

23RD ANNUAL



23RD LCI CONGRESS
OCTOBER 19-22

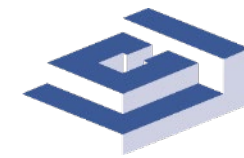
Productization & Industrialized Construction

Clark Pacific's Design-Manufacture-Build Model

Grant Guerrieri, Greg Otto, Crom Burgos

LEARN BY DOING FROM THOSE WHO DO

October 20, 2021



Health precautions to keep everyone as safe as possible at Congress:

- Wear masks at all times in indoor events.
- Complete your daily health screening on your phone and bring it with you when you enter the center each day.
- Practice social distancing to the extent possible. Seating at plenary sessions is structured to help with this.
- If you feel ill at any time, please leave the conference and return to your room/consult a physician as necessary.
- Ultimately, our collective health and safety at Congress is up to all of us. Thanks for your support!



Build different. Achieve more.

Our Mission

Through collaborative design, advanced manufacturing and efficient construction, we transform the way buildings are delivered.



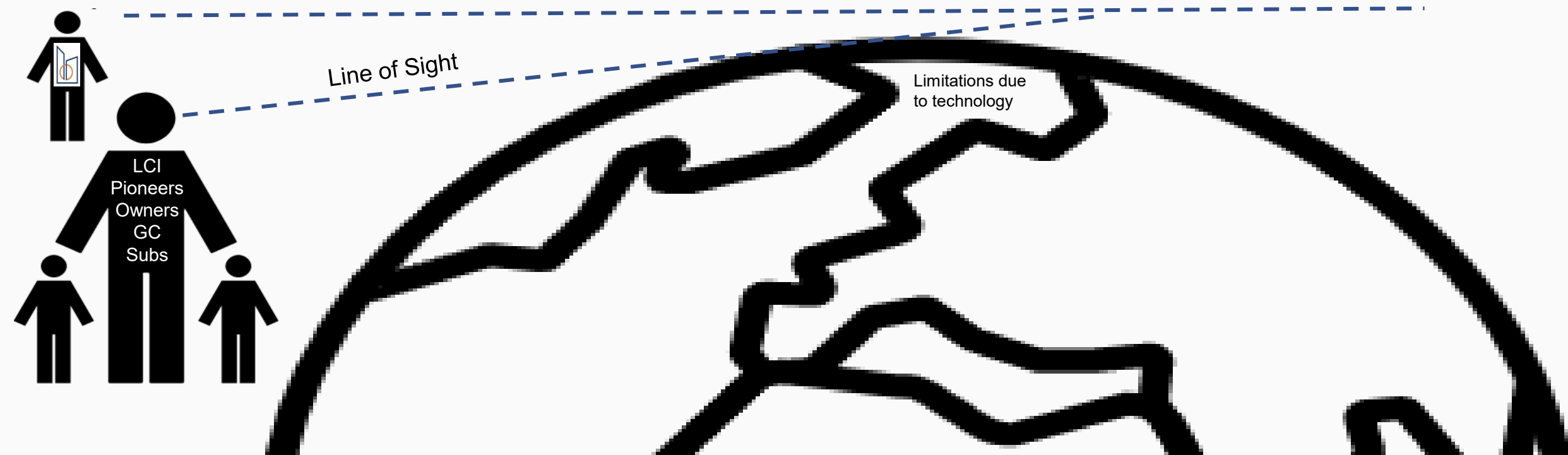
Presentation outline

- Why are we here?
- What is the problem we are trying to solve?
- Countermeasure(s)
- Why is the countermeasure(s) lean?
- What is the next experiment?
- Take away and learning

Why are we here

“If I have seen further, it is by standing on the shoulders of Giants”

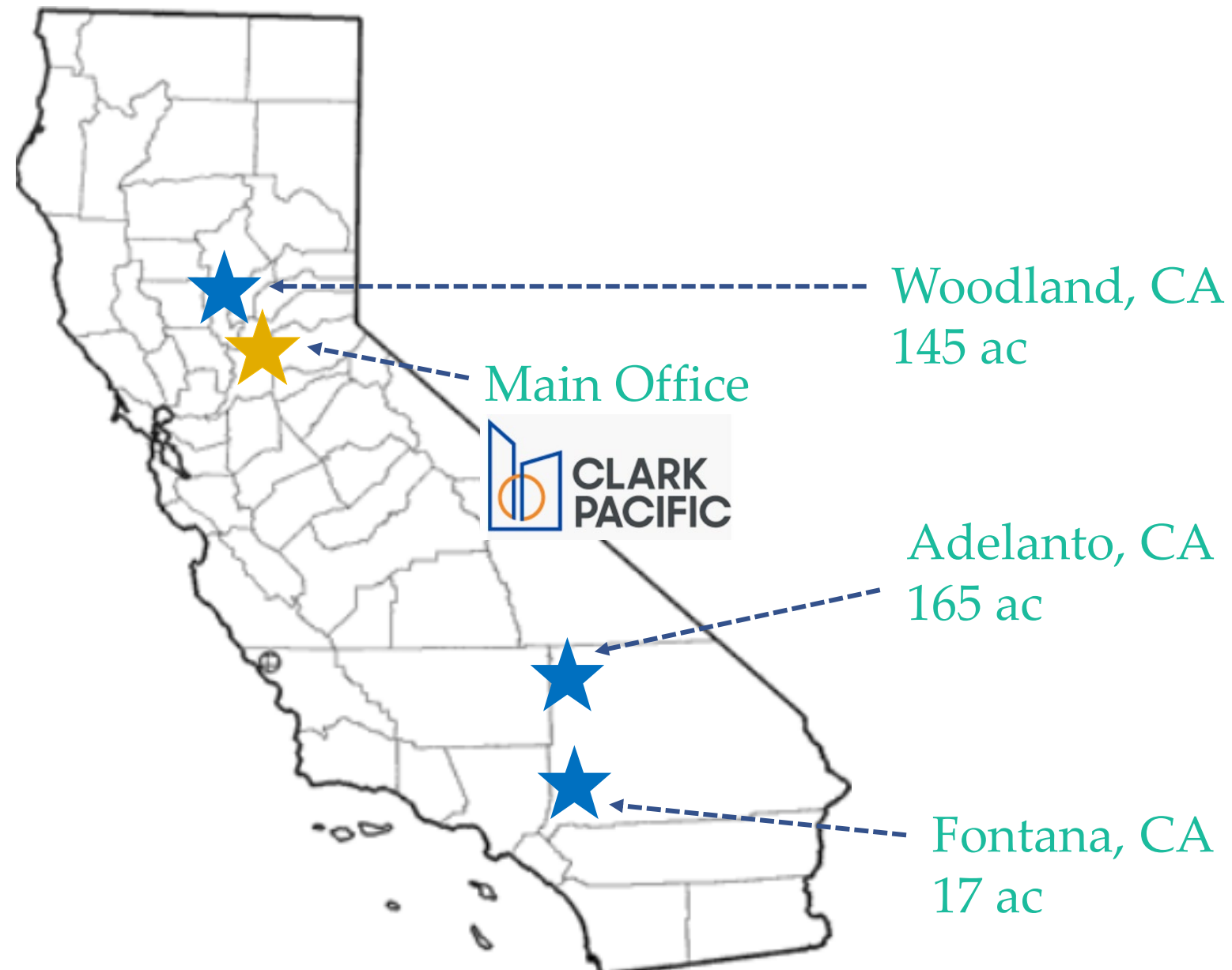
Sir Isaac Newton *circa 1675*



Manufacturing is Paramount to our Success



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“Having no problems is the
biggest problem of all”

Taiichi Ohno

WHAT IS THE PROBLEM WE ARE TRYING TO SOLVE?

