



# Emerging Technologies to Enhance Installations of the Future



**2023** JOINT ENGINEER TRAINING  
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# Emerging Technologies to Enhance Installations of the Future

Moderator: Lucian Niemeyer F.SAME, Building Cyber Security

Speakers:

- Allison Long, U.S. Army Engineer Research and Development Center (ERDC)
- Taylor Breihan, Johnson Controls
- Dave Nobles, Microsoft
- Brian Davis, Corning Optical Communications
- Kirk Rabiun, Honeywell Technologies





# 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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# BLUF: Modern Facility – Sensor to Cloud

## Base of the Future: Secure Data Ingestion With Robust Cloud Analytics

- **Single-pane-of-glass visibility and digital twin modeling**
  - Predictable facility outcomes that improve warfighter support and workplace experience
- **Connected pathway to digital transformation and sustainability**
  - Future proofing
  - Unlocks the power of data
- **Robust fiber to the edge**
  - Unlimited bandwidth, eliminates latency
- **Unified agentless security for OT and IT**
- **Refined customer requirements development process with guaranteed outcomes**





# U.S. ARMY

## Army Installations Modernization Pilot Program



Ms. Allison Long  
Program Manager, ERDC-CERL



UNCLASSIFIED

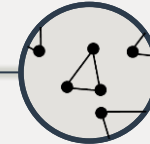


The framework to assess the resilience of Installations. Beginning with evaluating the maturity of the capabilities on an installation and its ability to connect other Installations or Command. Installations evolve in their capabilities, connectivity, maturity, and resilience across this model.



YOU ARE HERE

OUR FOCUS



## STATIC INSTALLATIONS

May have aspects of resilience but cannot achieve enterprise resilience and are generally static in form and function.

## SMART INSTALLATIONS

Installations feature some automated processes to collect and visualize data within the installation. Installation commanders utilize this information in decision-making.

## INSTALLATIONS AS PLATFORMS

Installations have facilities that are flexible and capable of adapting to meet new mission needs. Installations can shift resources and mission to improve individual post resilience.

## CONNECTED INSTALLATIONS

Multiple installations are connected to share relevant mission related data on status of forces, equipment, personnel, and facilities. Data is not fused and leveraged for enterprise-level insights.

## RESILIENT INSTALLATION ECOSYSTEMS

Installations ecosystems form and reform quickly shifting mission and focus between installations based on function, contingency, and local conditions. Creates adaptability, ability to deliver capability, and mission resilience across the Army enterprise.

## “Modernization is FUTURE Readiness” – Secretary Wormuth

### 1. National Defense Strategy (2022)

1. “We will increase resilience of military installations...”
2. “We will continue to analyze climate change impacts on the Joint Force and will integrate climate change into threat assessments.”
3. “...design open systems that **can rapidly incorporate cutting-edge technologies... reward rapid experimentation, acquisition, and fielding.**”

### 2. SECARMY Message to the Force (Feb 2022)

1. “My second objective is to ensure the Army becomes more **data-centric and can conduct operations in contested environments...**”
2. “My third objective is to continue our efforts to be resilient in the face of climate change...”

### 3. Army Climate Strategy (February 2022)

1. “Line of Effort 1: Installations – Strategic Outcome: Enhance resilience and sustainability by adapting infrastructure and natural environments to climate change risks, securing access to training and testing lands into the future, and mitigating GHG emissions.”
2. **“Enhanced Planning”** – Army Installations will use new tools, information, studies, and techniques for enhanced planning to precisely identify and correctly prioritize their operations, activities, and investments in light of expanding climate change threats. The Army is already considering climate resilience in master planning, natural resource planning, range management, and installation energy and water planning. The Army is also proactively implementing advanced planning tools...”

### 4. Army Climate Strategy Implementation Plan (October 2022)

1. “Objective 1.j. [C] Climate change threat mitigation included in Army Military Construction (MILCON) and land management processes.”
2. “Objective 1.k. [C] Stationing, construction, master planning, and fielding processes updated to add climate and environmental implications of modernization decisions.”

