Future Proofing Construction:

AI, BIM, and Modular Components in Sustainable Development

Prepared by:

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Resia Manufacturing, LLC

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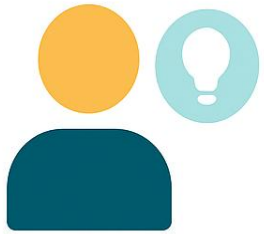
October 29th, 2025 – Building Solutions & Materials (Wrksp 2)

Quick Survey Before Exploring Stakeholder Benefits



GENERAL

- Accelerated **speed to market**
- Reduced on-site labor & delays
- Enhanced quality control & consistency
- Greater cost predictability & ROI
- Seamless design-to-installation workflow

DEVELOPERS

- **Maximize ROI** through streamlined timelines
- Predictable outcomes reduce financial risk
- Deliver consistent, market-ready finishes
- Integrated design & manufacturing, eliminates delays & rework

GENERAL CONTRACTORS

- **Simplified coordination** with fewer trades
- Off-site production reduces labor dependency & site congestion
- Just-in-time delivery streamlines workflows

ARCHITECTS

- **Design without Limits**
- BIM-driven design collaboration ensures accuracy & quality
- Factory-level control preserves design intent
- Seamless integration with modular systems

INVESTORS

- **Vertically integrated** model reduces project risk
- **Scalable solution** supports portfolio growth
- High-quality, repeatable construction method

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Future Proofing Construction AI, BIM & Modular Construction

- **Description:** This workshop explores the intersection of **digital construction and modular innovation**, showing how Resia's Manufacturing prefabricated bathroom and kitchen components integrate seamlessly with project models and coordination workflows.
- **Discussion topics** will include Leveraging BIM and AI-driven design tools to optimize component integration; How prefabrication supports sustainable design, and Investment perspectives: IRR improvements, scalability, and risk reduction for multifamily and hospitality sectors
- **Abstract:** Construction is at a turning point. Digital tools like AI and BIM are no longer optional. they are rapidly becoming the foundation for how projects are designed, coordinated, and delivered. When combined with prefabricated components, these technologies unlock new levels of efficiency and sustainability.
- **Learning Objectives / Key Takeaways**
- Discover how AI and BIM integration enhance design coordination and reduce costly rework.
- Understand the role modular components play in achieving sustainable development goals.
- Learn how digital tools support project efficiency, scalability, and risk reduction.
- Evaluate the financial case for prefabrication, including cost predictability and IRR improvements for investors and developers.

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Construction is Shifting From Reactive to Predictive — Digital + Modular is Now

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Resia Manufacturing *Prefabricated Bathroom & Kitchen Solutions*

- **Expertise:** Specializes in prefabricated **bathroom & kitchen components for all construction modalities**; streamlining timelines, improving quality, and reducing on-site labor with ready-to-install units
- **Facility & Capacity: 252,000 sf** Fairburn, GA facility; vertically integrated for high-volume production with scalability from **10,000 to 16,000+** components annually
- **HybridFabrication:** Lean, automated process using **BIM, DFMA, & conveyor-based** assembly lines to deliver consistent, high-quality bathrooms and kitchens
- **Automation & Standards:** Driving prefabrication forward with **robotics, sub-assembly, & rigorous QA/QC** to enhance efficiency, compliance, and reliability
- **Commitment:** Focused on **quality, innovation, and community development** across the U.S., while reshaping multifamily, hospitality, and student housing construction

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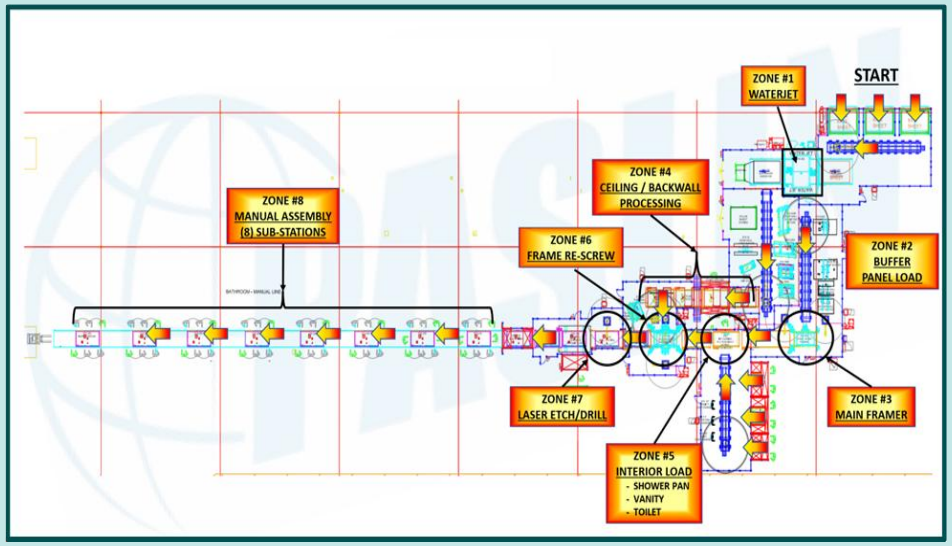
HybridFabrication *Process Revolution Delivering Fully Finished Units*



… Problem with Traditional Construction

Traditional methods are slow, fragmented, and dependent on Intensive site labor and sequencing, resulting in cost overruns, delays, and inconsistent quality

… Resia Advantage

HybridFabrication brings automotive-style efficiency to modular and prefabricated construction, delivering standardized, scalable, and quality-controlled results

… Key Differentiators

Faster Output 2–3 pods per hour production vs. the traditional 0.5 – 1, achieving up to 6x greater efficiency

Integrated Systems Plumbing, electrical, and finishes combined in one unified flow, minimizing rework and delays

Repeatable Quality Centralized QA/QC ensures accuracy, precision, and compliance for every unit

Cost Control Pre-staged logistics and trade-specific work zones reduce labor demand and costs

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Industry Challenges

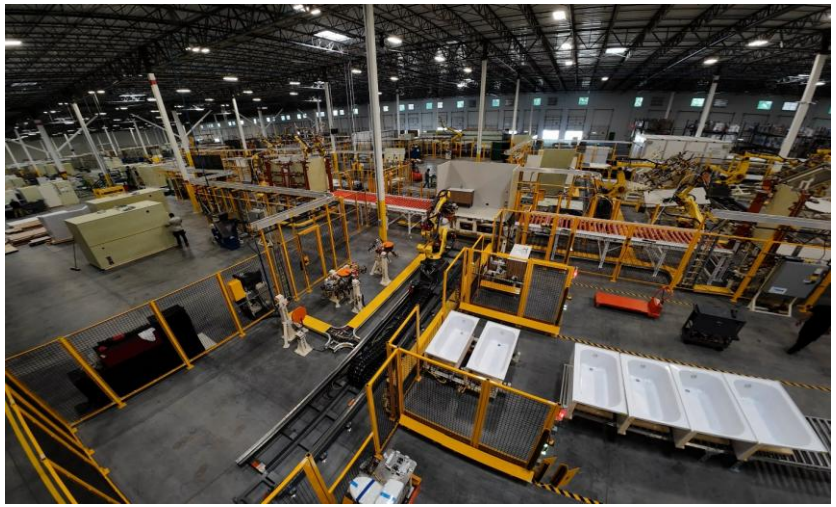
Why this conversation matters and why now

…Rising Construction Costs

…Skilled Labor Shortages

…Growing Environmental, Social, and Governance (ESG) Demands

…Project Delays From Fragmented Supply Chains



AI, BIM, and Modular Work Together to Unlock Efficiency and Certainty.