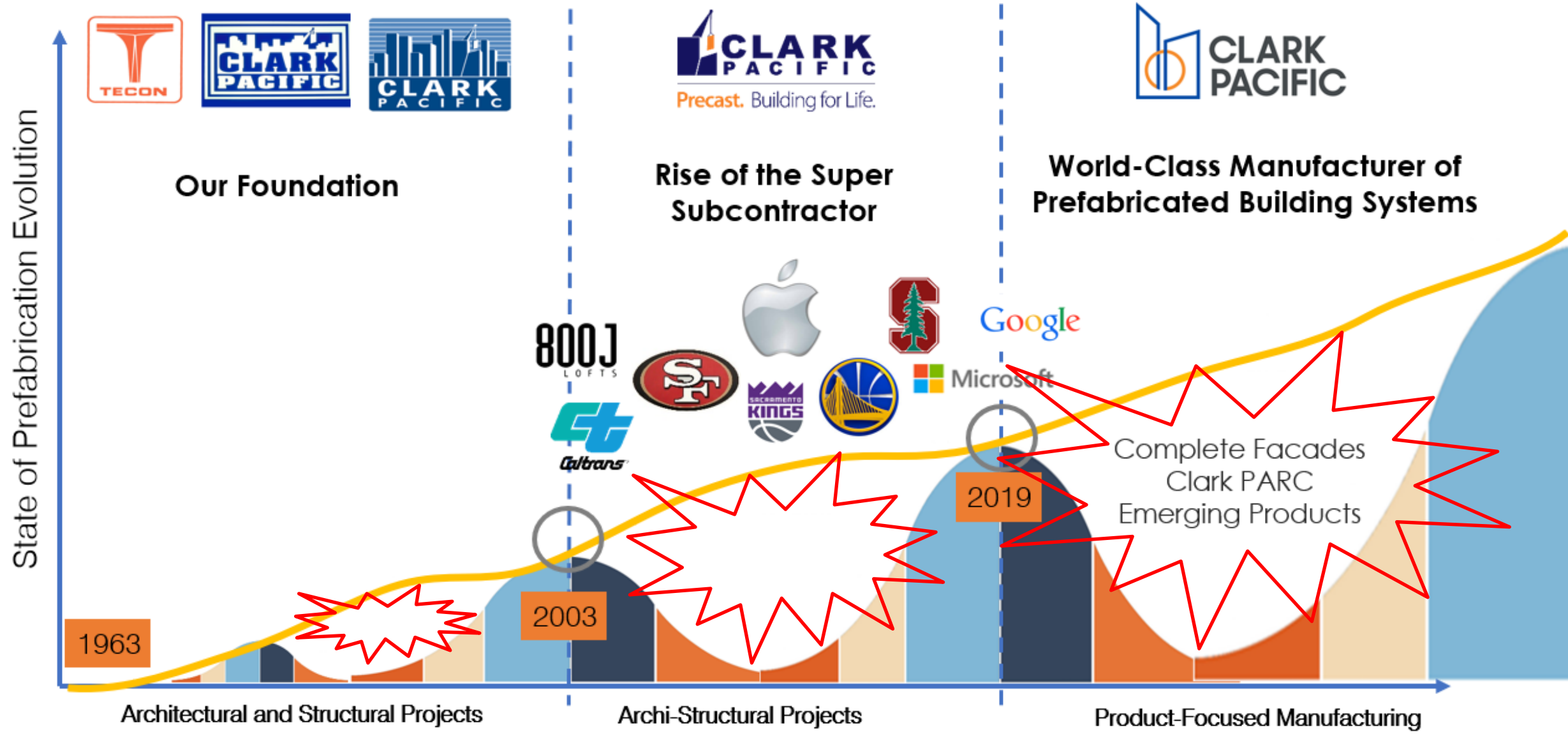
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With growth comes responsibility ...

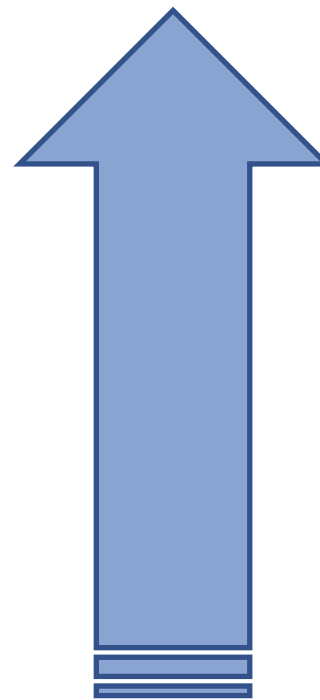
- 1. Business volatility.
- 2. Fake market share – false security.
- 3. Business sustainability. Social responsibility.



Problem 2: Lowering the water...has exposed the rocks

Transformation Journey

- Fragmentation produces silo'ed behavior
- Risk management supersedes larger project aspirations
- Missed opportunities to unlock significant value



- Product strategy focuses team on outcomes / market alignment
- Alignment supports vision, uniting project teams
- Productization enables industrialized construction

Where we are today

Key Elements to Transformation

1. Product Strategy

- A move to a product focus, allows us to focus on outcomes and most importantly, market alignment (what does the customer want?).

2. General Contractor with Design Manufacture Build Model

- The move to productization and general contracting heavily reliant upon manufactured scopes exposed the need to change our approach, organize our people differently, radically expand our knowledge base, upgrade our processes, and implement new technology.



“It's easier to act your way to a new way of thinking than to think your way to a new way of acting”

- John Shook

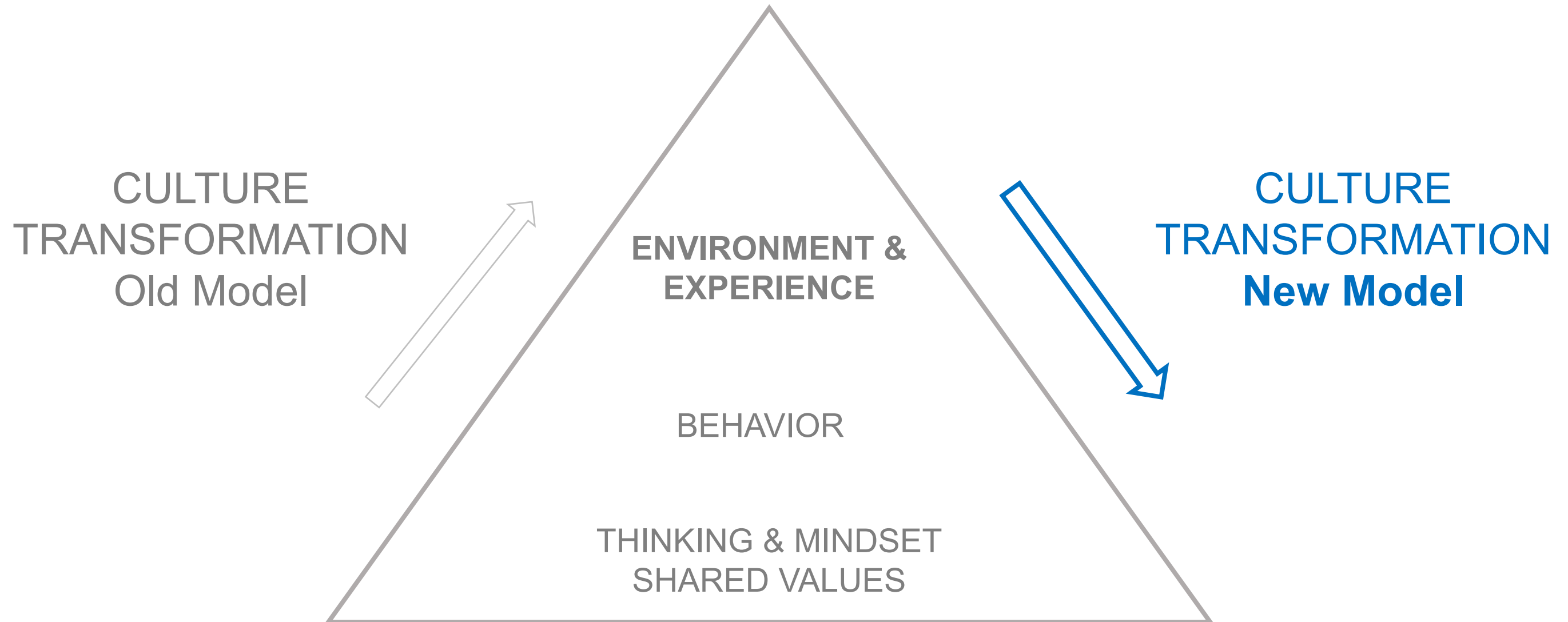
ORGANIZATIONAL STRUCTURE.

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Change practices to change thinking



"It's easier to act your way to a new way of thinking than to think your way to a new way of acting"

- John Shook

PROJECT-FOCUSED V. PRODUCT- FOCUSED

AS PREFAB BUSINESS GROWS, CLARK PACIFIC CHANGES FOCUS

"I believe the reason construction has lagged in adopting new technology is that each project is bespoke and most often with a new team. There hasn't been a standard platform that is used across the industry to share information from project to project or from team to team."

[illegible]

On the West Coast, prefab gains ground for speedier construction

Gensler has been working with component supplier Clark Pacific on several projects.