### 5. Army Enterprise Data Analytics Strategy (2018-2022)

1. Strategic Intent, “The Army must move from descriptive and diagnostic analytics – that are historically based, predominantly transactional, and focused on performance evaluation – toward enabling predictive and prescriptive analytics... how to take advantage of opportunities or mitigate risks as events unfold.”
2. Objective 2.2, “Organize and conduct collaborative Army wide events... in advancing the Army’s data analytics and data science capability.”
3. Objective 2.3, “a balance of centralized and distributed... advanced analysts, strategically deployed to enterprise-wide initiatives.”
4. Objective 5.3, “The Army operates a centralized and de-centralized scalable, trusted data environments with tools that provide automation, governance, and a full range of descriptive, diagnostic, predictive, and prescriptive analytics on both historical and real-time data.”

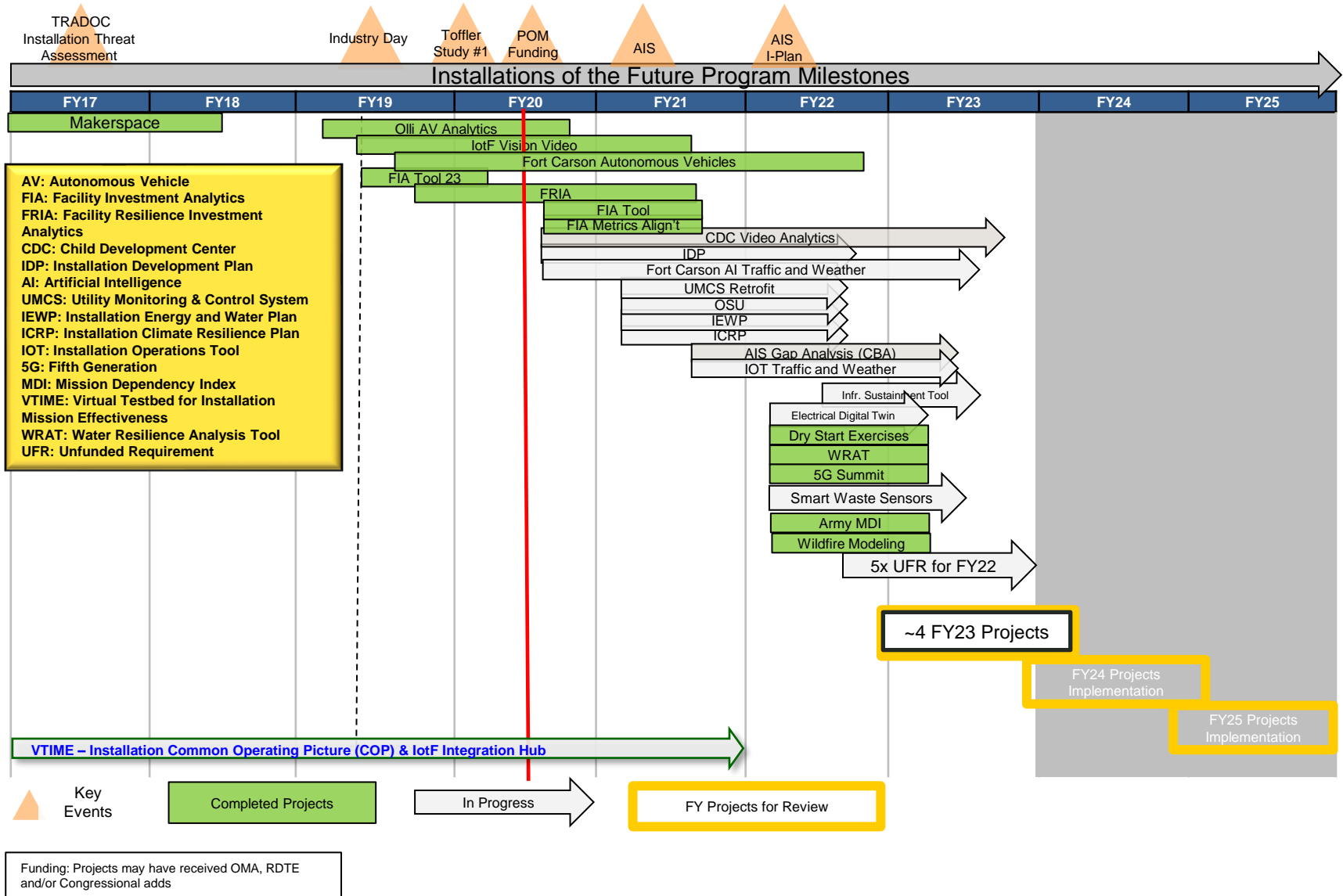


## MISSION:

**Inform and enable swift Installation Modernization through emerging and established technology pilots**

## GOALS:

- Synchronize** use cases with operational Army modernization and resilience needs