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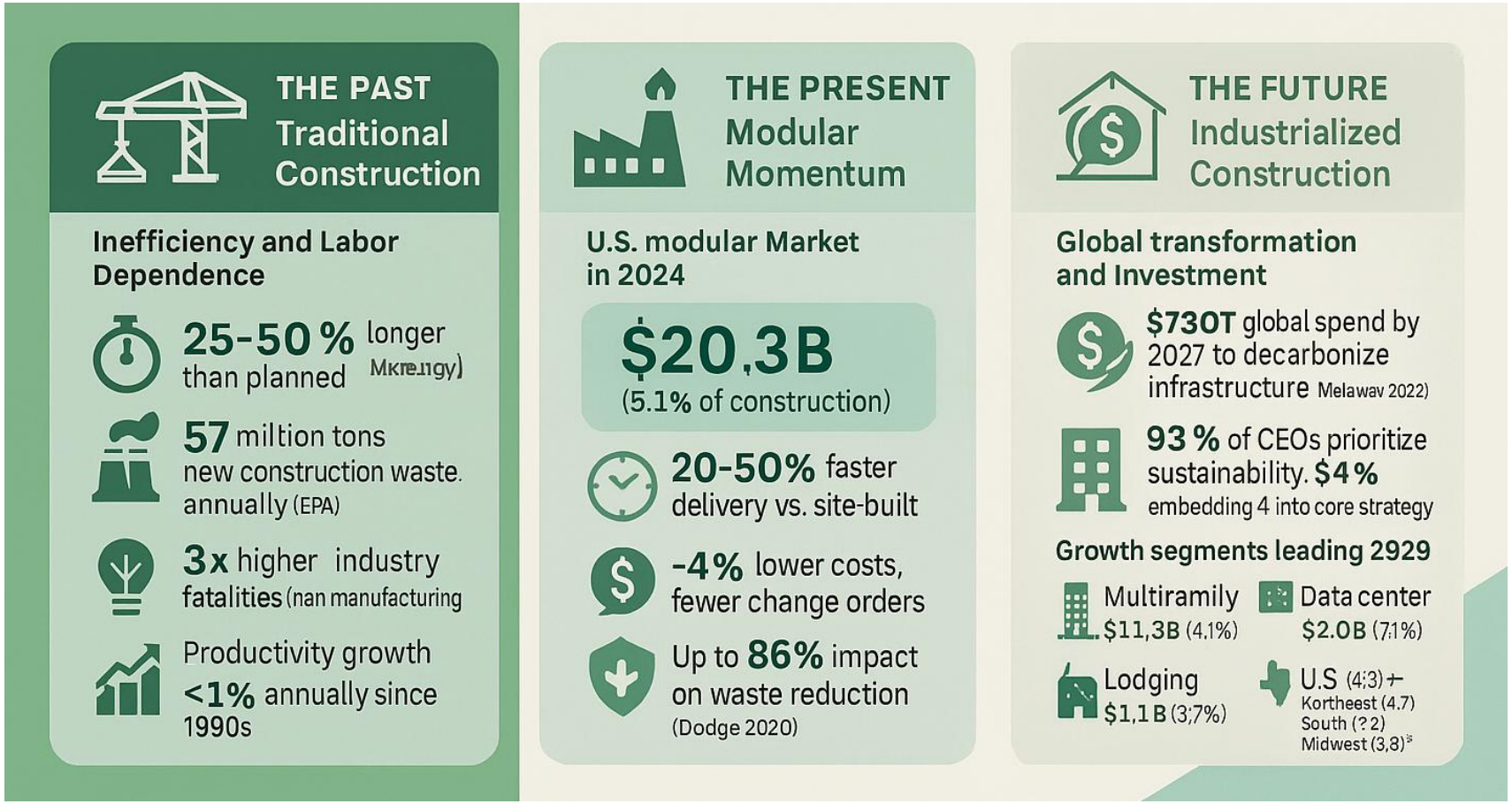
Construction is at an Inflection Point

…The Future of Construction is Here, Driven by Digital and Modular Innovation

…With Rising Costs and ESG Pressures, Innovation Isn't Optional, It's Essential.

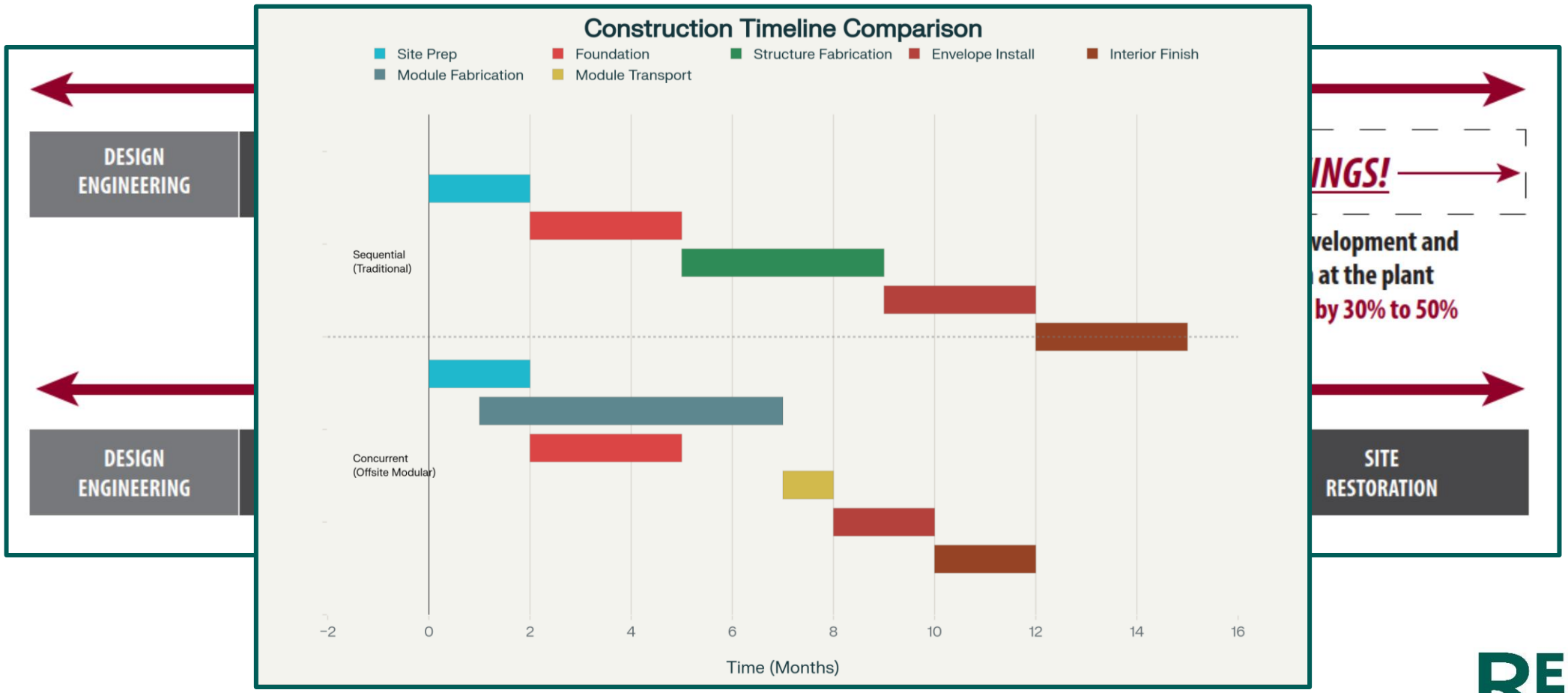


Rising Costs, Labor Shortages, and ESG Pressure Demand New Delivery Models.