MODULAR BUILDING | FEBRUARY 16, 2020 | JOHN CALFIELD, SENIOR EDITOR



An exterior wall panel, manufactured by Clark Pacific, is positioned into place. Image: Clark Pacific

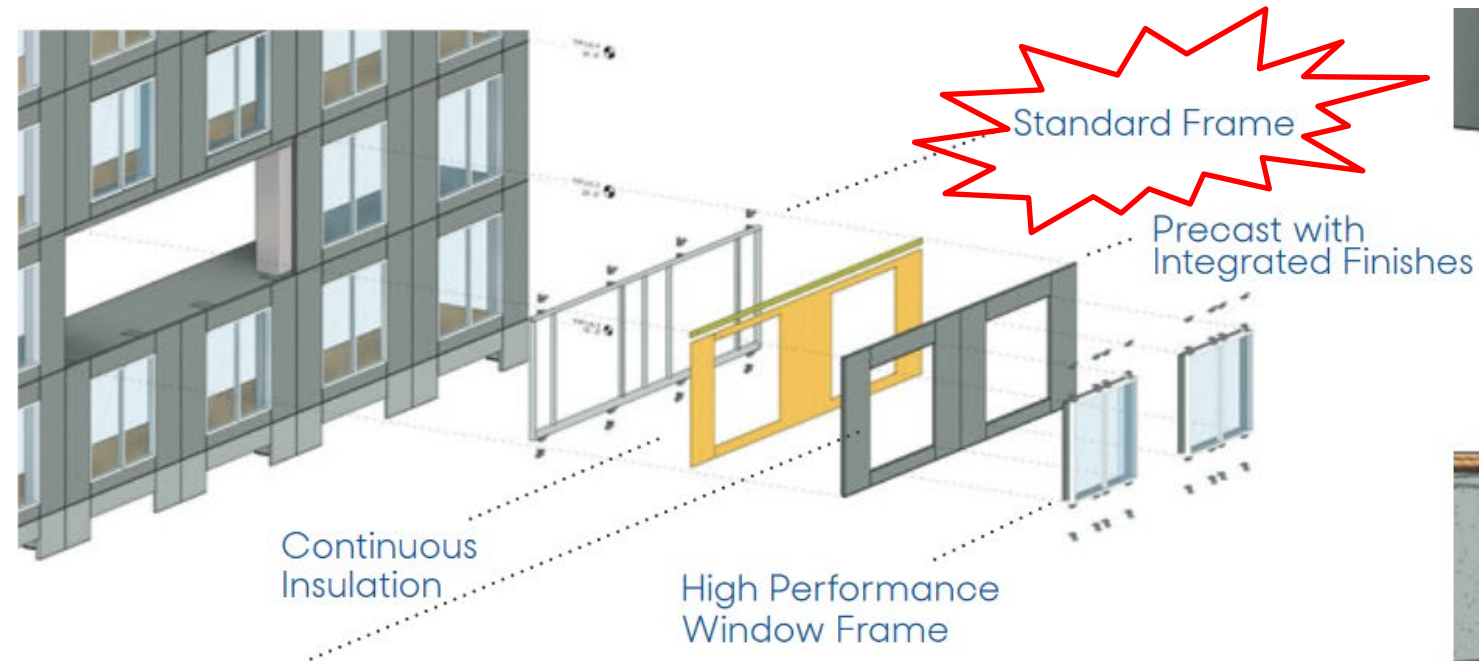


Product

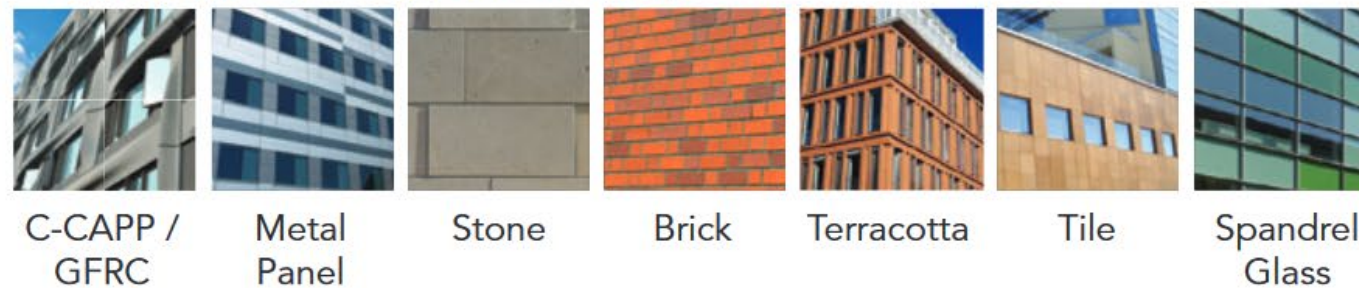
Projects

Platform Approach - Complete Façade System

- The market wants an integrated solution



Color, texture and material flexibility



Platform Approach - End to End Delivery

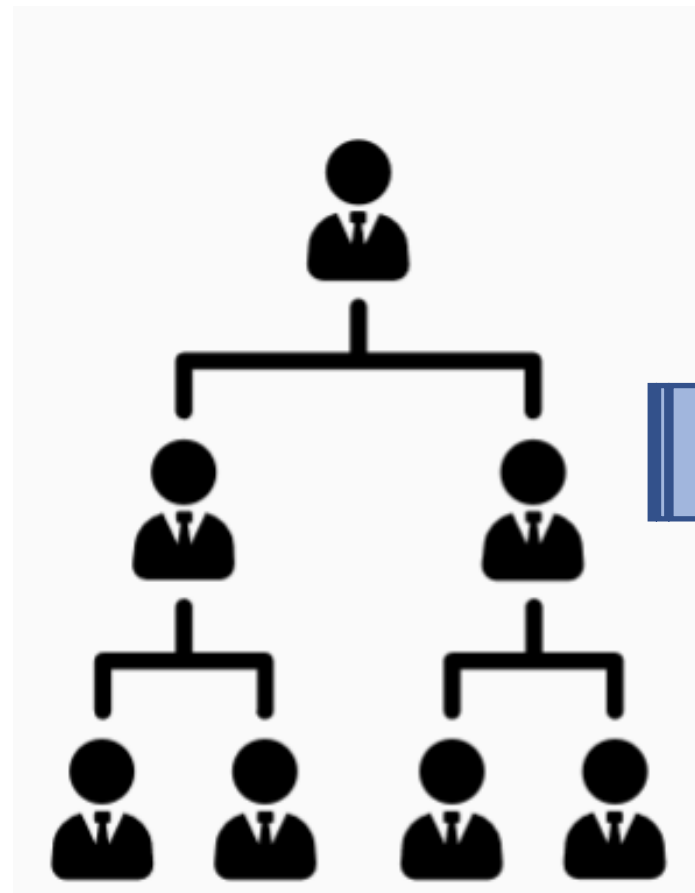
- The market wants reliability and predictability

Configurator Concept (rule based design) to Complete Delivery

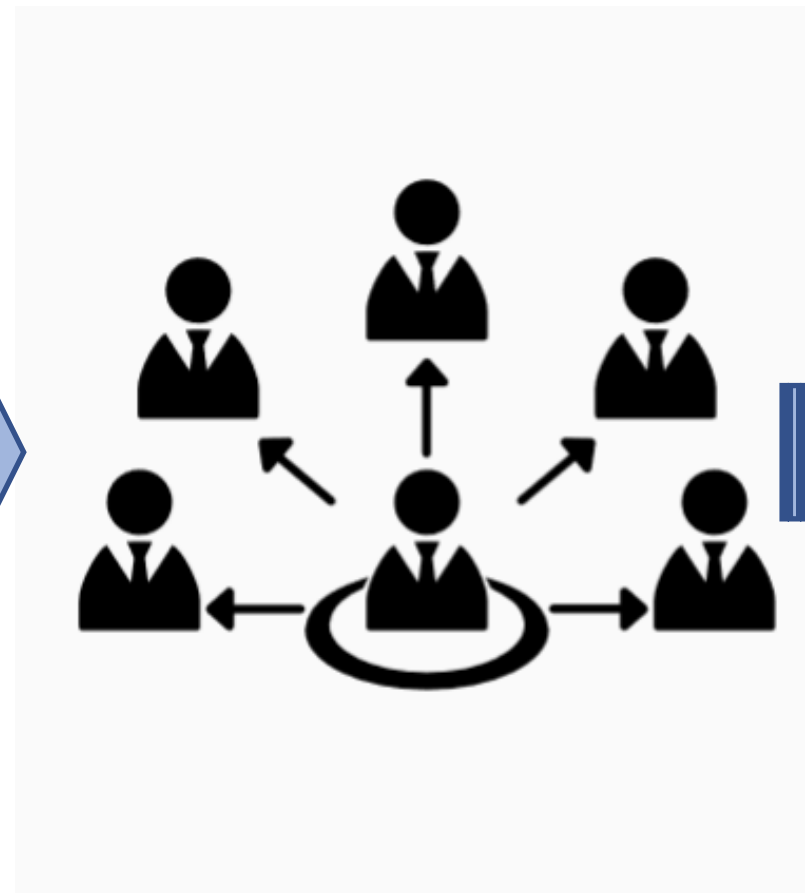


Process over departments

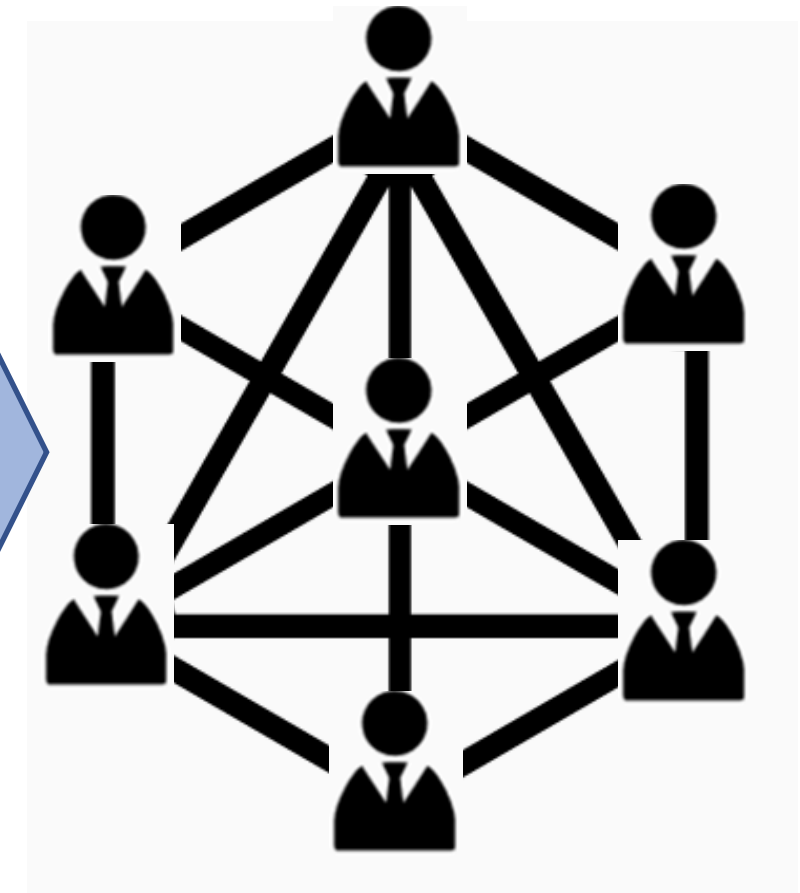
→ Product then Projects



Hierarchical Organization



Product Organization



Network of Teams

“If you are working on something exciting that you really care about, you don’t have to be pushed. The vision pulls you”

- Steve Jobs

DESIGN APPROACH.