- Increased investment** in installation modernization with considerations for ROI, sustainment, workload, training (OP\$)
- “Single pane of glass”- Sensor to alert/action** integration; data-centralized, cyber secure, decision tools
- Create** designated installation **testbeds** +1 outlier
- Increase R&M** for Army Installations of 2040+



### **Installation Modernization Council of Colonels:**

- Create a broad, inclusive and collaborative working group to engage about relevant topics that are impacting the Total Army Installations.
- To engage and support AIS & ACS I Plan initiatives
- To collaborate on Army Installation Modernization Pilot Program (AIMP2).
- To push and pull information throughout the total Installation community.
- Establish a governance structure and feedback mechanism for pilots and testbed.

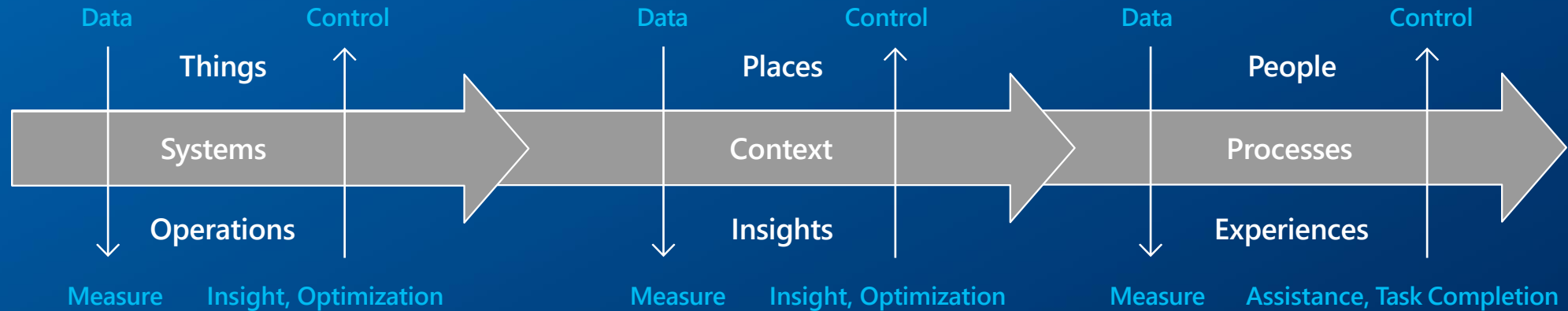
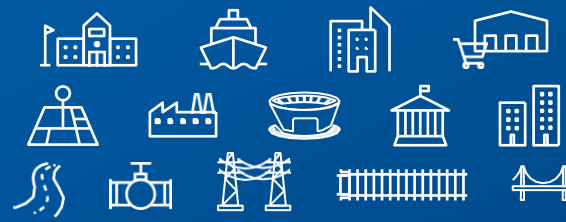
**Vision:** Installations will modernize: This CoC will inform the modernization efforts of our Army's communities.

**Mission:** Become a broad, inclusive and collaborative cross section of Army stakeholders, committed to influencing modernization of Army Installations.