Traditional vs Prefabrication/Digital Delivery

…Sequential, Siloed Workflows → Delays, RFIs, Rework, & Change Orders

…Digital + Modular Workflows → Streamlined, Predictive, and Coordinated



Digital Workflows Eliminate Delays, RFIs, and Costly Change Orders.

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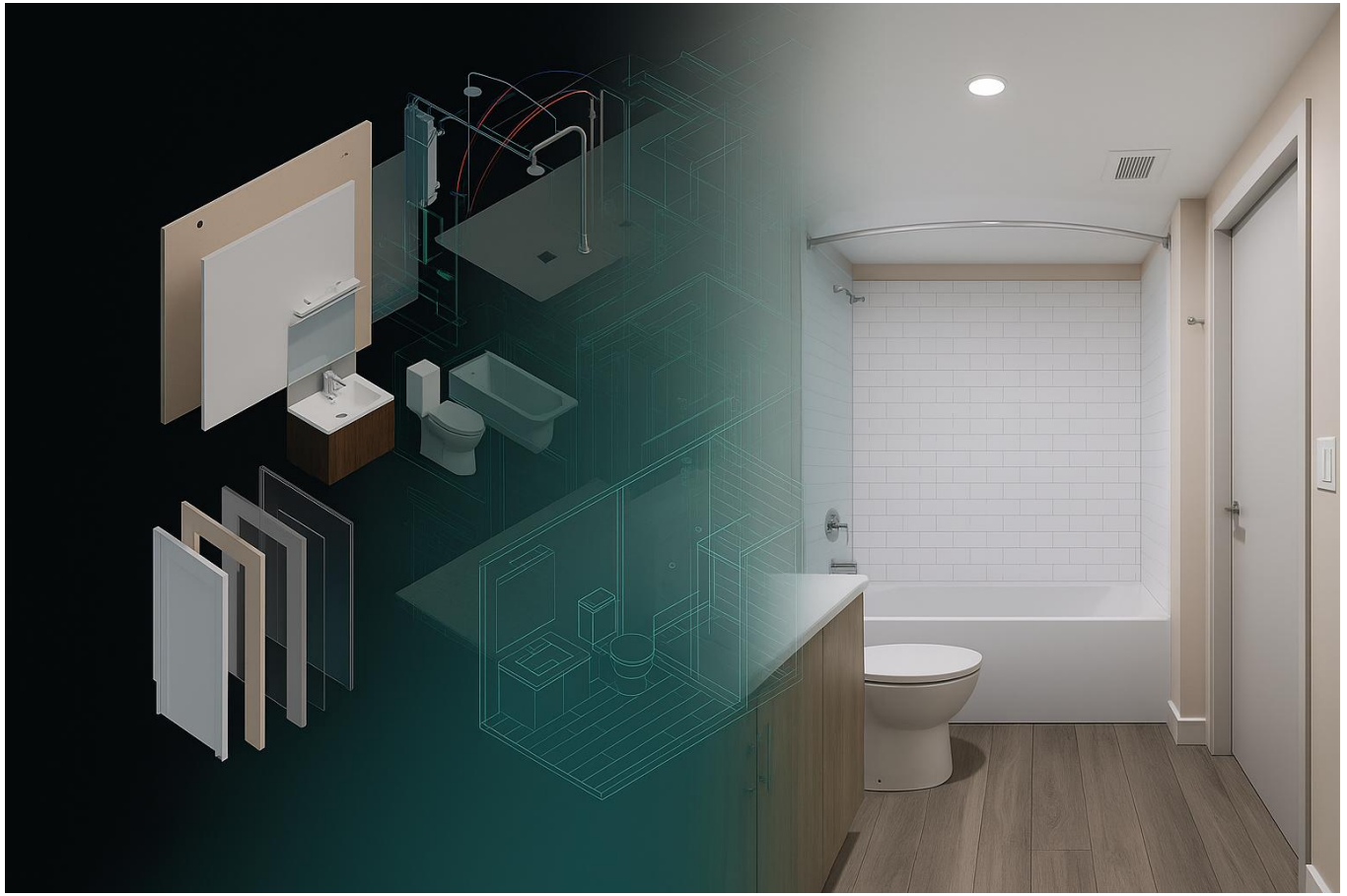
BIM – The Digital Backbone

…BIM Enables Real-time Collaboration and Precise Component Integration

…Data-riven Coordination Eliminates Errors and Costly Surprises



BIM is the Digital Backbone Enabling Precise Modular Integration.

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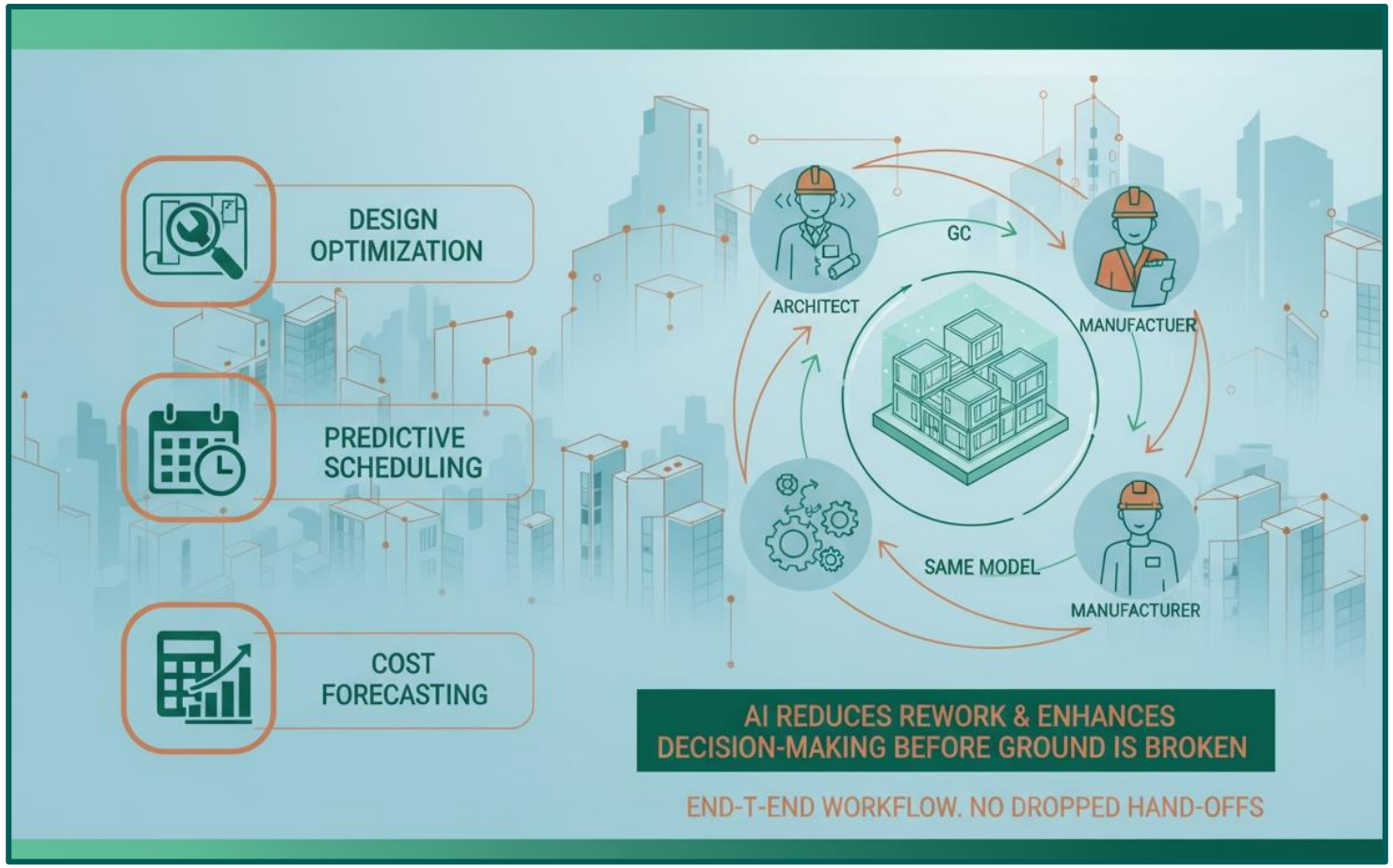
Power of AI in Construction