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Align to the Vision



Vision is like gravity...in that it attracts (alignment)
and is relentless in doing so...

People will rally around purpose.

Cascade of Vision

Example

1. Create Transformational Student Housing
2. Reduce construction duration, campus impact
3. Maximize off site scope
4. Features:
 - Precast primary frame
 - In precast, radiant (PEX) slab
 - Multi-disciplinary rack and plank corridor assembly
 - Volumetric Pods at high intensity scope areas
 - Panelized, wired wall and ceiling assemblies
 - Optimized erection sequence to maximize flow

Looking for Value Add Solutions



Product Vision

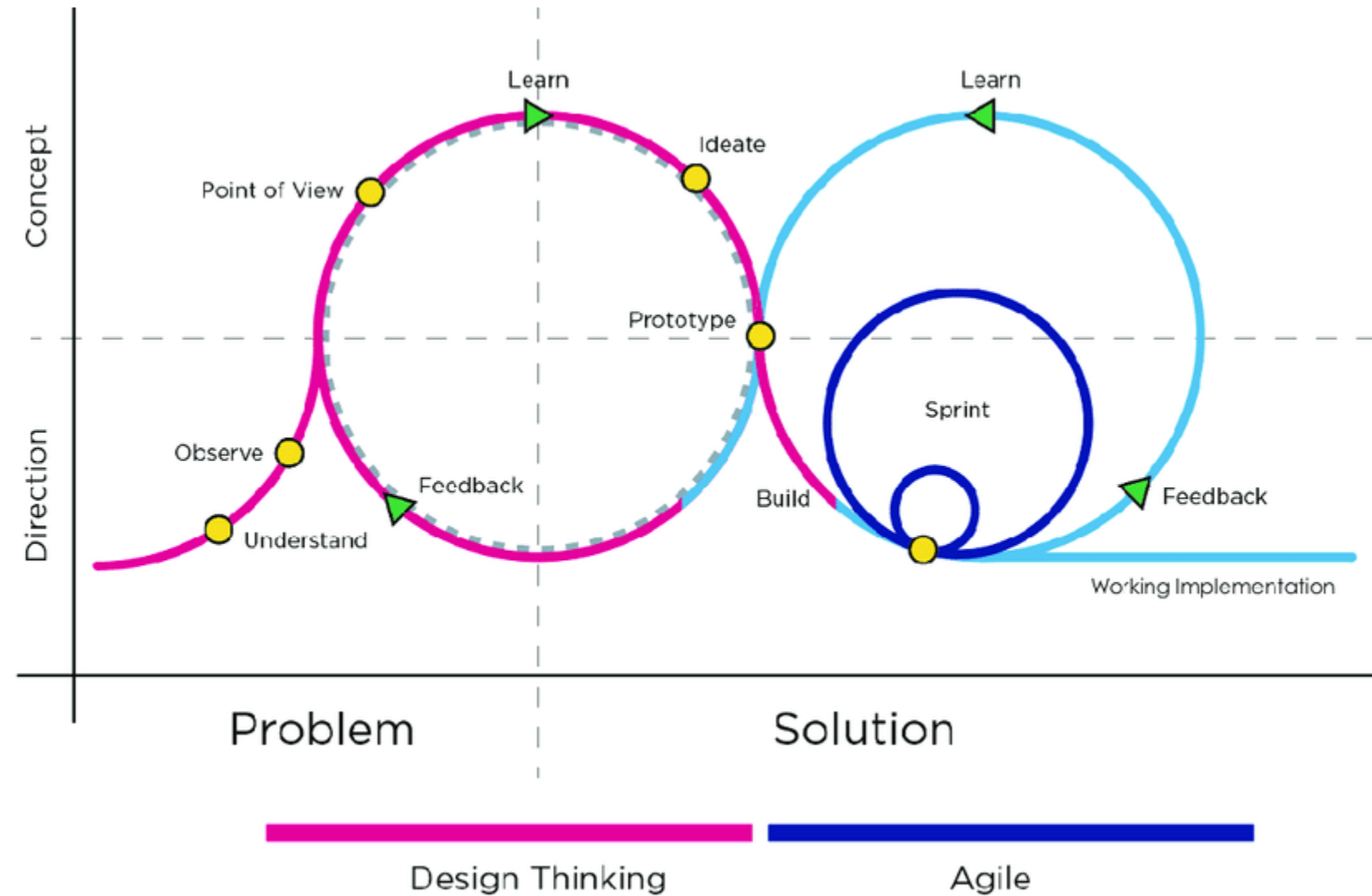
Objective(s) – The “how?”

Design Issue

Product Feature(s)



Customer Centric: Design Thinking



Empathize
Define
Ideate

Prototype
Test
Implement

Understand

Explore

Materialize

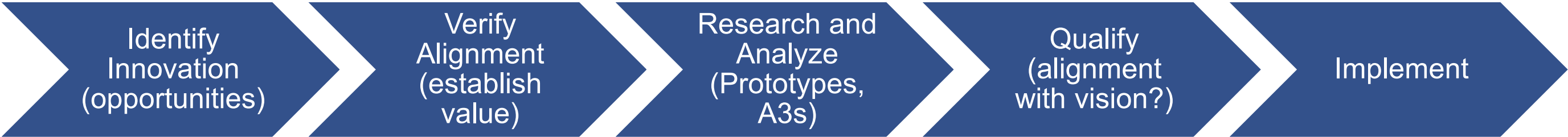
“It’s not ‘us versus them’ or even ‘us on behalf of them.’ For a design thinker it has to be ‘us with them’”

– Tim Brown, CEO and President of IDEO



Diverge, Emerge, Converge

DIVERGE						EMERGE																			CONVERGE										
ASSIGN						RESEARCH & ANALYZE																			DECIDE										
Item #	PEOPLE				PHASE	Innovations Alternatives	EFFORT		CONSTRAINTS			POTENTIAL BENEFITS										Possible Impact to: COORDINATE WITH:													
	Resp. Functional Team	Suggested By (Company)	Suggested By (Person)	Product Owner A3 Champion	CATEGORY: Design Phase		Degree of Difficulty	AHJ	DESIGN FIT	CONSTRUCTION & FACILITY OPERATIONAL NEEDS					CONSTRUCTION METRICS					Likelihood of Implementation															
							Technical difficulty to develop the product:	Likelihood of Approval	Been done before	Desirability	Viability	Affordability	First Cost	Life Cycle Cost	Sustainability	Operational Flow	Student Life	Employee Safety	Community	Safety	Schedule	Quality	Production	People	Likelihood of Implementation	Site	Structure	Enclosure	MEPF	Modular Pods	Interiors	Equipment			
							Team knowledge, skills, experience, and desired performance																												
1	09 Prod'n	CP	LO	MM	03 LOD 350	Kit all trades prior to loading deck. Pre-pack at nearby facility. Load decks with kits in sequence of work. Work to be planned in week intervals. (Start with the organization and framework / need)		Yes	Yes	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	43		X	X	X	X	X	X			
2	02 Struct	CP	LO	MM	02 LOD 250	Replan gallery MEP/FP. Supply from both ends of gallery, reducing duct size to achieve 8'-6" clear floor to ceiling height. Prefab multi-discipline assembly of precast plus MEP/FP as single 40' unit. Rack MEP/FP, cast into precast.		Yes	No	3	3	3	3	3	3	3	3	3	3	3	3	3	3	45		X		X	X	X					
3	08 Prefab	CP	GG	GG	01 LOD 150	Re-engineer double wall to create 1/2" additional tolerance.		Yes	Yes	1	2	2	2	1	3	2	2	2	2	2	3	3	3	2	32										
									</																										



“All we are doing is looking at the timeline, from the moment the customer gives us an order to the point when we collect the cash. And we are reducing the timeline by reducing the non-value adding wastes..”

