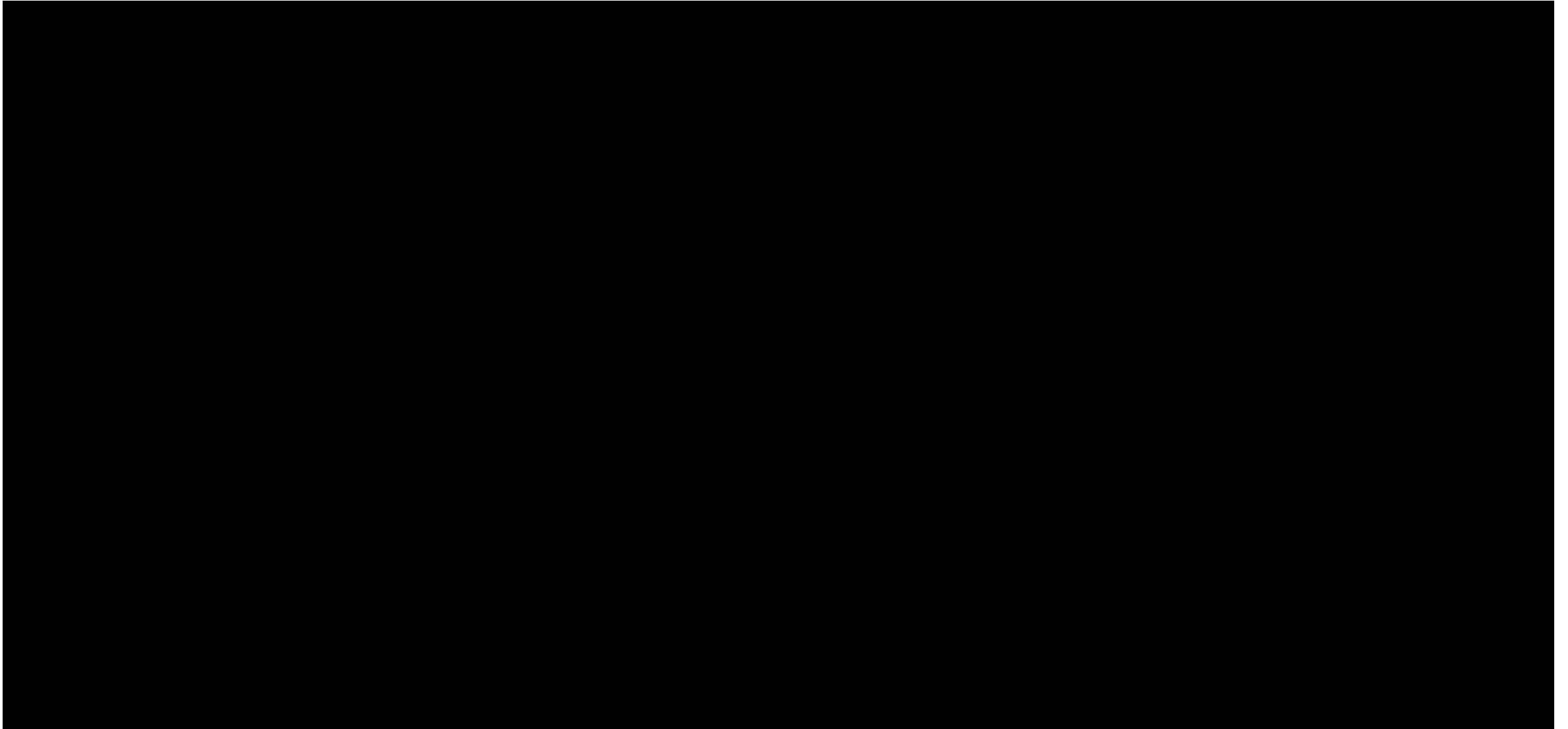
# MINIDOZER from Movex Innovation



Olli from local motors



# Semi-Automated Mason (SAM) from construction robotics



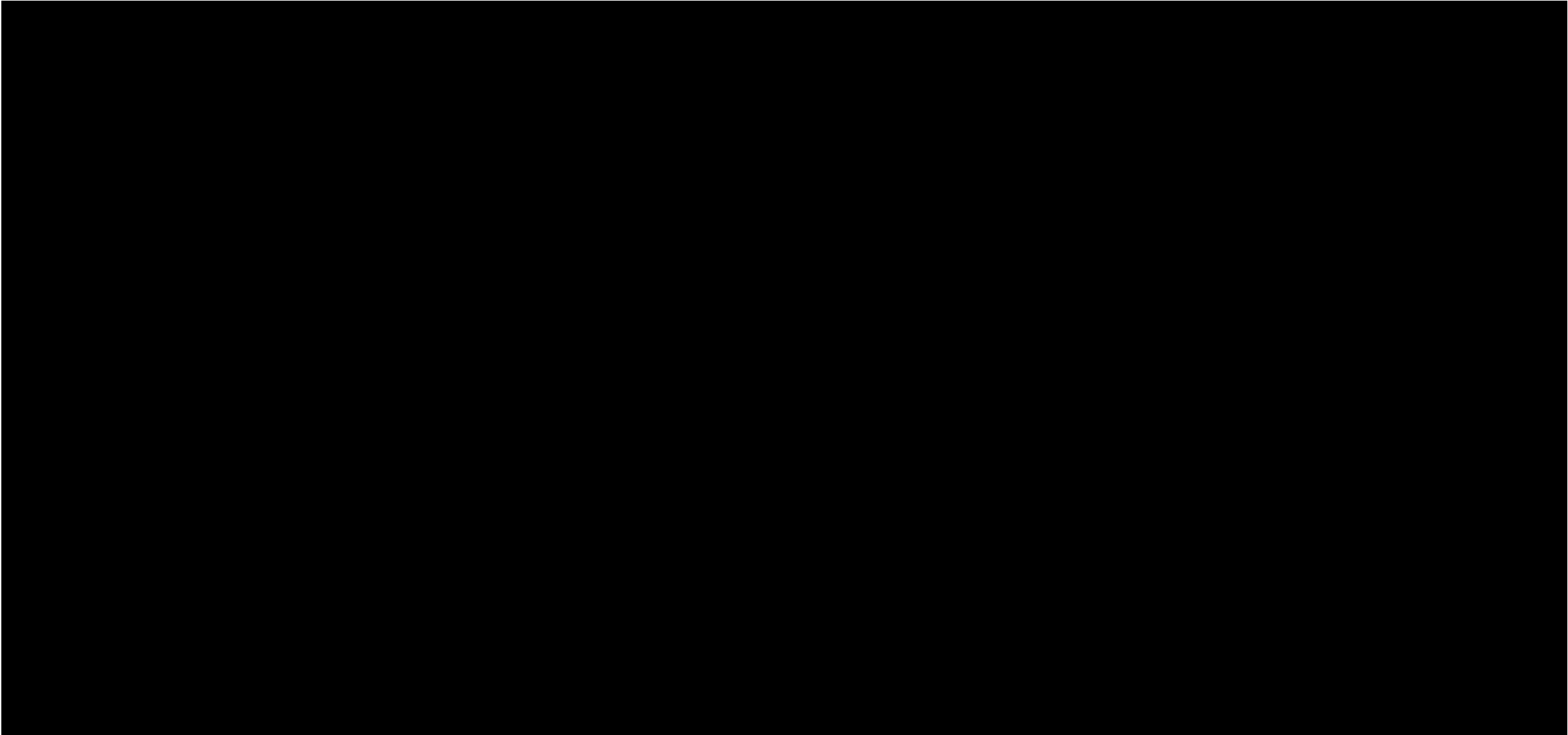
## Advanced techniques for managing safety

Increase performance and reduce safety issues using drones. Use drones to scale safety inspections quickly and provide information to reduce safety incident and risk. New increased integration with machine telematics and other job site systems. A surge expected in drones 10x increase to 450,000 drones by 2021.

Idea to Action	Technology	Benefit
Use software to manage drones to capture data for analytics	Software companies Skycatch, senseFly, and DroneDeploy are developing software for drone use. Komatsu, AECOM, Bechtel and Stantec are some of many companies using this technology.	Automation of the survey and monitoring process using drones saving time and cost on projects and increasing data for analytics