# Digital Twins – Fusing Physical and Digital

A digital twin is a digital replica of a living or non-living physical entity

Physical World



Digital World



- Remote monitoring
- Fault detection
- Diagnostics & auditing
- Predictive maintenance



- Flow optimization
- Occupancy & utilization
- Space advise and analytics
- Asset tracking



- Employee, frontline worker, fan experience
- Productivity, comfort, satisfaction
- Location, wayfinding (indoor & outdoor)
- Mixed reality & cognition





# OpenBlue Enterprise Manager

*Single-pane-of-glass experience moves you toward desired outcomes*



## Sustainability and Tenant Value

Achieve energy savings and reduce carbon footprint, while ensuring tenant comfort and experience.



## Operations as Competitive Advantage

Optimize asset and maintenance operations using advanced analytics and AI, to reduce energy and operations cost with better system performance.



## Manage Space Utilization and Health

Improve space value and leasing rates by creating healthy spaces, balancing energy spend with space utilization, IAQ and reduced risk of infection spread.



## Secure and Future Proof Technology

Ensure quick ROI and recurring advantage with an OpenBlue solution, leveraging advanced Digital Twin and Edge with complete Cyber Security capabilities.



**Sustainability Manager**



**Energy Manager**



**Net Zero Advisor**



**Asset Manager**



**Service Manager**



**Alarm Manager**



**Space Performance**



**Performance Advisor**



**OpenBlue Viewer**



**Data Auditor**



**Report Builder**



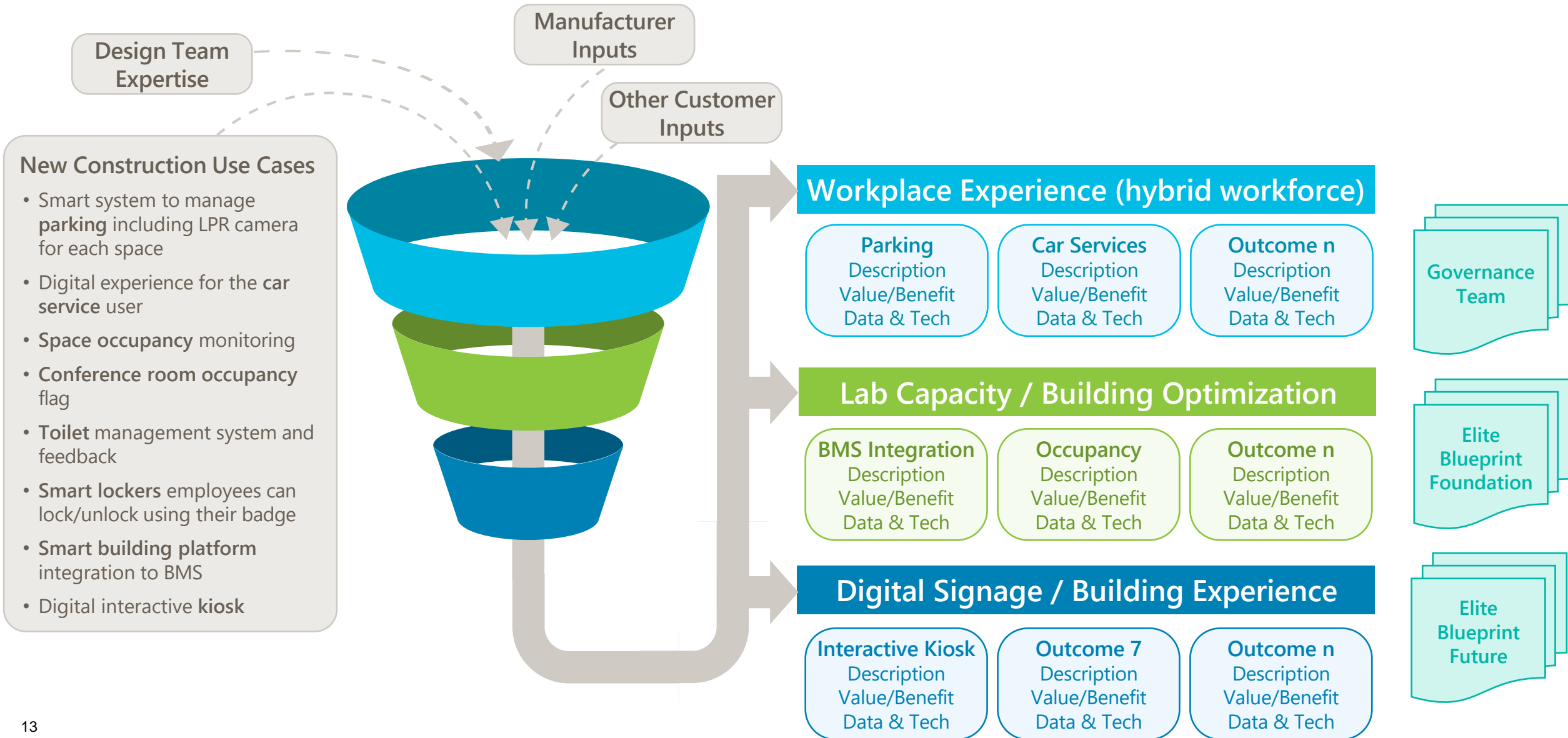