—Taiichi Ohno



Pull from demand

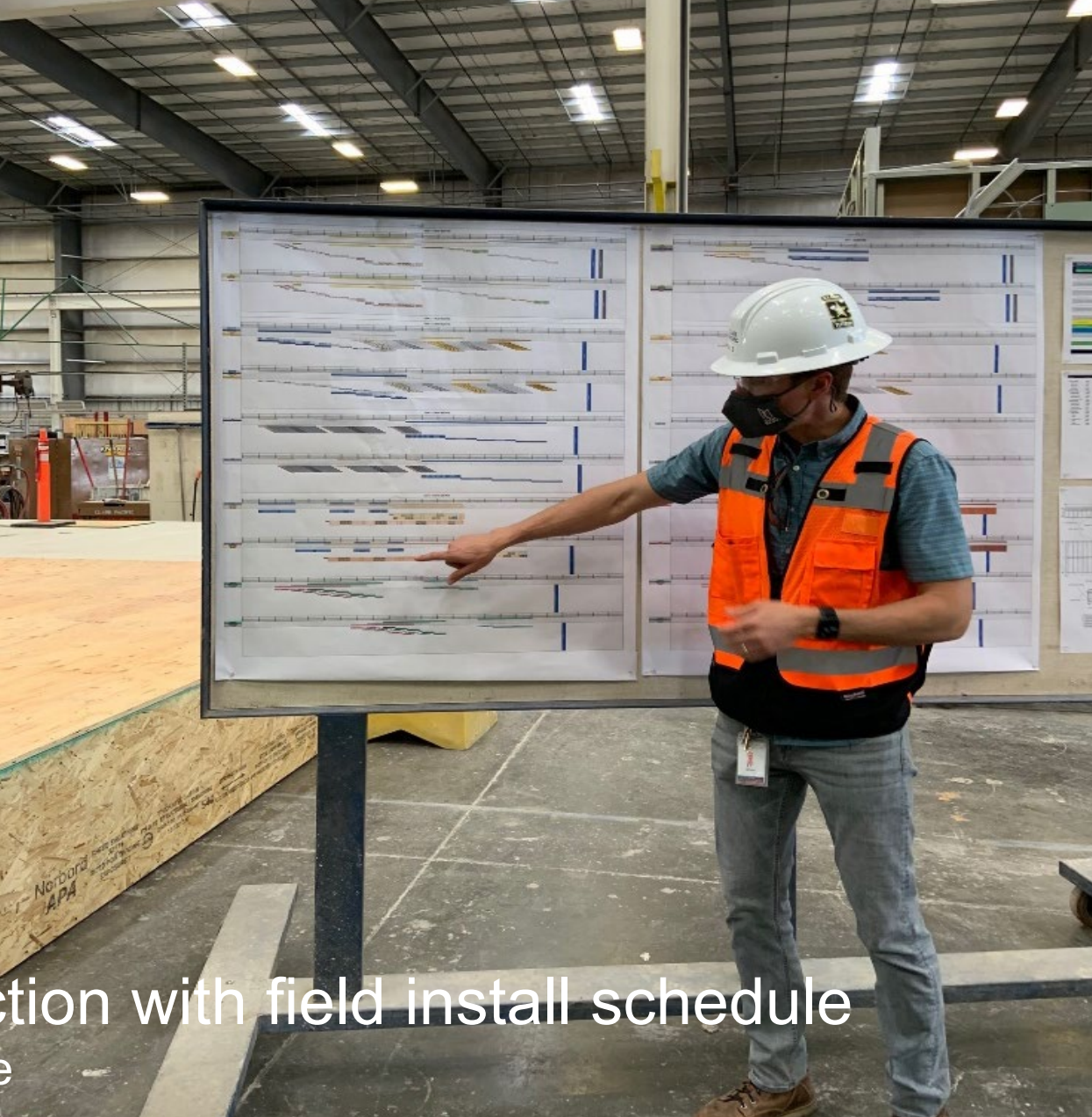
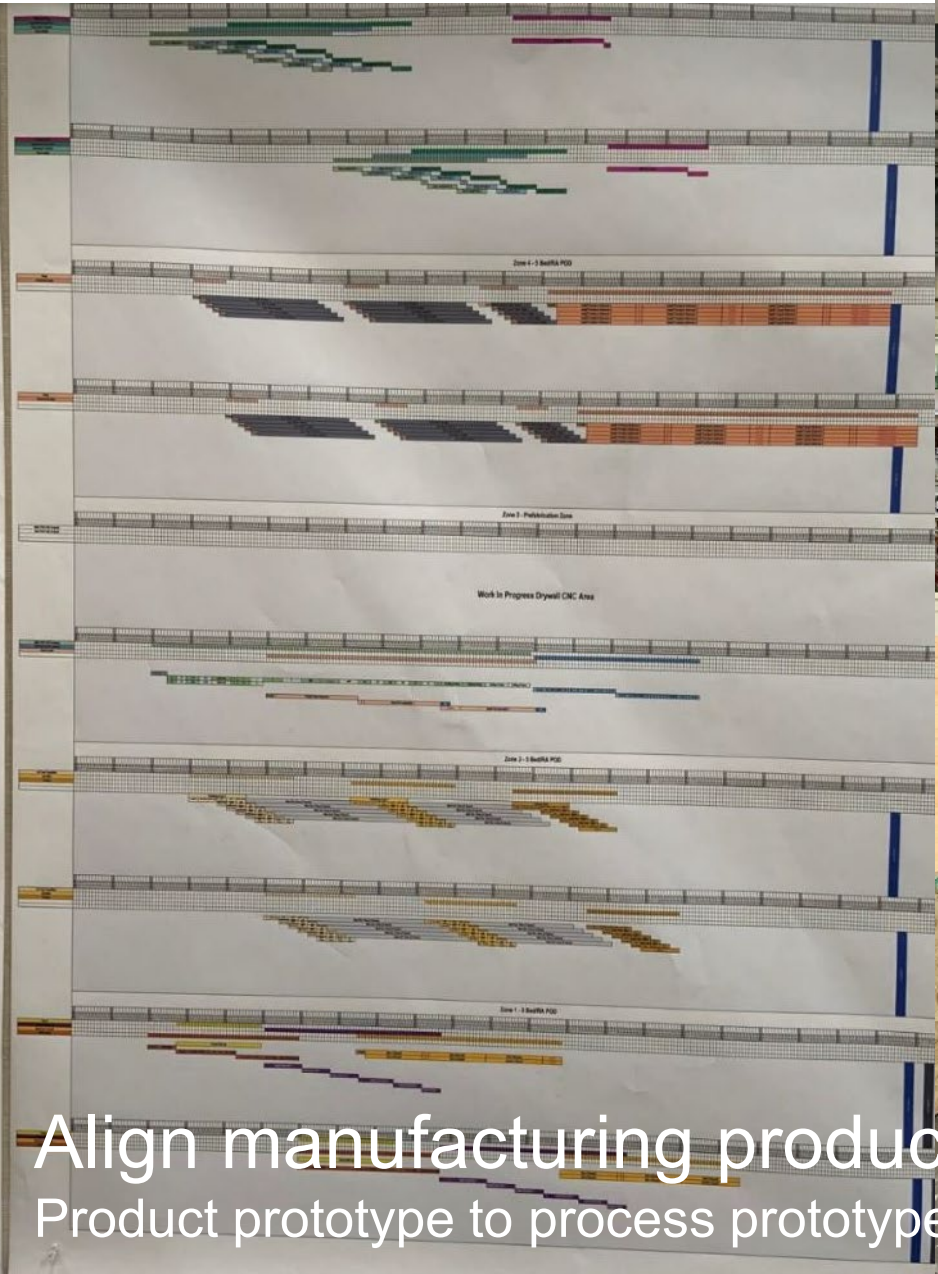
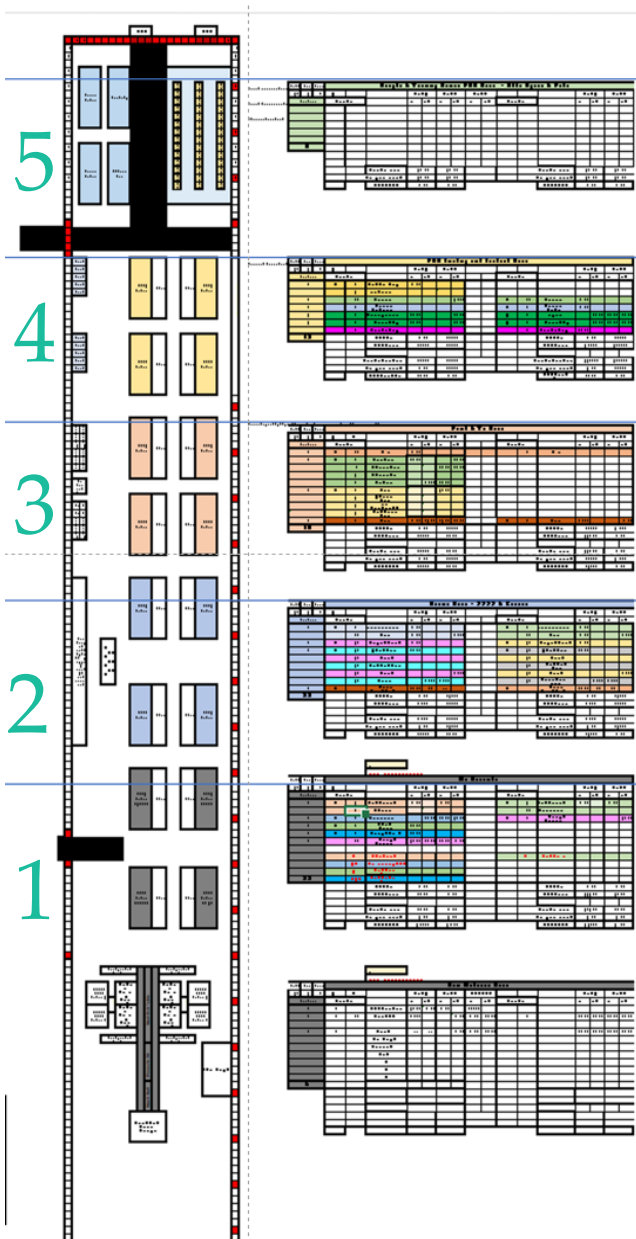
Zone 5

Zone 4

Zone 3

Zone 2

Zone 1



Align manufacturing production with field install schedule

Product prototype to process prototype

Proof Point: Designing for flow



“It is not necessary to change. Survival is not mandatory.”