…Predictive Design and Scheduling

…Automated Compliance and Clash Detection

…Smarter Cost and Risk Forecasting

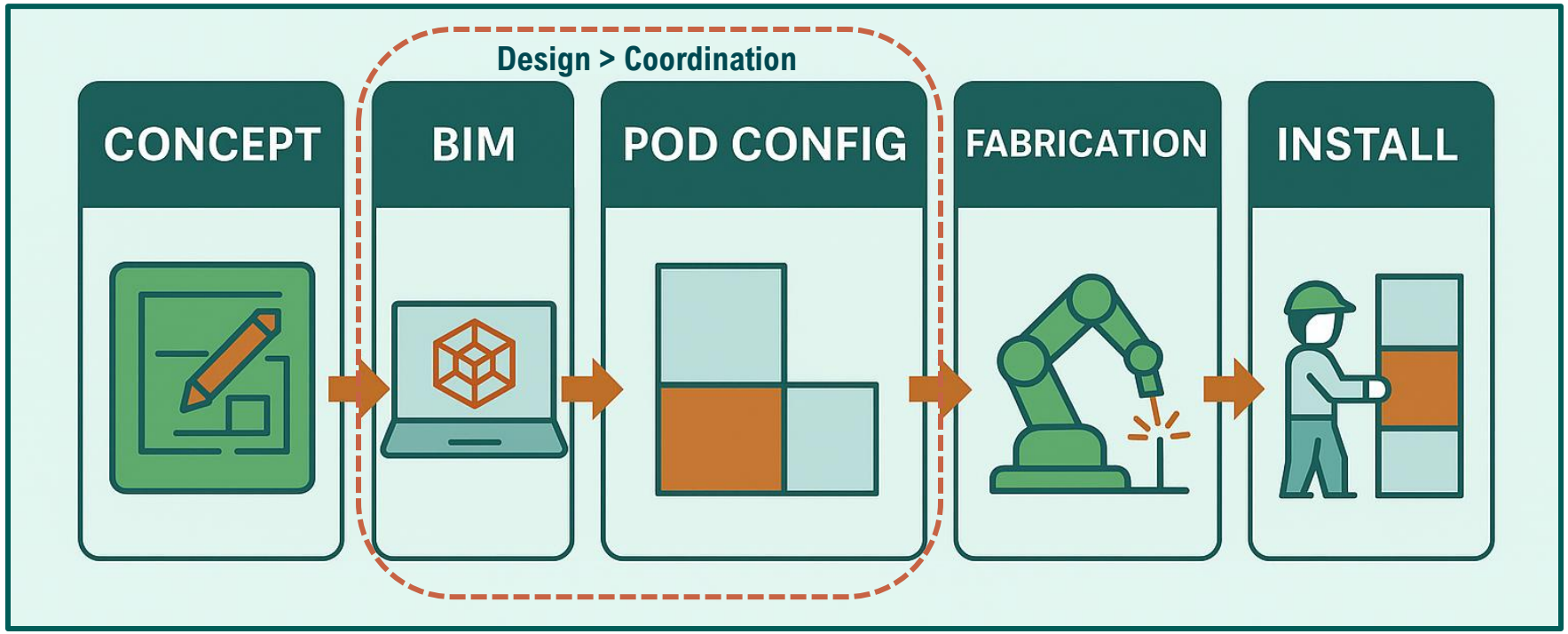


AI Optimizes Design, Cost, and Risk Decisions Before Construction Starts

Digital Coordination in Action

…Concept
…BIM Modeling
…Configuration

…Fabrication
…Delivery + Installation



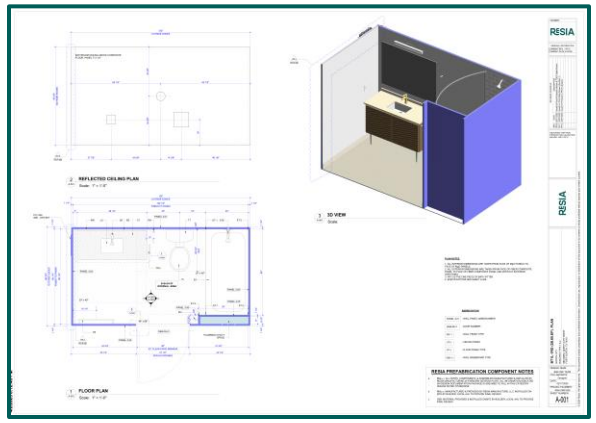
Elimination of "Handoff Gaps & Data"
(Architect, GC, Fabricator, Installer → 1 Data Environment

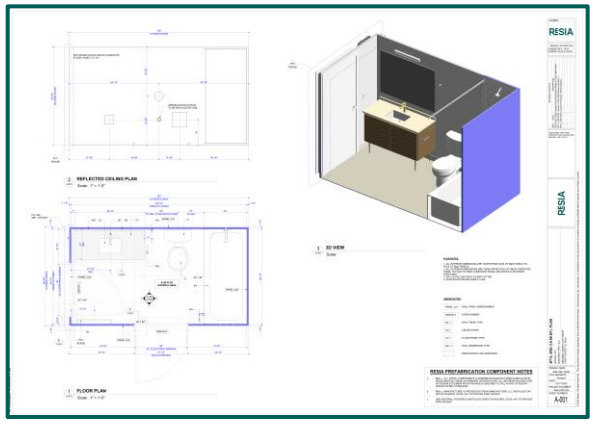
Integrated Workflows Align All Stakeholders and Eliminate Information Loss.