Image recognition software teach systems to recognize people from jobsite images and flag safety concerns	Shimmick, Skanska, Mortenson, and Suffolk are some for many working with Very Intelligent Neural Network for Insight and Evaluation (VINNIE).	A first in applications to determine whether people are wearing safety colors and hardhats.
Create a safety inspection assistant that goes where the safety manager can't	Safety manager uses drones to monitor job sites and interacts with field staff	Saves time & cost of resources to monitor tough job locations



# Skycatch partners with AutoDesk



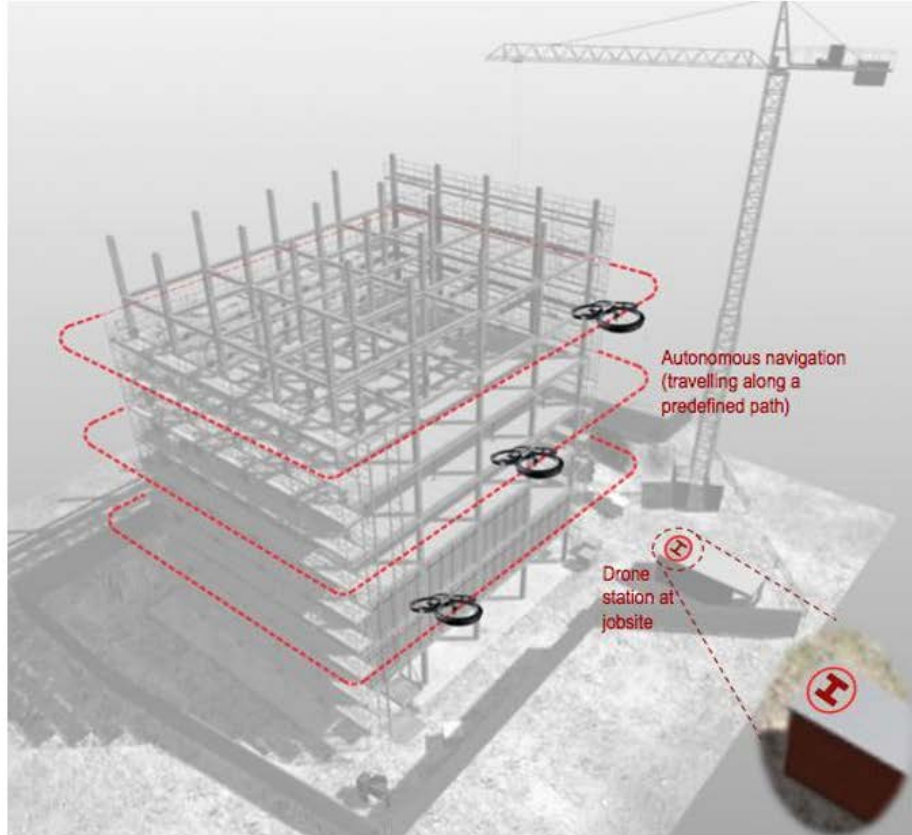
# Very Intelligent Neural Network for Insight and Evaluation (VINNIE)

VINNIE will be a second pair of eyes to flag an image that has potential risk and raise attention. VINNIE can get broader coverage of the job site faster than humans.