- W. Edwards Deming

WHAT ABOUT OUR SOLUTION MADE IT LEAN?

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Organizational Resiliency

Continuous Improvement: Evolve people, process, tools with the **market and product**.

Munger – Gen 0



Prefab exterior

Comstock –
Gen 1



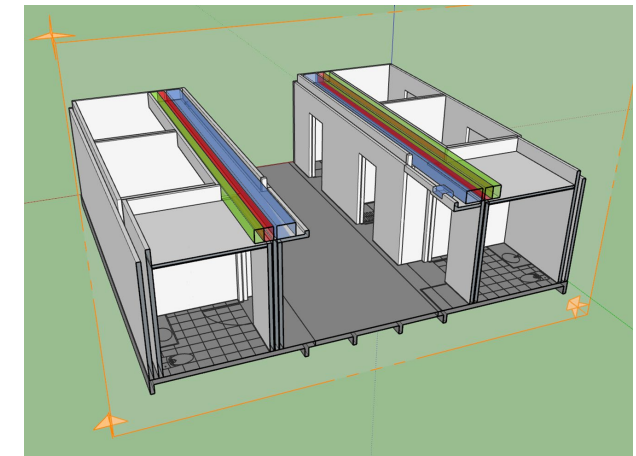
+ Prefab Structure

Escondido Village
– Gen 2



- + Integrated BIM
- + Integrated Glazing
- + Kitting

Confidential - Gen 3

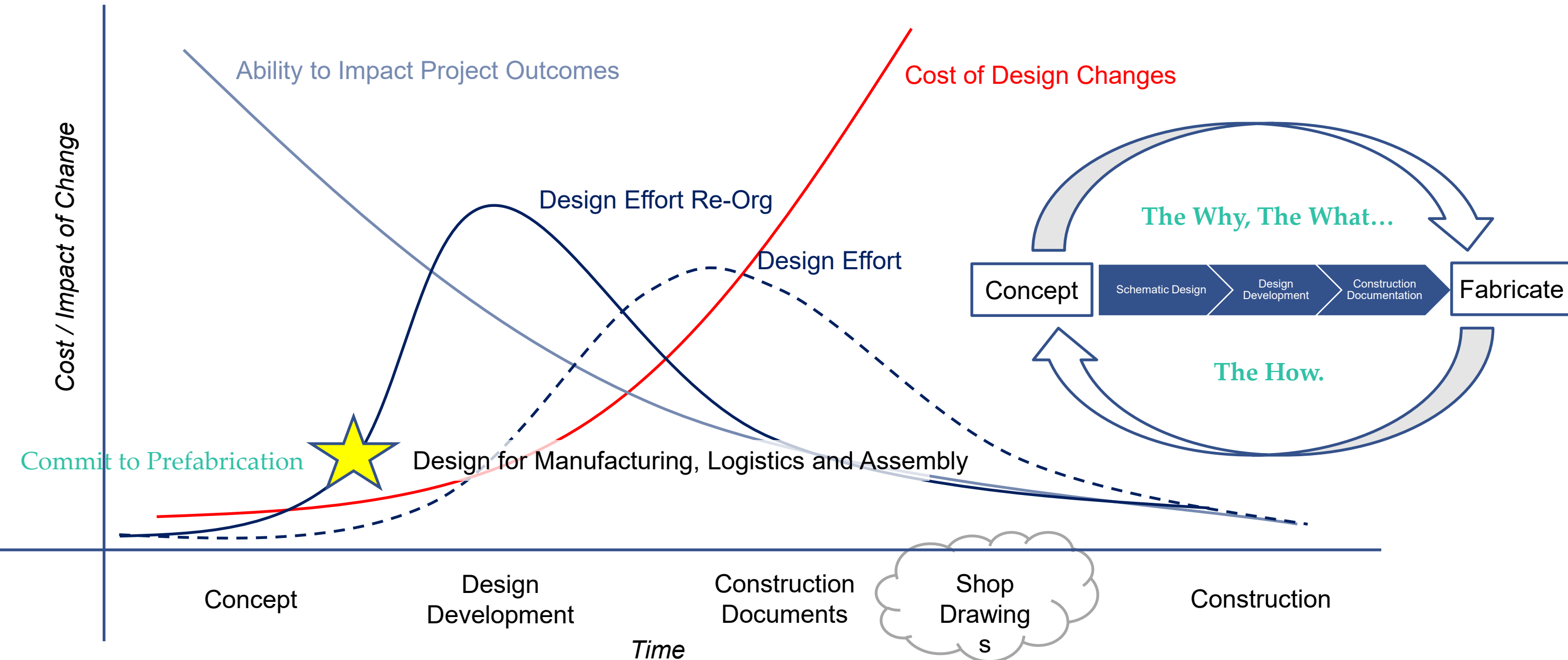


- + Volumetric Modules
- + Expanded Integrated BIM
- + Incentivized Trade Contractor Engagement in Prefab

Organize differently to accelerate decision making



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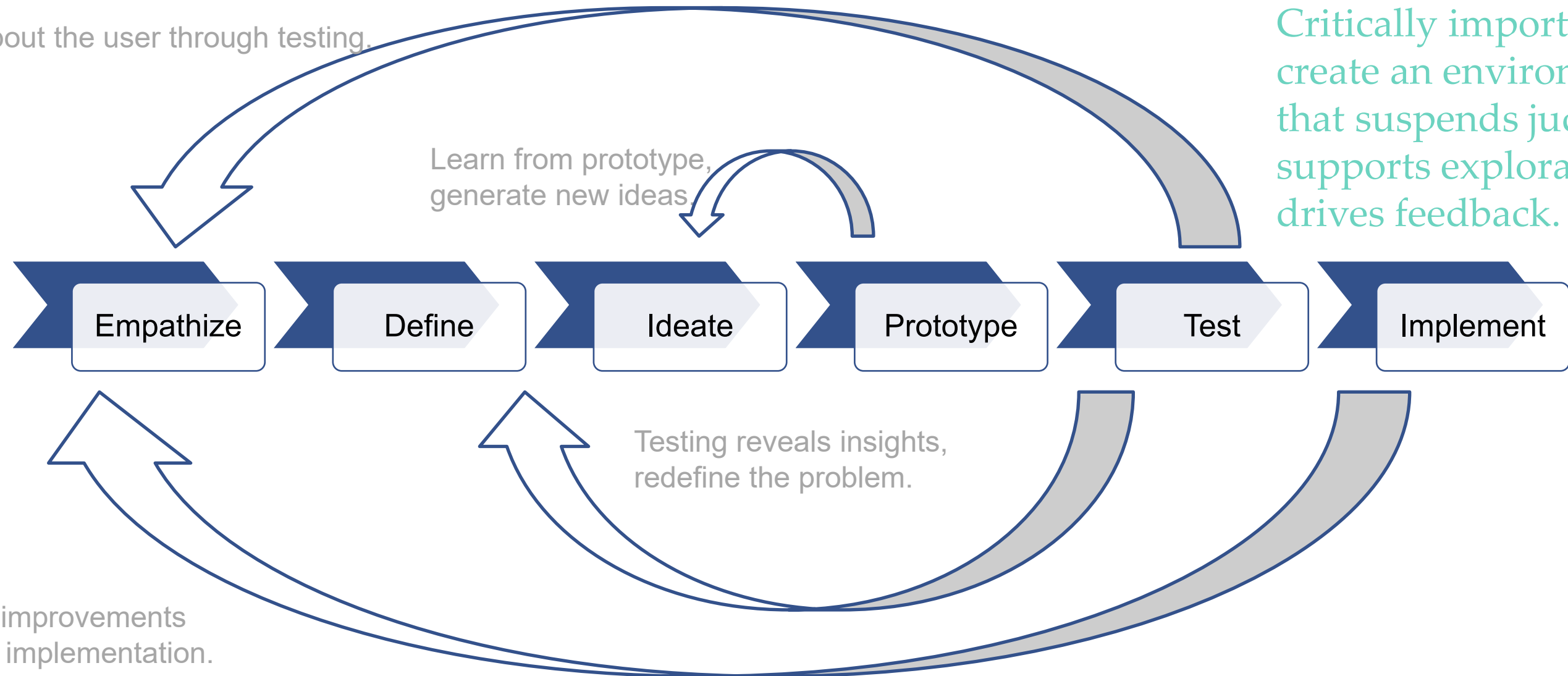
Problem solving drives learning

It is OK to be critical and reflective when motivated by continuous improvement!