AI Driven Design Optimization

…AI Evaluates Multiple Component Layout Options

…Optimized Designs Enhance MEP Flow, ADA Compliance, and Space Efficiency





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AI Evaluates Hundreds of Layouts in Minutes, Cutting Weeks From Pre-Con

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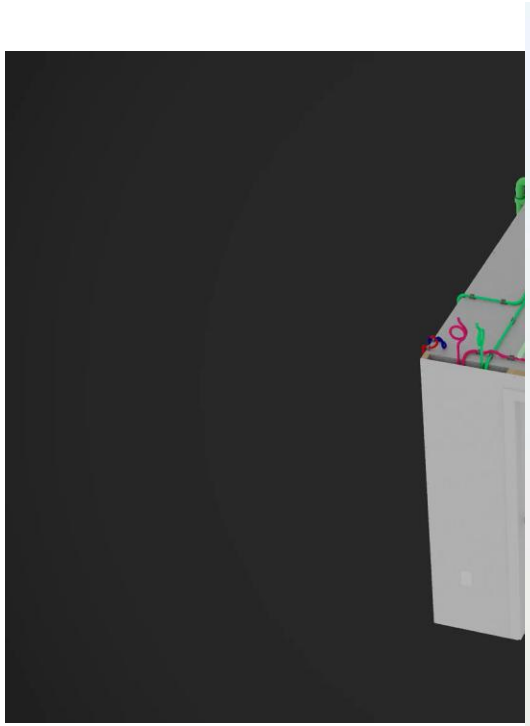
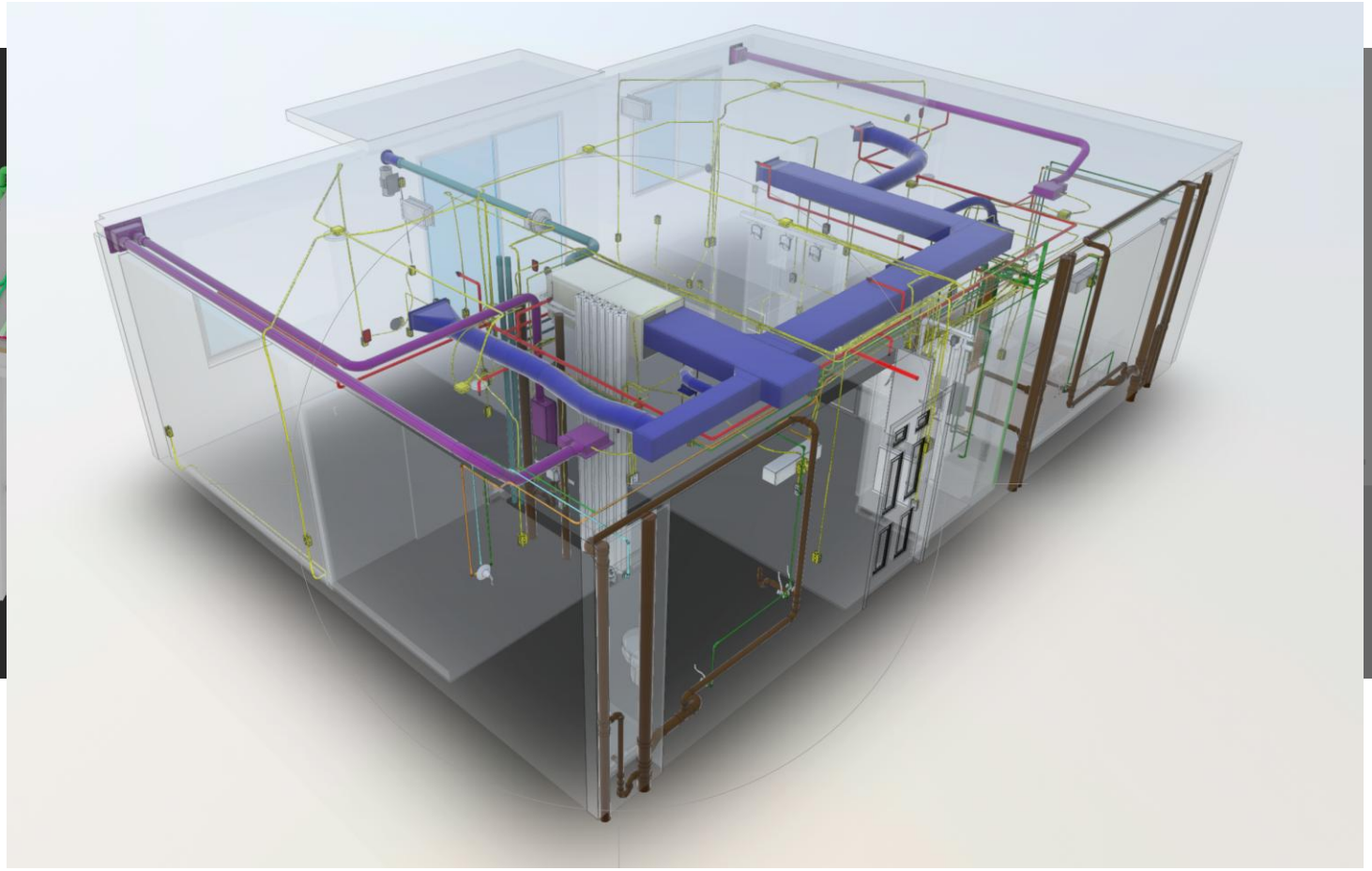
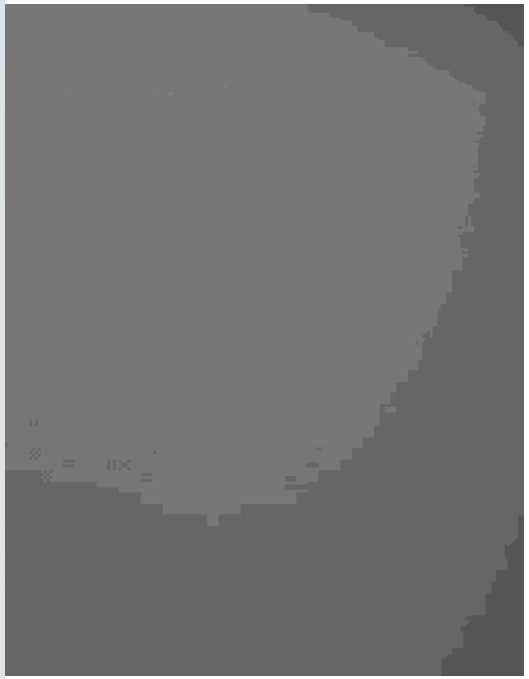
Modular as a Core Design Element

…Prefabricated Components are Integral to the Digital Design Model

…Parametric Integration Ensures Accuracy, Precision, Speed & Quality







Pods Become Parametric Components in the Model, Not Afterthoughts

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Case Study Highlights *Multifamily*

…*Golden Glades, 5-story midrise pilot → 1500+ units delivered in 27 weeks, Average set rate of 41.5 units/week, 46-minute bathroom & kitchen installation per apartment.*

…*Key Outcomes → Faster Delivery, Reduced Rework, and ESG Alignment*

… *Schedule Reduction*
… *Labor Coordination Simplified*
… *Quality Outcomes Exceeded On-Site Benchmarks*
… *Repeatable Design Made Pods Ideal*

… *Predictable Delivery Improved Project Certainty*
… *Faster Occupancy Improved Financial Returns*
… *Developers Could Scale Portfolios Faster*

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Modular Integration Reduces Field Conflicts and Saves Weeks on Schedule

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Case Study Highlights *Prefabrication vs Traditional Construction*

…Side by Side Construction Results

Bathroom Prefabrication vs Traditional

Feature	HybridFabrication	Traditional Construction
Total Installed Material	$14,500[1] (average)	$18,750[2] (midrange)
Materials	Included	$5,000
Labor	$335	$11,000
Installation Time	< 4 hours	≈ 15 days
Installation Scope	Plug-and-Play Single Crew	HVAC, Electrical, Plumbing, & Finish Trades
Risk Exposure	Low-Moderate (Factory Controlled)	High (Schedule/Quality /Cost)
Scalability	High	Low-Moderate

Kitchen Prefabrication vs Traditional

Feature	HybridFabrication	Traditional Construction
Total Installed Material	$13,500[1] (average)	$24,000[2] (midrange)
Materials	Included	$9,250
Labor	$605	$11,821
Installation Time	< 7 Hour	≈ 17 days
Installation Scope	Plug-and-Play, Single Crew	HVAC, Electrical, Plumbing, & Finish Trades
Risk Exposure	Low-Moderate (Factory Controlled)	High (Schedule/Quality /Cost)
Scalability	High	Low-Moderate