# Drones Act as the Safety Manager's Assistant

Use of drones to enhance the effectiveness of the safety manager by a) increasing coverage of the site, b) interacting with crews with voice and c) using remote control.



(a) Autonomous navigation using predefined paths or locations



(b) Voice interaction between workers and the drone



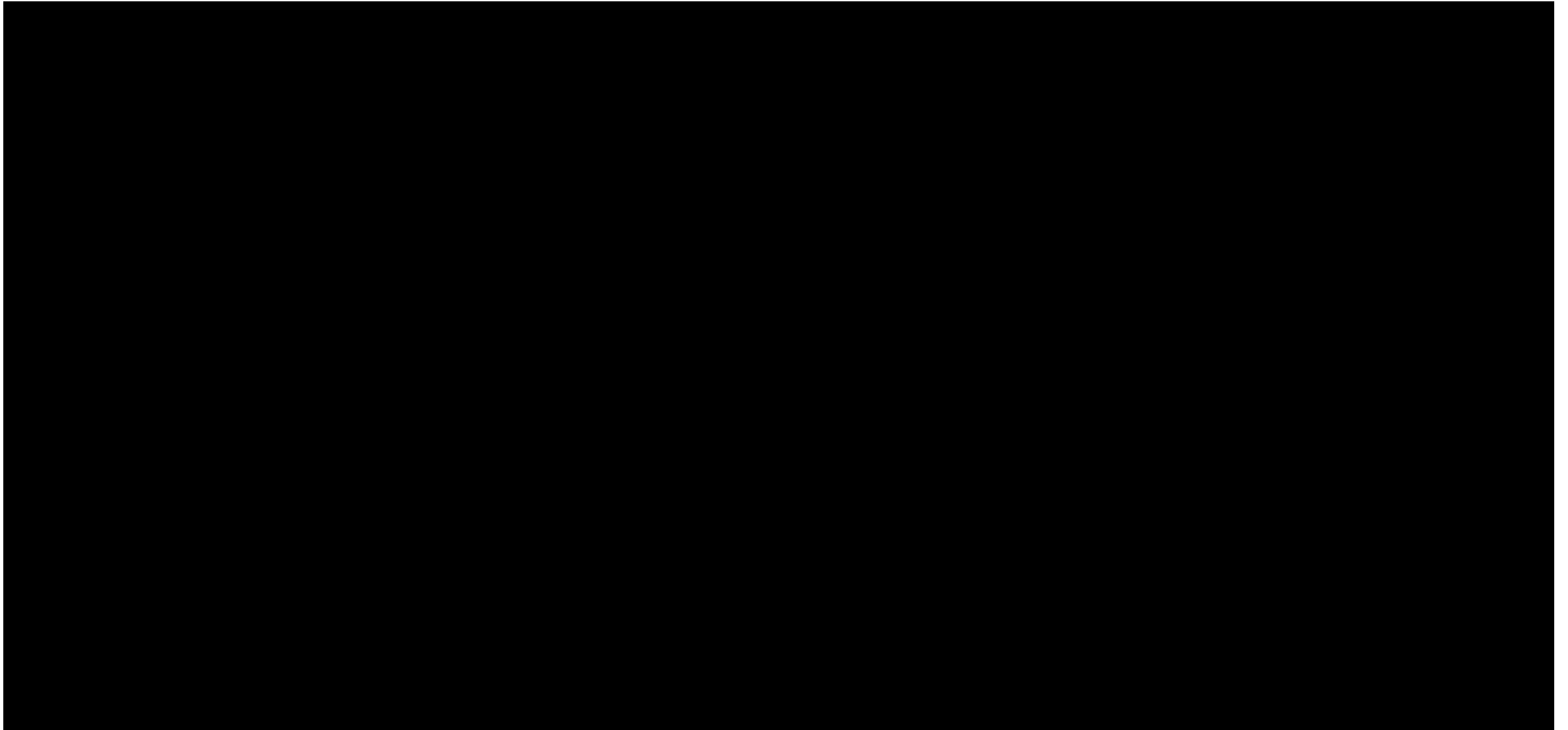
(c) Safety manager interacts with workers using the drone and through the iPad

## Robotics controls repeatable office processes

Reduce SG&A by using robotics to control repeatable back-office business processes to reduce cost and error rate and increase productivity

Idea to Action	Technology	Benefit
Automate routine tasks to improve customer service and decrease cost to serve	Use cross-functional and cross-application macros to provide enhanced service at a lower cost	Focus talent on more complex tasks that improve project and bottom-line performance
Defer technology upgrades by using robots to add features and capabilities to aging application software	Cloud-based integration technology provides capability quickly by not having to deal with hardware and software implementations	Deliver capability faster, less expensively with less disruption to the business
Relieve critical skills gap by automating processes that require tribal knowledge to perform	Use robotics to automate and document key processes	Newly hired staff can become productive more quickly because they do not have to learn the peculiarities of undocumented legacy processes and systems
Integrate disparate data sources to create analytics	Use robotics to create automated work streams that integrate data to produce real-time analytics	Gain greater visibility to business performance, allowing decisions to be made in a more timely manner

# Robotics movies



# Managing the shortage of skilled labor

Address the shortage of skilled labor by working with trade organizations in the market, reducing pressure on timelines due to a lack of skilled labor

Idea to Action	Technology	Benefit
Recast your culture to attract workers by being the best place to work. Highlight your connection to issues that are important to today's worker	Embrace the use of technology integrated technology provide more personalized control over one's work	Will relieve burden of talent and workforce shortages by making your company a more attractive place to work
Acknowledge generational differences by using techniques that will resonate with them in their search for a job	Use recruiting tools (LinkedIn, indeed.com, Facebook, etc.) to reinforce your recast cultural message	Showcasing your message will attract new talent in a competitive market
Partner with schools to help them deliver the message about good jobs and careers in the construction industry. Participate in career days. Develop relationships with faculty at area schools to collaborate on curriculum, needed skills and jobs	Develop interactive media that the schools can use to inform students of careers and your company. For example, create an interactive webinar with an emerging technology provider (e.g., drones) that will instruct and inform students and faculty	Will create interest in your industry and company