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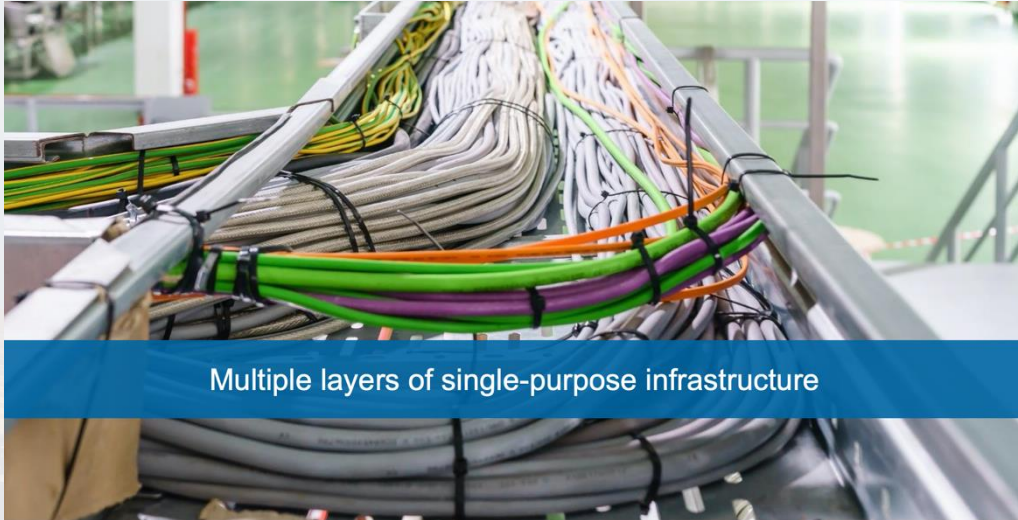
# Customer – New Construction – Design Blueprint

(Alignment + Ideation + Implementation-ready)





# Fiber to the Edge enables sustainable, secure, smart bases



Multiple layers of single-purpose infrastructure



Reduce and eliminate single-purpose infrastructure



## Bandwidth Demand

Today's technology demands are testing the limits of legacy Category cable networks.



## Cybersecurity

Cyber threats are real. Fiber is inherently more secure while SD-LAN extends zero trust policies to the access layer.



## More Devices

We have too many devices to feasibly connect each of them with an independent cable. FttE connects multiple devices at the edge of the network.



## Future Tech Upgrades

Technology changes constantly. Building owners need the flexibility to make tech upgrades without having to rip and replace infrastructure.



## Sustainability

Driving to net zero carbon requires different planning and different action. FttE is more resilient and sustainable.



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# Q&A





**2023**

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MISSION  
SUCCESS  
STARTS  
HERE  
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MAY  
2-4  
2023

San Antonio,  
TEXAS



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