Power Infrastructure Low Voltage vs Line Voltage

Feature	Low Voltage	Line Voltage
Wire Type	18/2 – 18/5 (Low voltage)	12 /2 (Romex/metal clad)
Fixture Longevity	20+ years	6 years
Installation Time	Fast (No hot work)	Slow (licensed electric)
Energy use	48%, centralized AC to DC	Less efficient (Fix level conv)
Safety	Class 2 (< 60V DC)	Class 1 (120V AC)
Cost Savings / Apt	≈ $1,500 (50%-70% savings)	Baseline
Code Compliant	NEC chap 7, Art 411	NEC chap 2/3 (More complex)
Smart Integration	Native compatibility	Additional controls required

[1]**HybridFabrication** *(all labor, inspection, and setting/installation included)*
[2]**Traditional** *(materials + GC markups + shop/field coordination + Inspections)*

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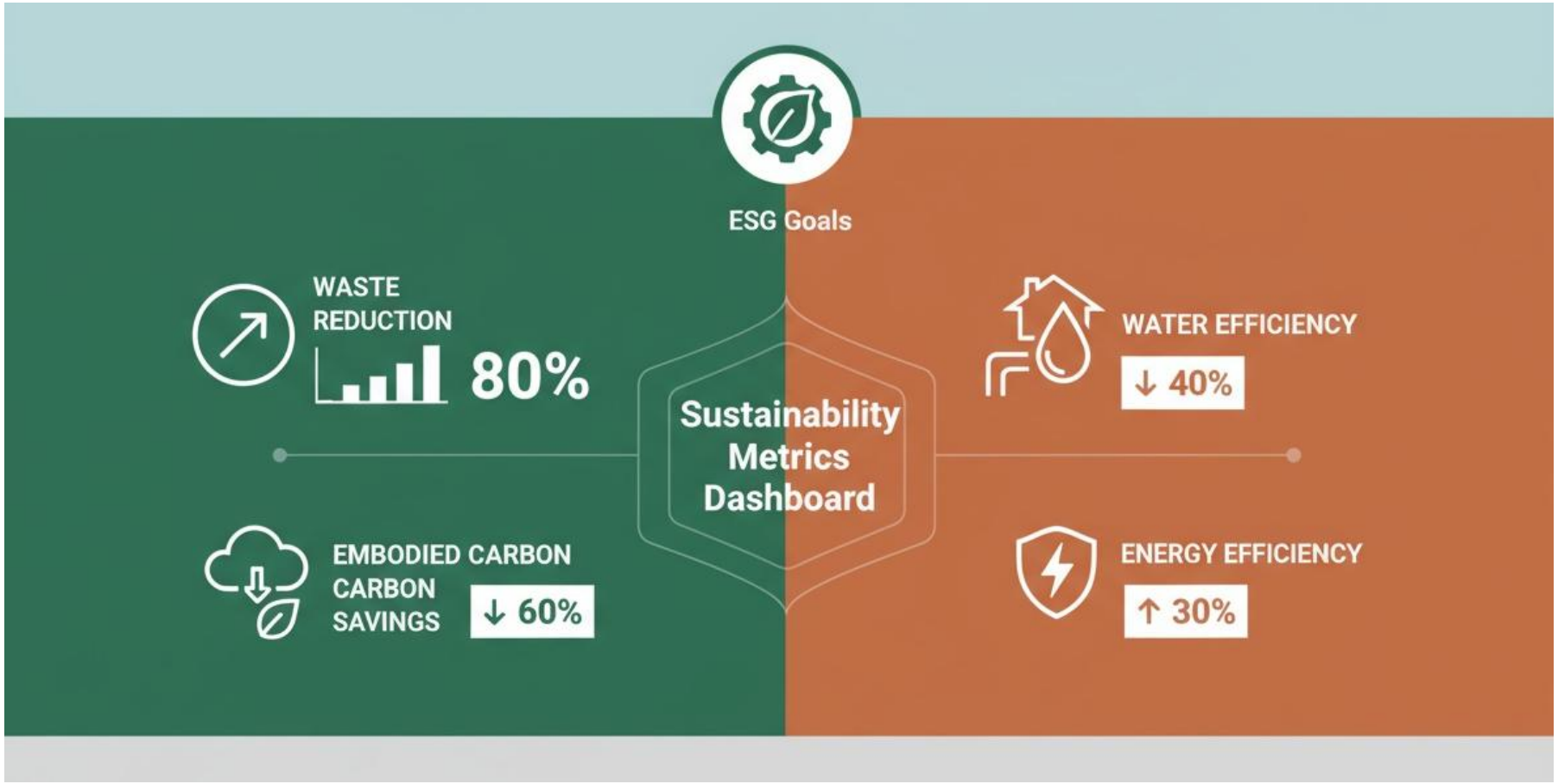
Sustainability Imperatives

…Up to 80% Less Waste

…Reduced Embodied Carbon

…Lower Water and Energy Consumption



Modular Dramatically Reduces Waste, Water Use, and Embodied Carbon

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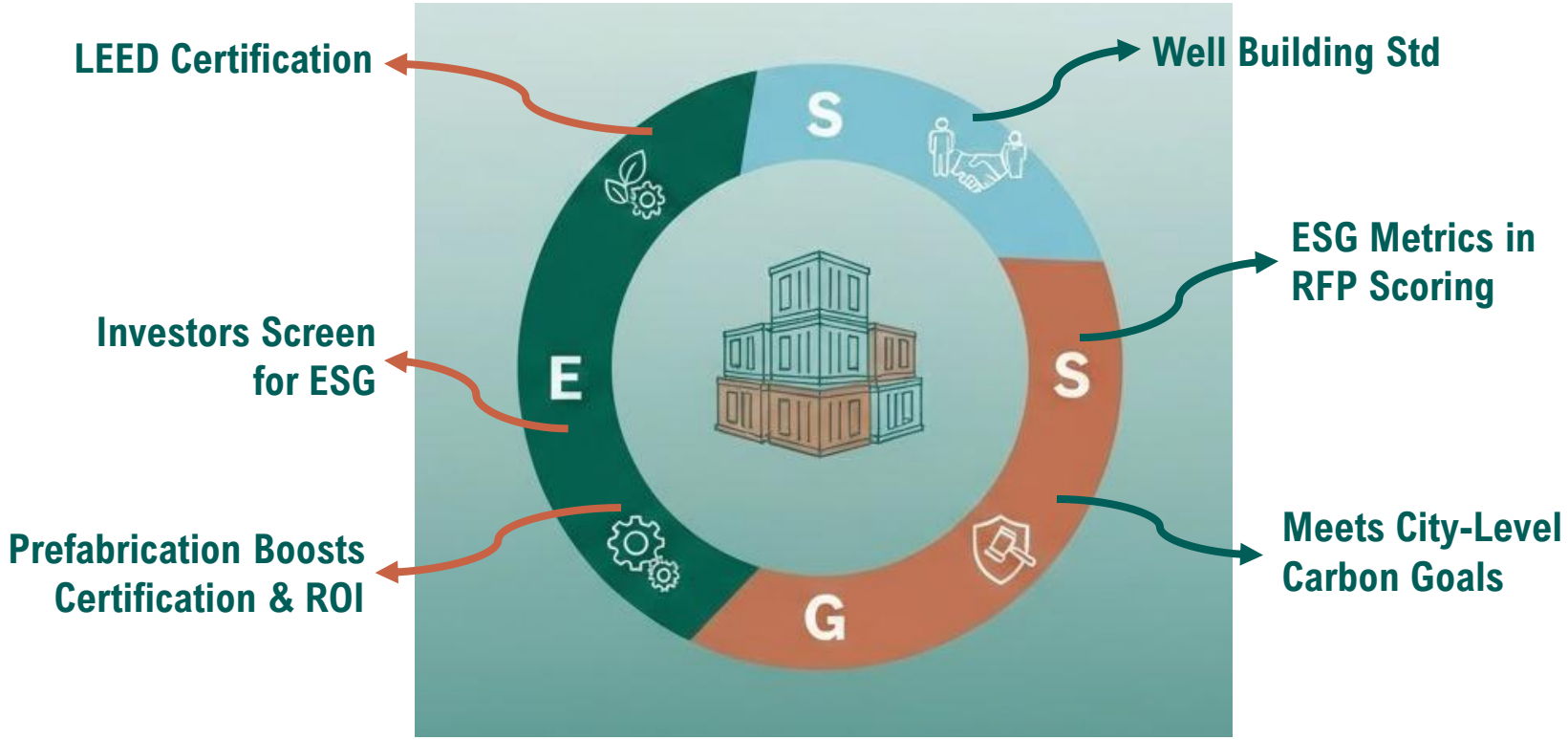
Aligning with ESG & Policy Goals