# Site 101 Building Vision

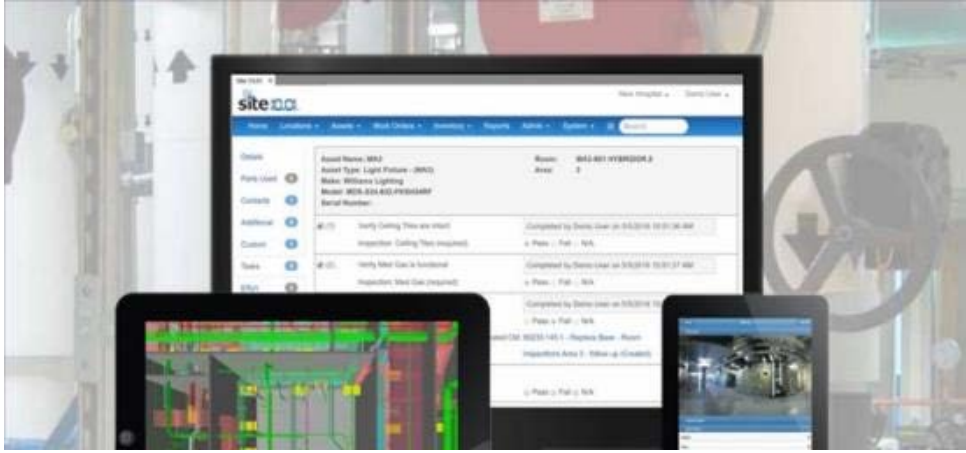
## Next generation asset and facilities management

Idea to action	Technology	Benefit
Utilize the digital data gathered during the design and construction process for the owner's benefit through a CMMS	Cloud based, SAS delivery for real time fulltime mobile access of all building information with an integrated work order system	100% accurate information available where and when you need it that is always current
Eliminate the onboarding hurdle. Create an accurate, faster bulk loading of data.	PDF Parser, OCR, Visual content recognition, floorplan import and asset-to-location assignment	Reduce the cost and time necessary for implementation while improving accuracy
Upgrade the currently available CMMS functionality to take advantage of the real time data that is available	IoT/Sensor Orchestration: Connect and manage independent IoT devices through the use of 3rd party API's to aggregate live data streams from all building assets	Lower the Total Cost of Ownership by maintaining building operations without human intervention while eliminating downtime through predictive failure analytics

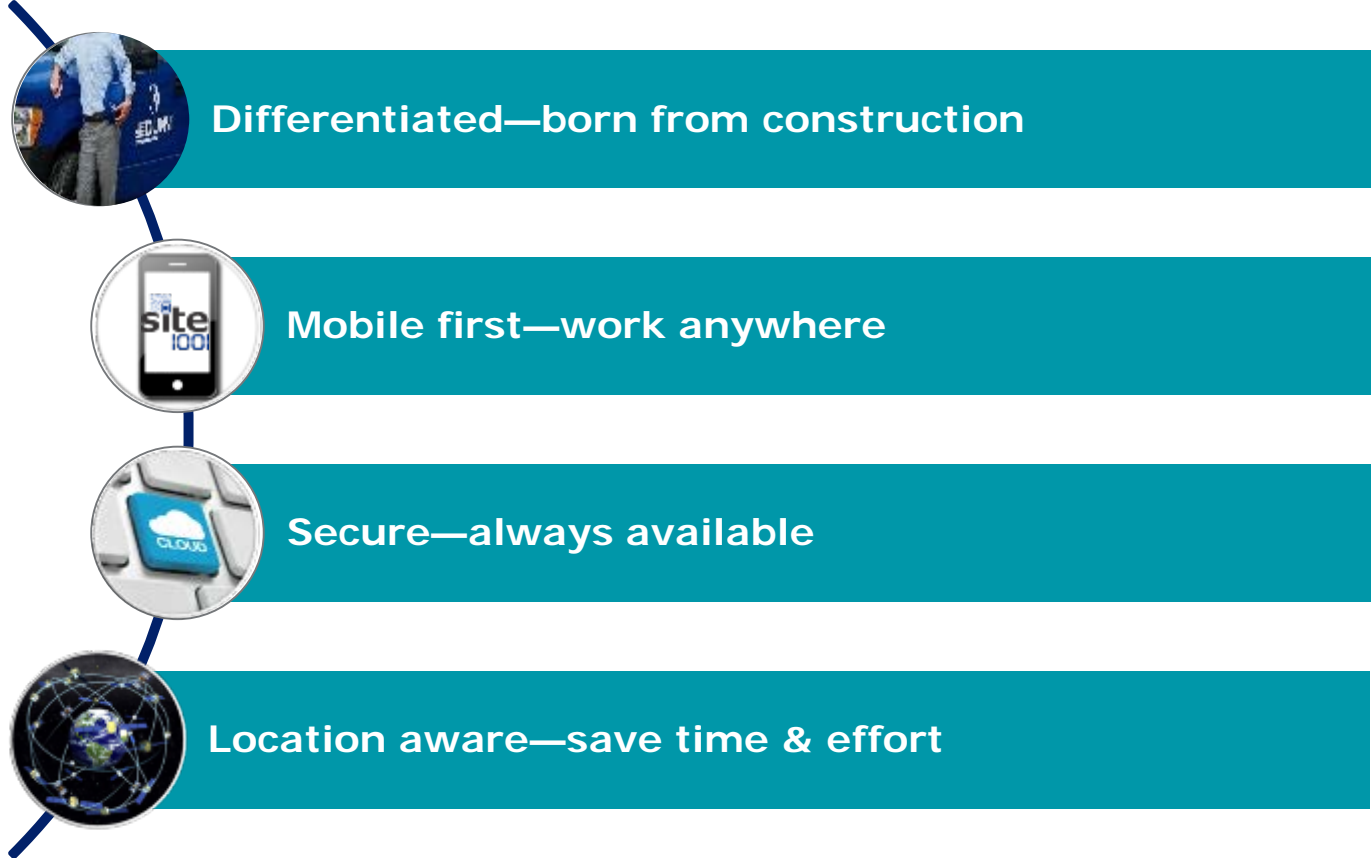


# Introducing Site 1001

A next generation facilities maintenance platform that is:



*Site 1001 designed to work the way people do now*



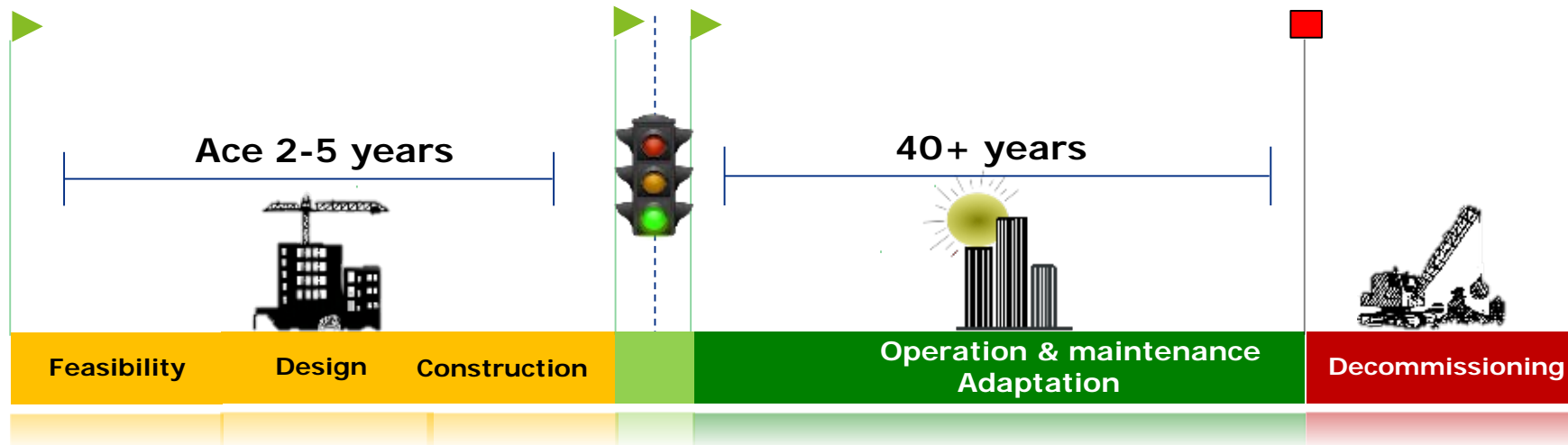


# A building's lifecycle

## Commissioning & handover

**MAINT. & OPPS. = Expense**—For an owner, a building is a cost center, owner's don't necessarily run a building the way it was designed.

**POOR information**—Much of the design and build information delivered at handover is stored but often is lost or forgotten.