Learn about the user through testing.

Learn from prototype,
generate new ideas.

Critically important to
create an environment
that suspends judgement,
supports exploration, and
drives feedback.



**“The only real mistake is the one from
which we learn nothing.”**

- Henry Ford

NEXT EXPERIMENT(S).

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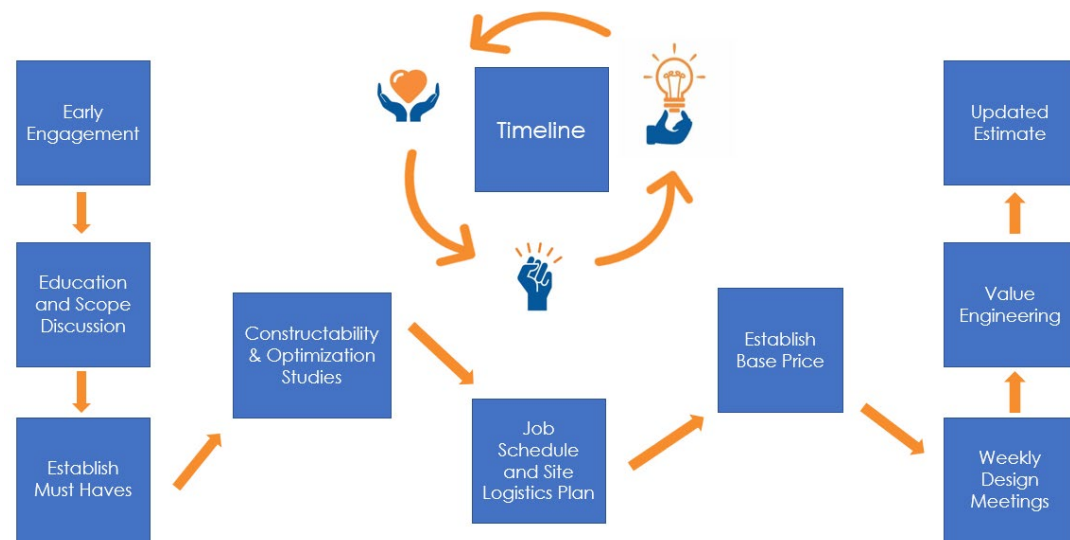


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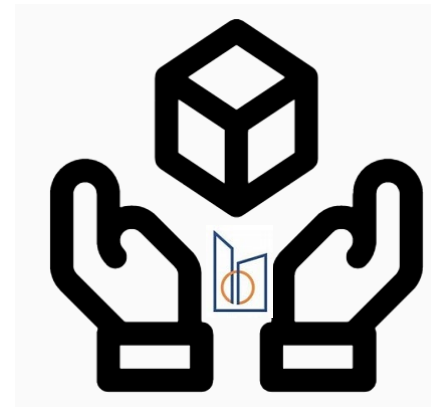
A better way of managing value

Target Value Delivery

- Early involvement of project stakeholders
- Target Cost - Projects
- Design w/ Project Life Cycle in mind
- Cross functional / Design collaboration
- Lean Design / A3 / CBA / LPS



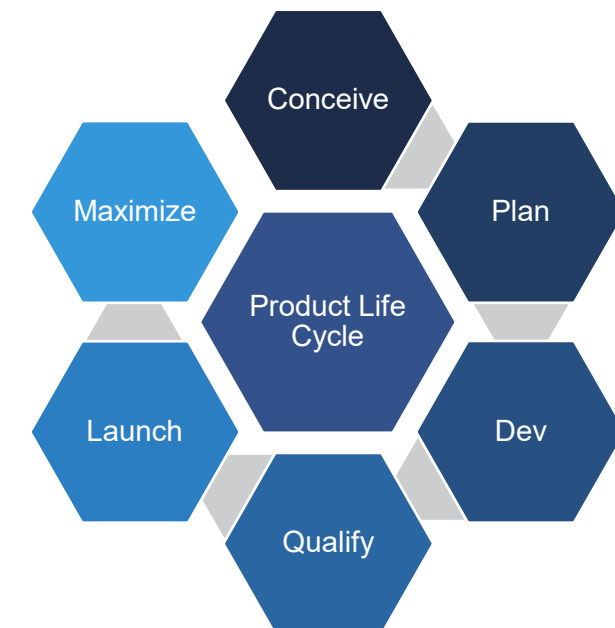
+



Philosophy
Process
Practices

Productization

- Identify the market need – solve a common problem
- Target Cost - Market
- Manage the Product Life Cycle
- PM/PO & Integrate the entire domain (own vision)
- Agile Mindset / Agile Framework / MVP



Creating a Product and Process Development System

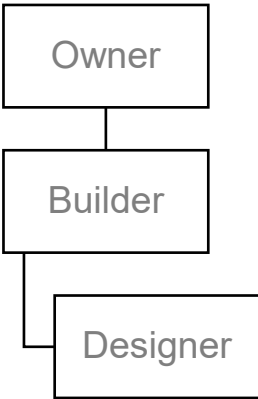
Incentivize partners on a non-IFOA owner contract

Conventional
Delivery

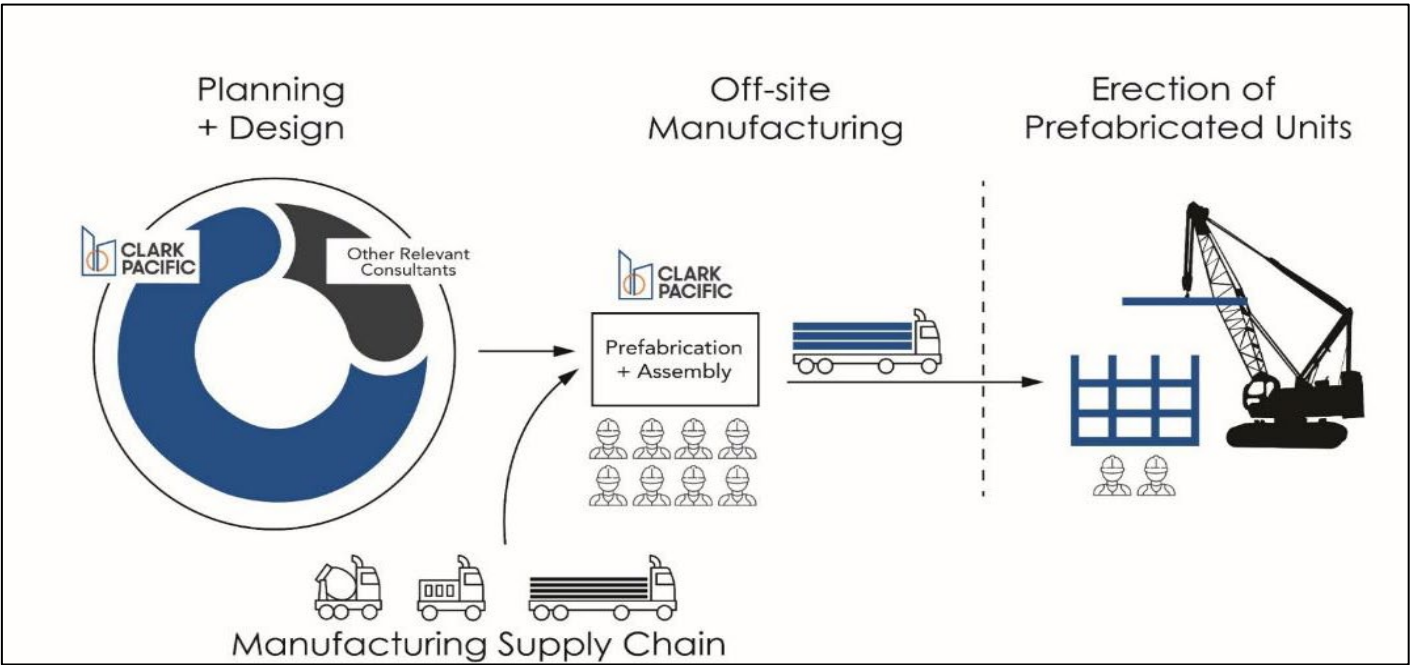
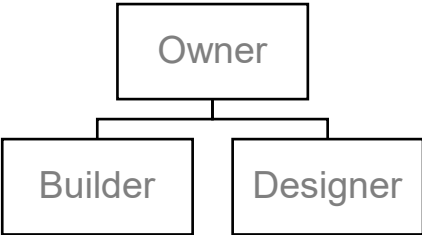
➡ Design-Manufacture-Build Model ➡