…Modular Supports LEED, WELL, and Carbon Targets

…ESG Performance is Now a Competitive Differentiator

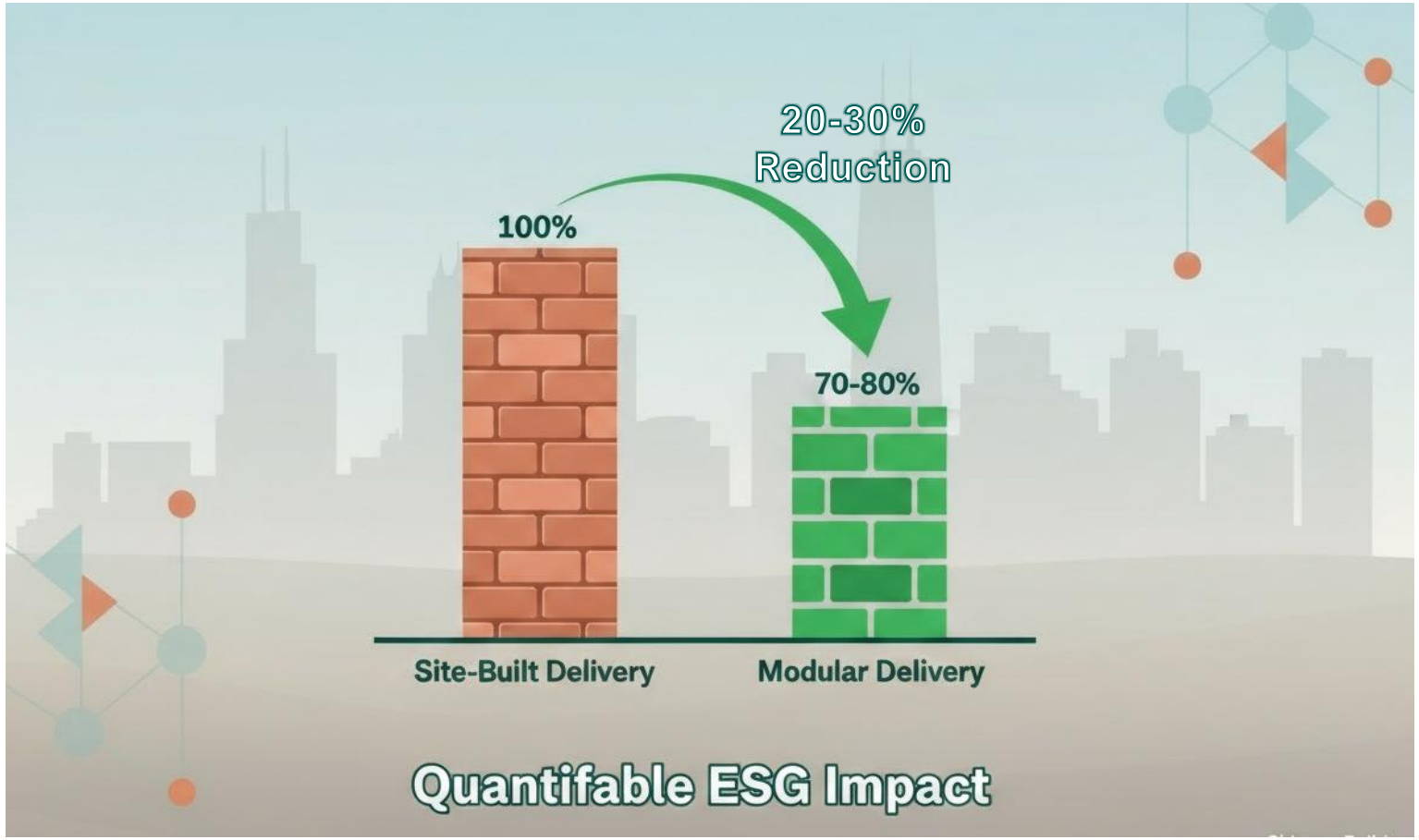


Modular/Prefab Supports ESG Goals and Strengthens RFP Competitiveness

Lowering Embodied Carbon

…Modular Construction Reduces Embodied Carbon Across the Project Lifecycle

…Lower Emissions → Higher Long-Term Asset Value



Lower Carbon Builds are Future-Proofed and More Valuable

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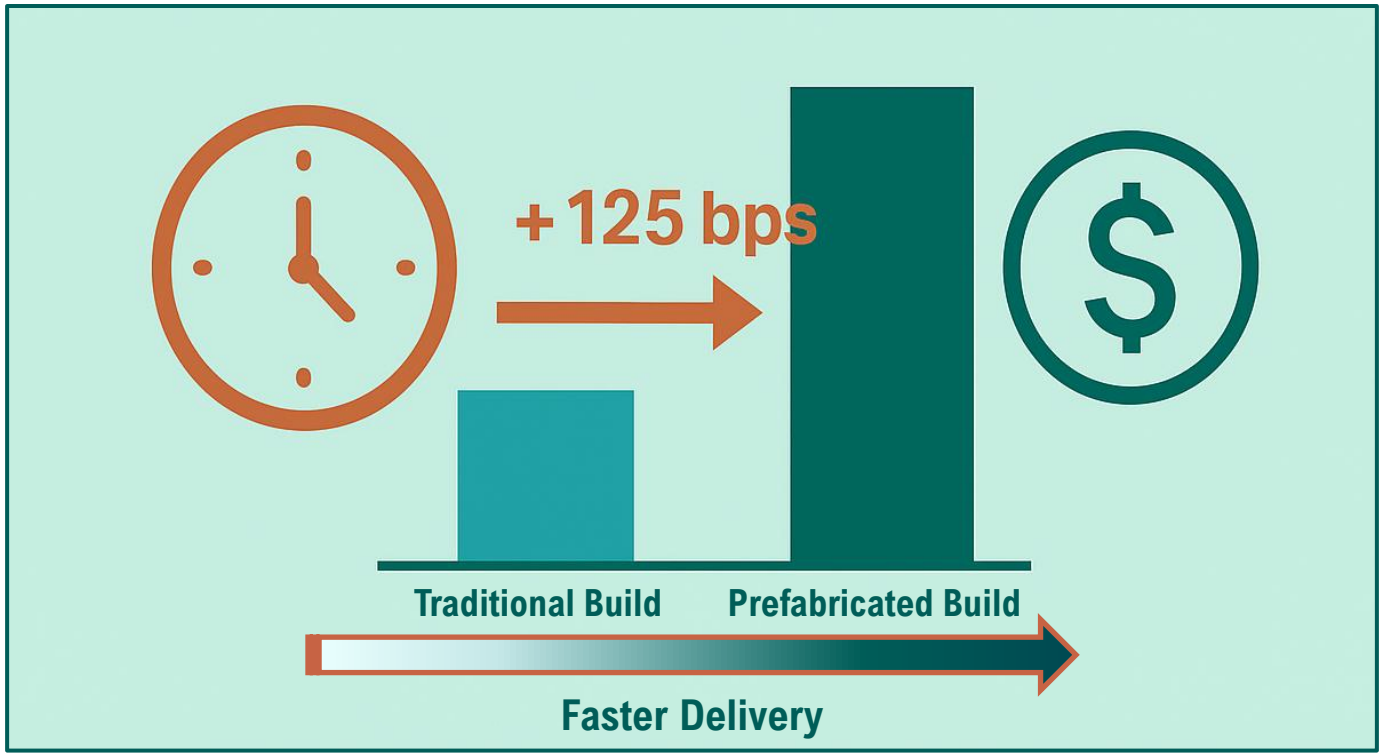
Financial Advantage