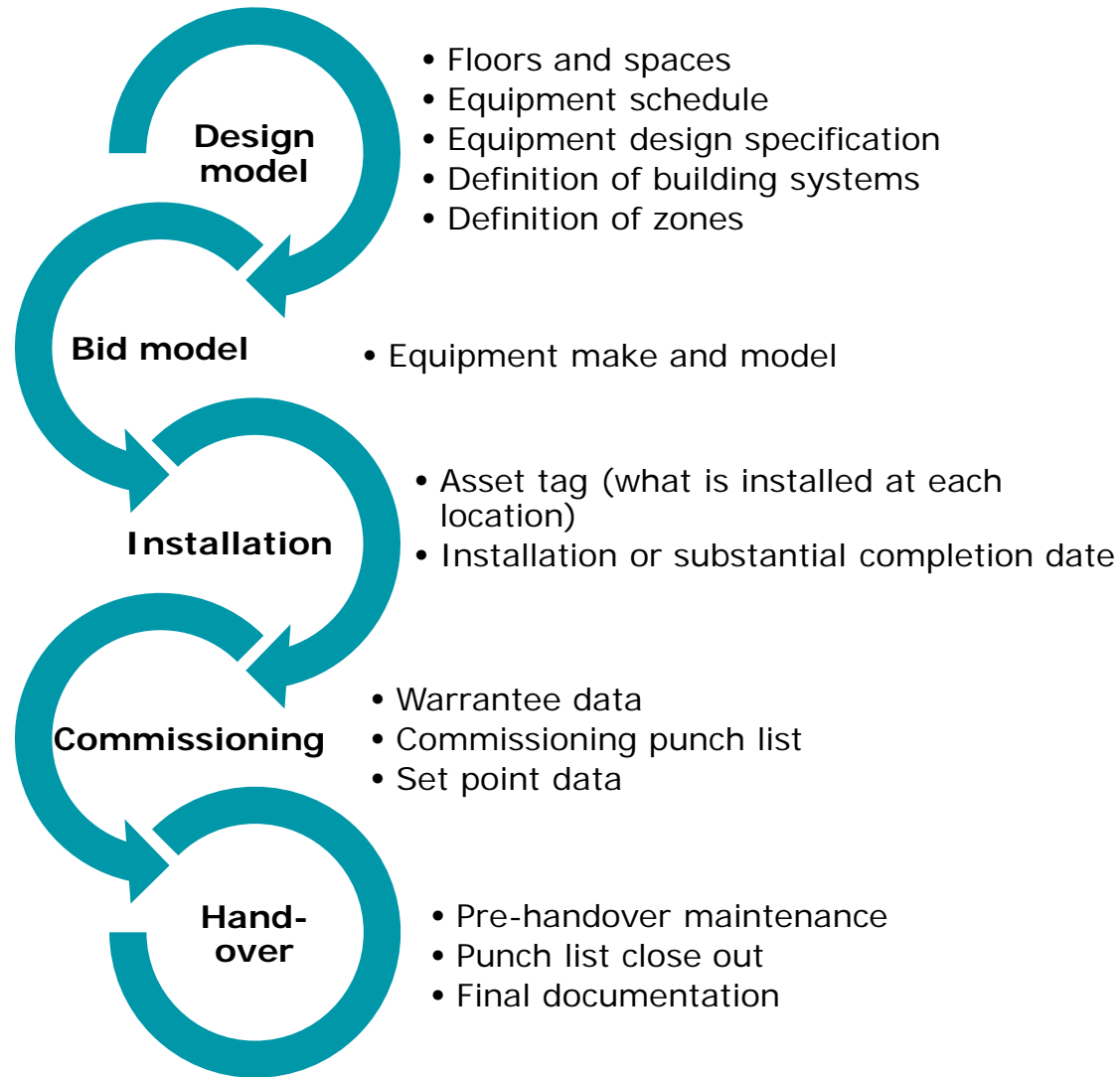


**Total cost of ownership**—80% of the building's cost is after handover.

**Customer reality**—The vast majority of their experience will occur after you handover the keys

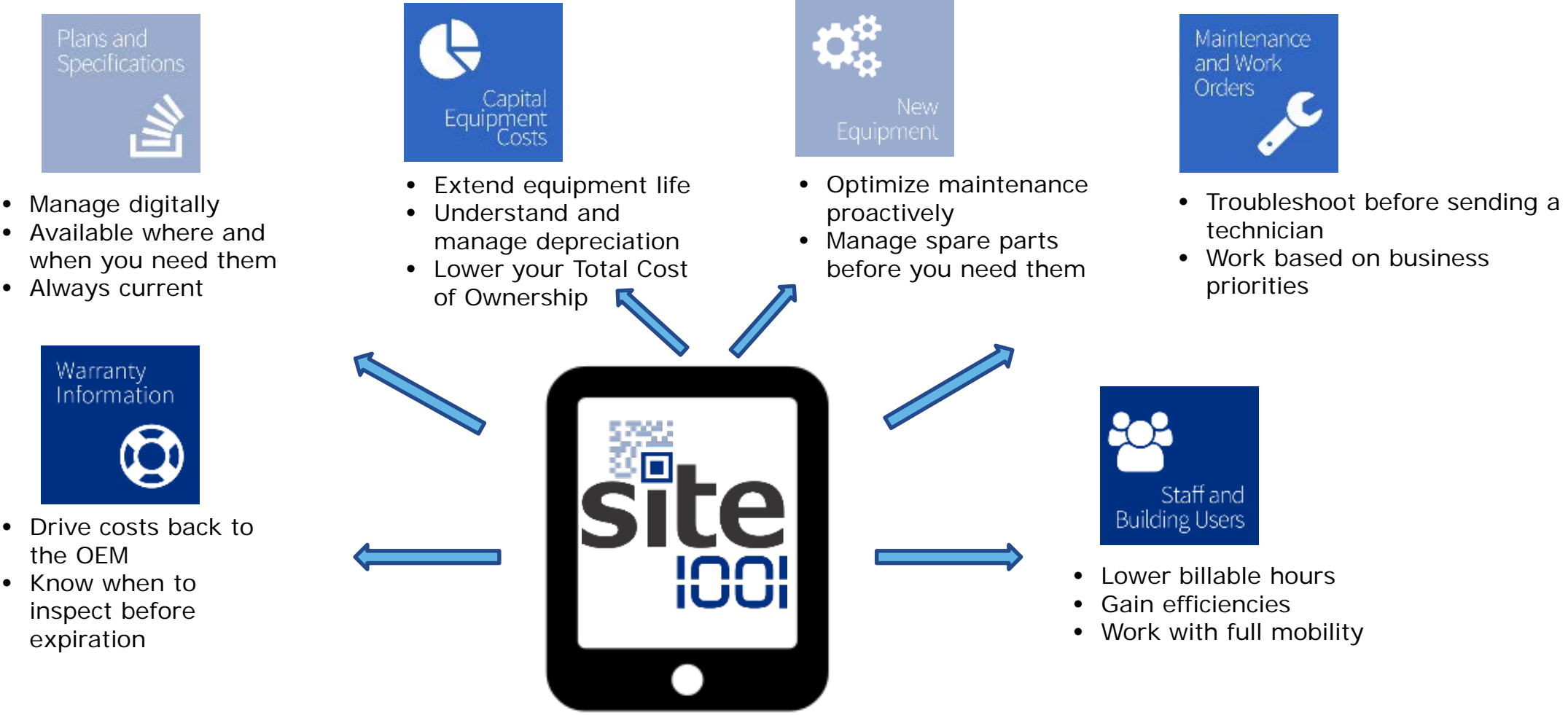
**Reputation**—Built with the building, but post handover outside of their control.

# The Last 5% of construction



- The most visible finishes are being decided ... and re-decided
- All assets, asset types, asset groups and installation definitions are available
- All of the trade partners are available or involved for commissioning and close-out
- 100% accurate building Information
- All relevant and important information is available for an optimally run building
- Owner/operators can now capitalize on the availability of data

# The building owners solution



# Site 1001—your own personal building advisor

- Know everything your Architect, Contractor, and Equipment Manufacturer knows about your building
- Have your maintenance routines configured specifically for the equipment installed
- Bring with you what the manufacturer would bring every time you respond to a service request
- Have a troubleshooting advisor every step of the way
- Grow your knowledge of the building every time you service it
- Reduce your building TCO significantly



# New markets Tax credits

Providing project capital for owners through federal financing subsidies.