…Faster Time-to-Revenue → Boost IRR Gains

…Greater Cost Certainty and Predictability



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IRR Improves Through Faster Delivery and Cost Certainty

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Cost Predictability & Risk Reduction

…Factory Production → Controlled Pricing, Reduces Volatility, and Risks

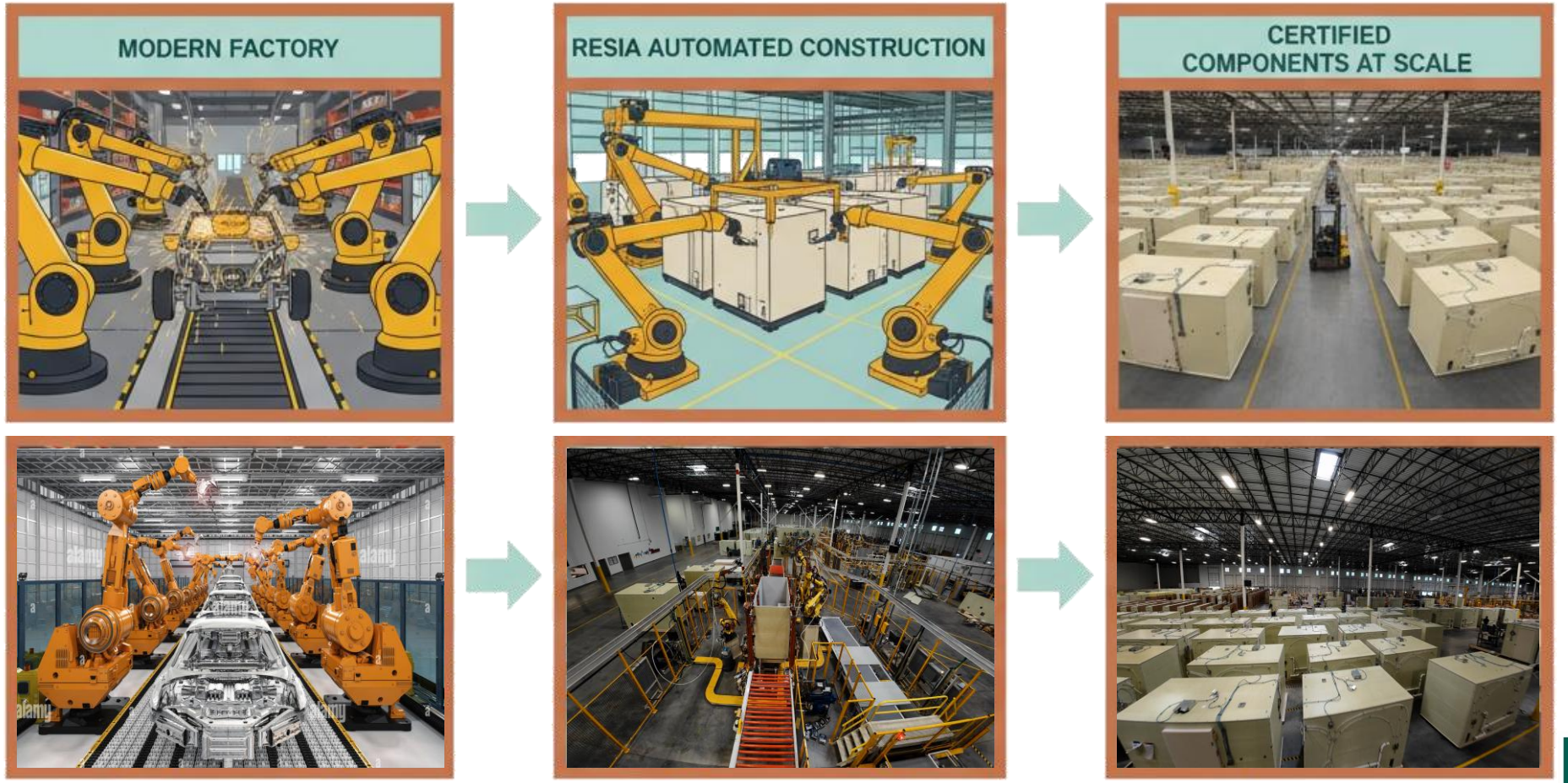
…Ensuring Greater Schedule Certainty, Less Exposure to Labor, Supply Chain, & Weather Risks

Factory Production Locks in Pricing and Reduces Volatility

Scalability & Standardization *Components as a Platform, Not a Product*

…Standardized Component Platforms Scale Across Portfolios

…Repeatable Processes → Faster Rollout + Lower Costs



Standardization Enables Portfolio-Level Scale and Savings

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Feedback Loop *Future Optimization Insight*

…Developers & Investors → Faster NOI, More Predictable Returns, Income Generation
…Lenders → Debt Service Coverage
…GCs → Project Acceleration Completion

Progressive Coordination & Continuous Improvement (Insight for Future Optimization)

All Stakeholders Benefit From Certainty and Faster Returns

Future Outlook *Digital Twins & Smart Cities*

…Real-Time Performance Tracking and Predictive Maintenance

…Modular as Infrastructure for Connected, Intelligent Cities

Digital Twins + Modular Create the Backbone for Smart Cities

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Call to Action Roadmap

Engage • Visit • Explore

Let's Build Smarter Together

- **Start:** Pilot Bathroom & Kitchen Components on One Project
- **Scale:** Align Design and Procurement
- **Standardize:** Build Repeatable Delivery Model(s)

- **Resia General Contact & Factory Tour**
  Contact Us To Learn How Resia Can Support Your Next Multifamily, Hospitality, Or Institutional Project With High-Efficiency Modular Solutions

- **Request a Quote or Begin Your 30-Day Design Development Evaluation**
  Whether you're interested in visiting our state-of-the-art facility, evaluating modular bathroom/kitchen components for your project, or requesting concept design and preliminary pricing, our team is ready to engage

Experience Resia

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Start Small, Scale Smart, and Standardize Workflows

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manufacturing

Future Proofing Construction

The future isn't a concept, it's an active decision

Contacts

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