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<b>Idea to action</b>	<b>Technology</b>	<b>Benefit</b>
Partner with a consultant that can facilitate NMTC and other potential subsidies for your client investments.	Online public database and private consultant databases.	Competitive advantage on contract bids by offering cash benefit opportunities to target clients.

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# NMTC program overview

## Origin and Purpose of the New Markets Tax Credit (NMTC) Program

- Origin: Community Renewal Tax Relief Act of 2000
- Purpose: Stimulate investment and economic growth in low-income urban and rural communities

## Potential Benefits of NMTCs

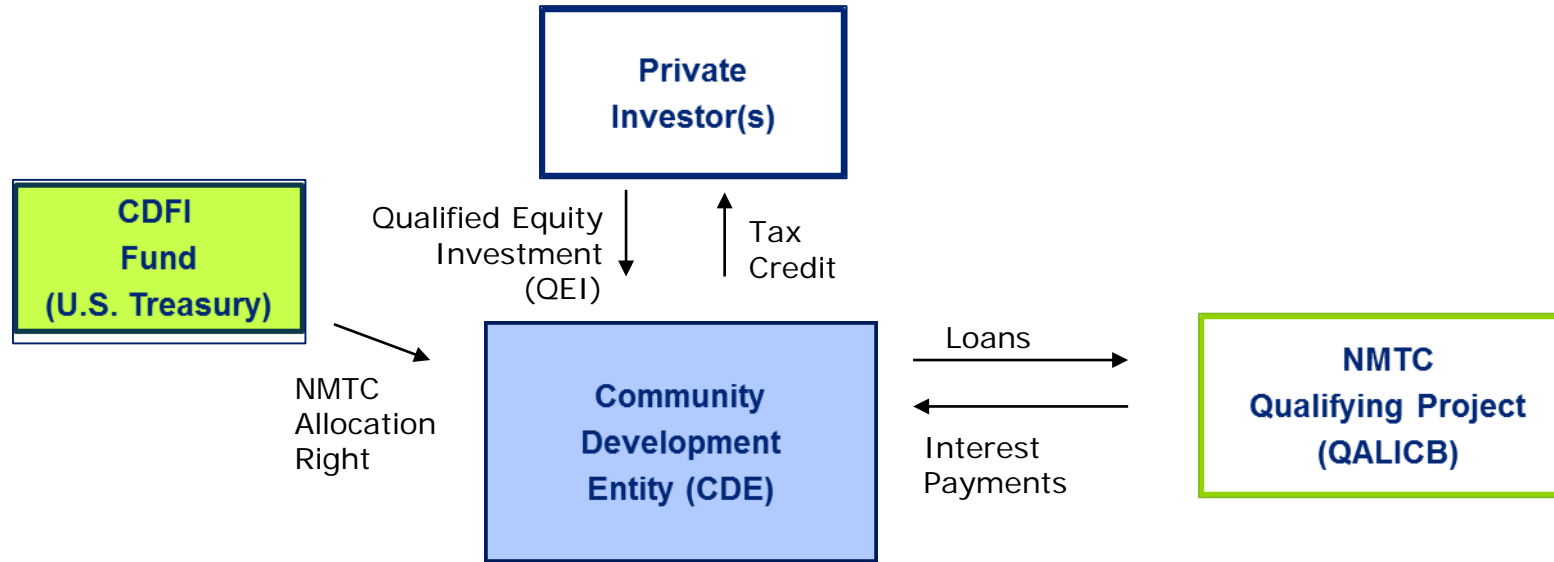
- Cash Benefit: Qualifying projects receive **upfront cash** (not tax credits) in the form of a low-rate, interest-only loan for 7 years.
- Typically, the loan is “forgiven” (i.e. purchased for a nominal amount of \$1,000) at the end of the 7 year term.
- Subsidy (“forgivable” loan) amount of ~\$2.5 million for every \$10 million of capital expenditures, with limits.

## How NMTCs are Used

- Loan Proceeds are typically used for real estate development, equipment, or working capital
- Financing Amount generally ranges between \$7 million and \$15 million per Community Development Entity (CDE)
  - Multiple CDEs may combine to provide more financing to a single project.
  - Smaller loans are available (i.e. under \$2 million) with pre-packaged capital
- Significant job creation or delivery of social services make projects more likely to receive funding.

# NMTC program overview

## How it works



### How it works

- CDFI fund (part of treasury) allocates NMTC authority to registered Community Development Entities (“CDES”) through a competitive application process. These third party intermediates then look to investors and potential projects for investments into qualifying low income communities.
- Tax credit investors make cash investments in CDES in exchange for the tax credits. The tax credit investor receives more back in tax credits than it puts into the transaction, making them willing to walk away from the loan into the project at the end of a seven-year period.
- CDES use tax credit investor cash and other funds (E.g. Market-rate loans or project sponsor funds) to make loans to the project. The tax credit equity portion is typically “forgiven” at the end of 7 years, providing the economic value to the project. Receive fee and services income for the use of allocation.

# NMTC economic summary

## How it works:

- Cash Benefit to Qualifying Projects: Only \$7.7 million cash needed for a \$10 million capital investment if the location of the development is in a low income community.
- A portion of the development costs is provided in the form of a loan from a Tax Credit Equity Investor.
- The Tax Credit Equity Investor receives more back in tax credits than it puts into the transaction, making them willing to walk away from the loan into the project at the end of a seven-year period.
- Capital expenditures that exceed \$10 million can be eligible for increased benefit.

## Benefit summary

### Closing:

\$10,000,000
x 39%
<b>\$ 3,900,000</b>
x 0.85
<b>\$ 3,315,000</b>
<u>(500,000)</u>
\$ 2,815,000
(250,000)
<u>(250,000)</u>
\$ 2,315,000

- NMTC allocation
- Tax Credit Earned Over 7-years
- **Tax Credit Benefit (EARNED BY 3<sup>RD</sup> PARTY)**
- Price Paid for NMTCs
- **Tax Credit Investment**
- Upfront Allocation Fee (5%)
- NMTC Loan to Project
- Loan Closing Attorney/Accounting Fees
- Loan Closing Consulting Fees
- Net Cash Benefit at closing

### Total interest expense:

\$ (555,000)

- Annual Asset Management fees and audit/tax preparation for investment entities paid through interest expense

### Exit:

\$ (1,000)
<u>(984,900)</u>
\$ (985,900)

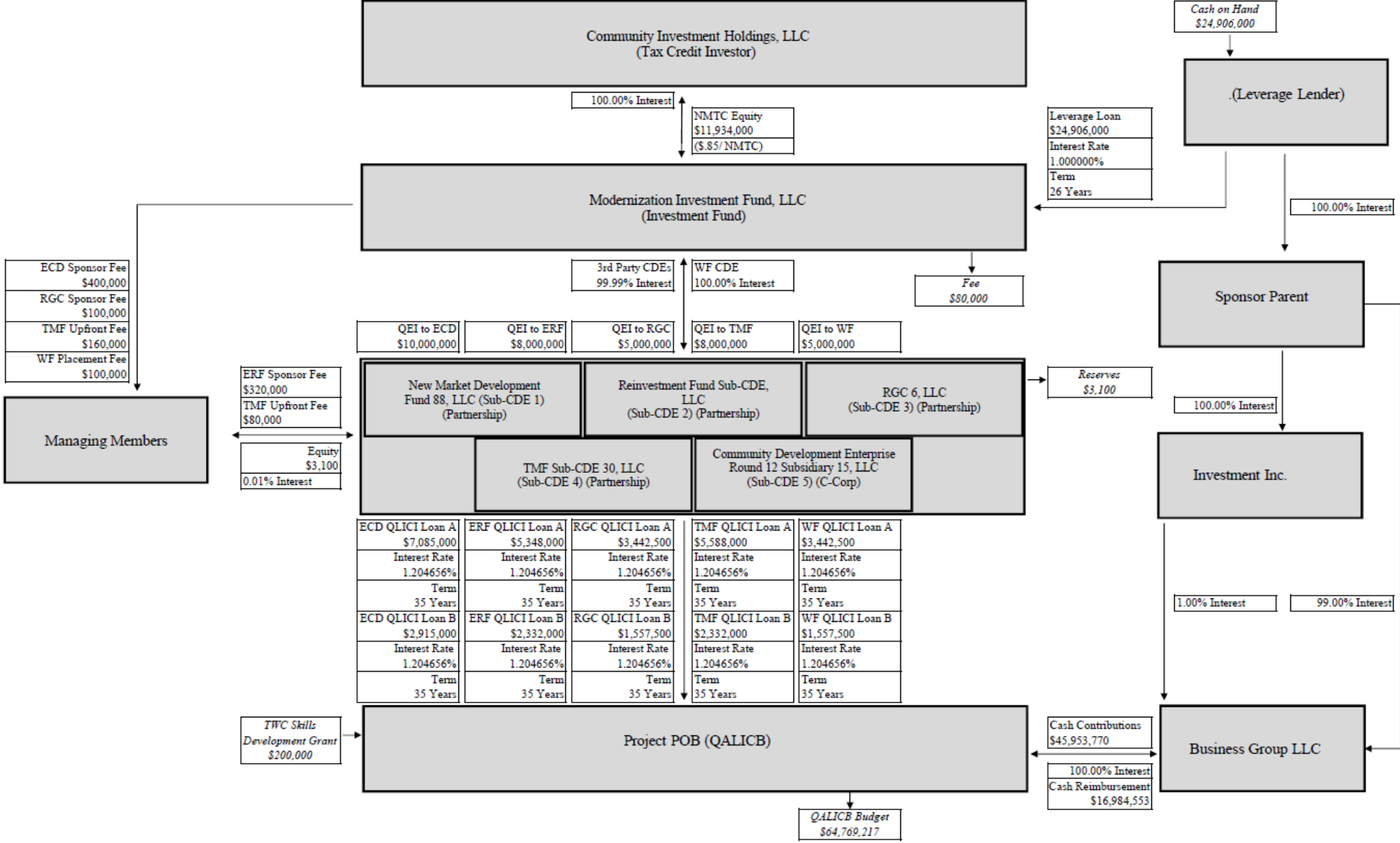
- put price to purchase B Note
- deferred 35% tax on B Note COD income

### Economic benefit:

**\$ 1,873,387** Pre-Tax NPV Cash Flow over 7 Years at 6% discount  
**\$ 1,516,694** After-Tax NPV benefit at 6% discount rate



# NMTC Sample Structure Diagram



# NMTC project steps

- Project Viability and Marketing Package (2-3 Weeks)
- Secure Allocation from CDE(s) (varies)
- Closing Process (60-90 days)
- NMTC Proceeds Spent (within 12 months)
- Compliance Period (quarterly to annually for 7 years)
- Exit NMTC structure (Put/Call option at the end of year 7)

The timeline for an NMTC transaction from Step 1 to Step 3 can vary depending on the NMTC Allocation available, the viability of the project, as well as the timing of the project completion. It's important to be prepared for Step 3 if a CDE would like to fund the project.

**Q&A**



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