Enhance
Partnerships /
Incentivize

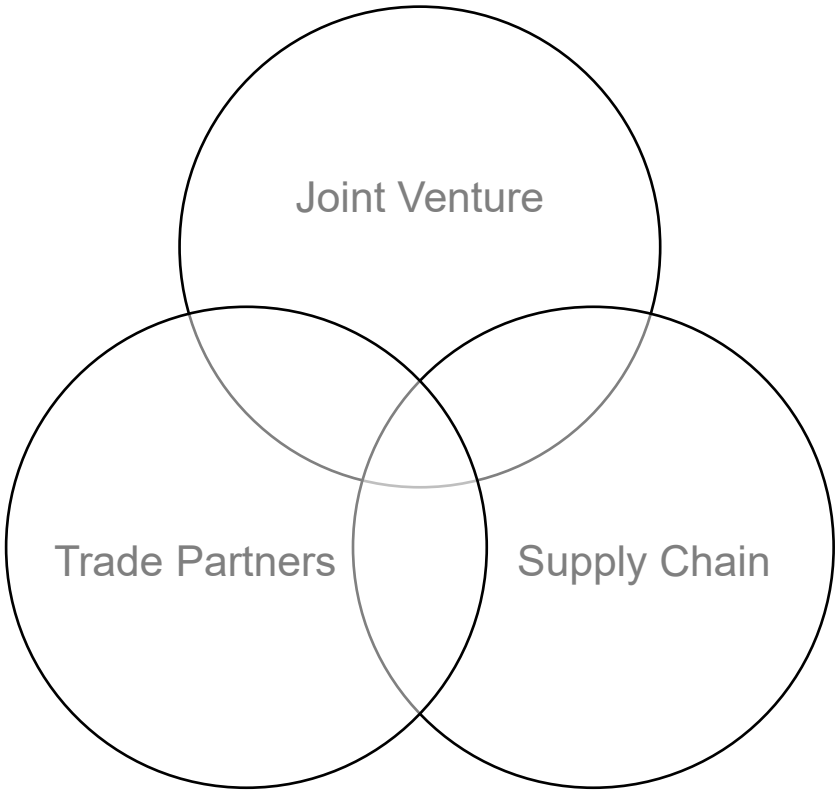
Design/Build



CM@R



Medium to integrate the domain



Unlock value of premanufacturing

Identify new opportunities...volumetric (modular) pods.



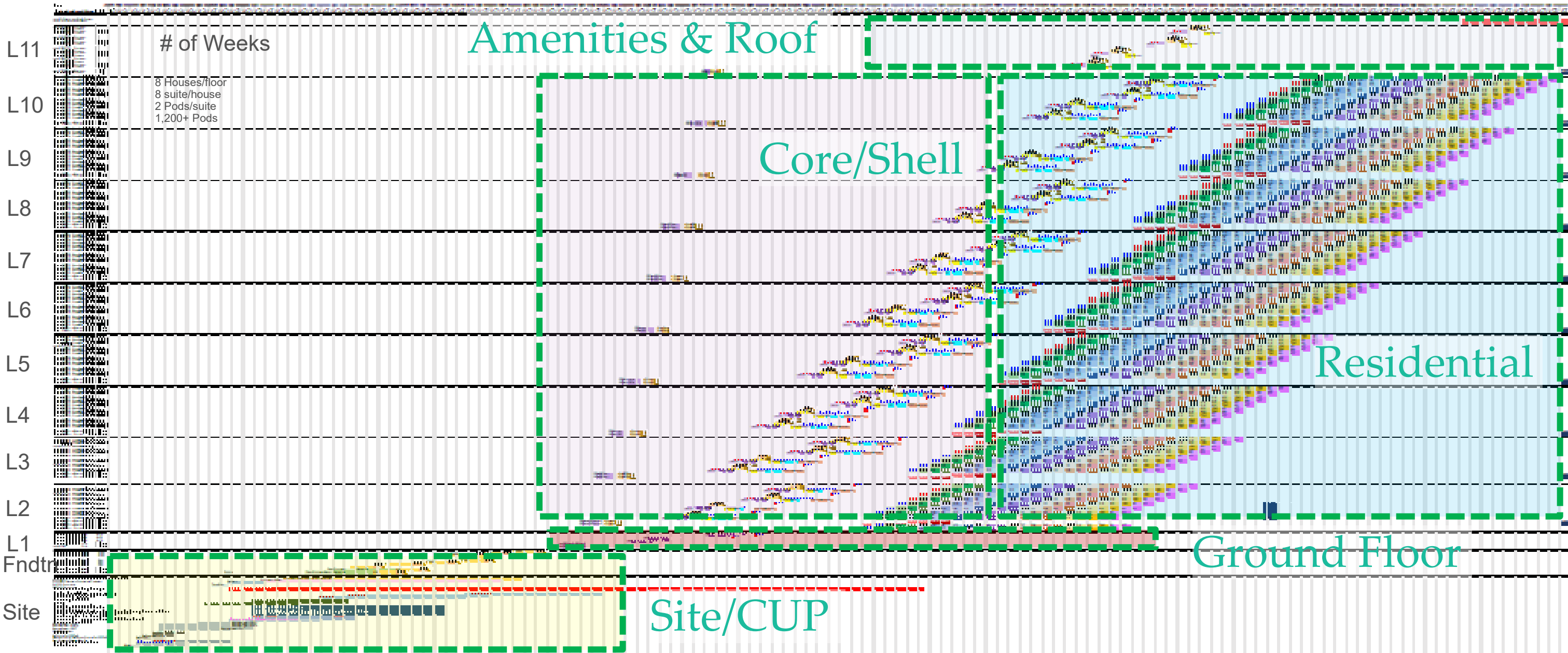
1st iteration of modular pod



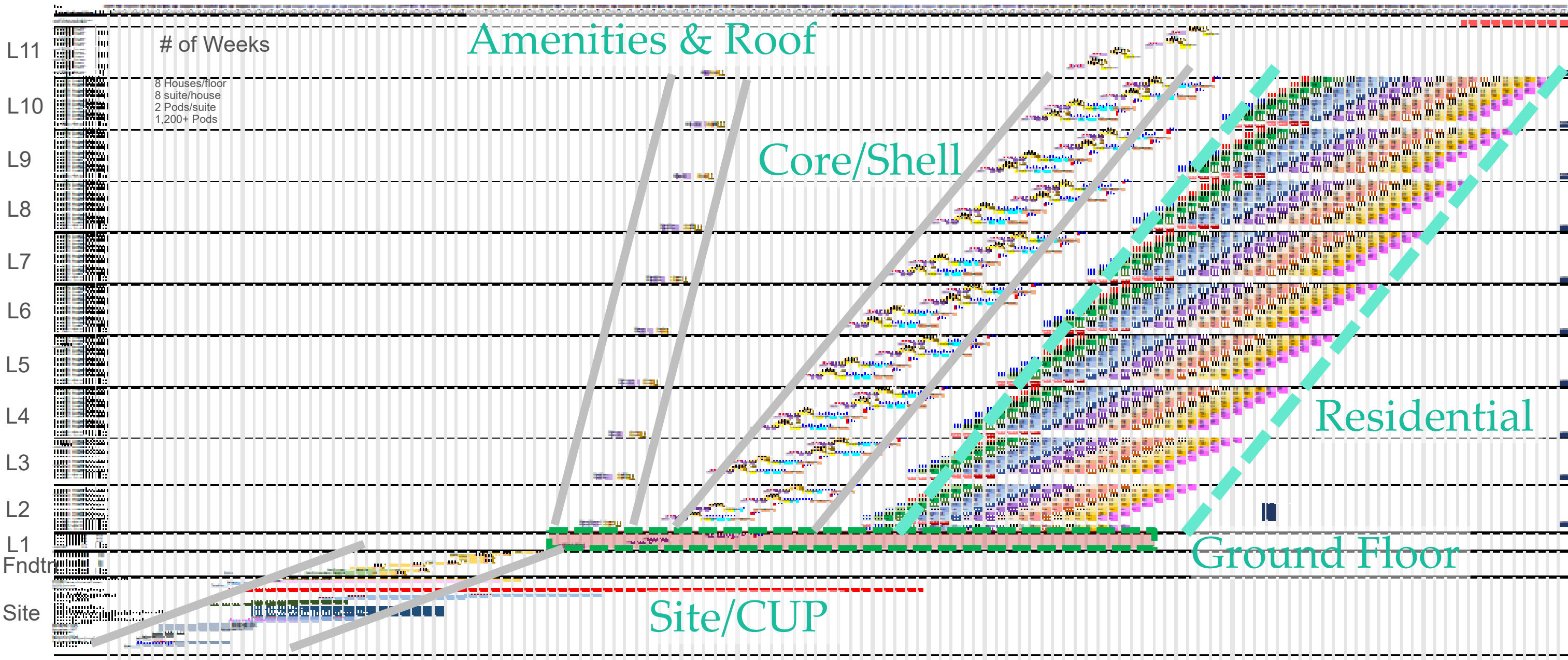
Production Strategy: align components



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Next experiment: Bring manufacturing practices to field



“The greatest waste... is failure to use the abilities of people... to learn about their frustrations and contributions that they are eager to make.”

—W. Edwards Deming

TAKE AWAY / LEARNING.

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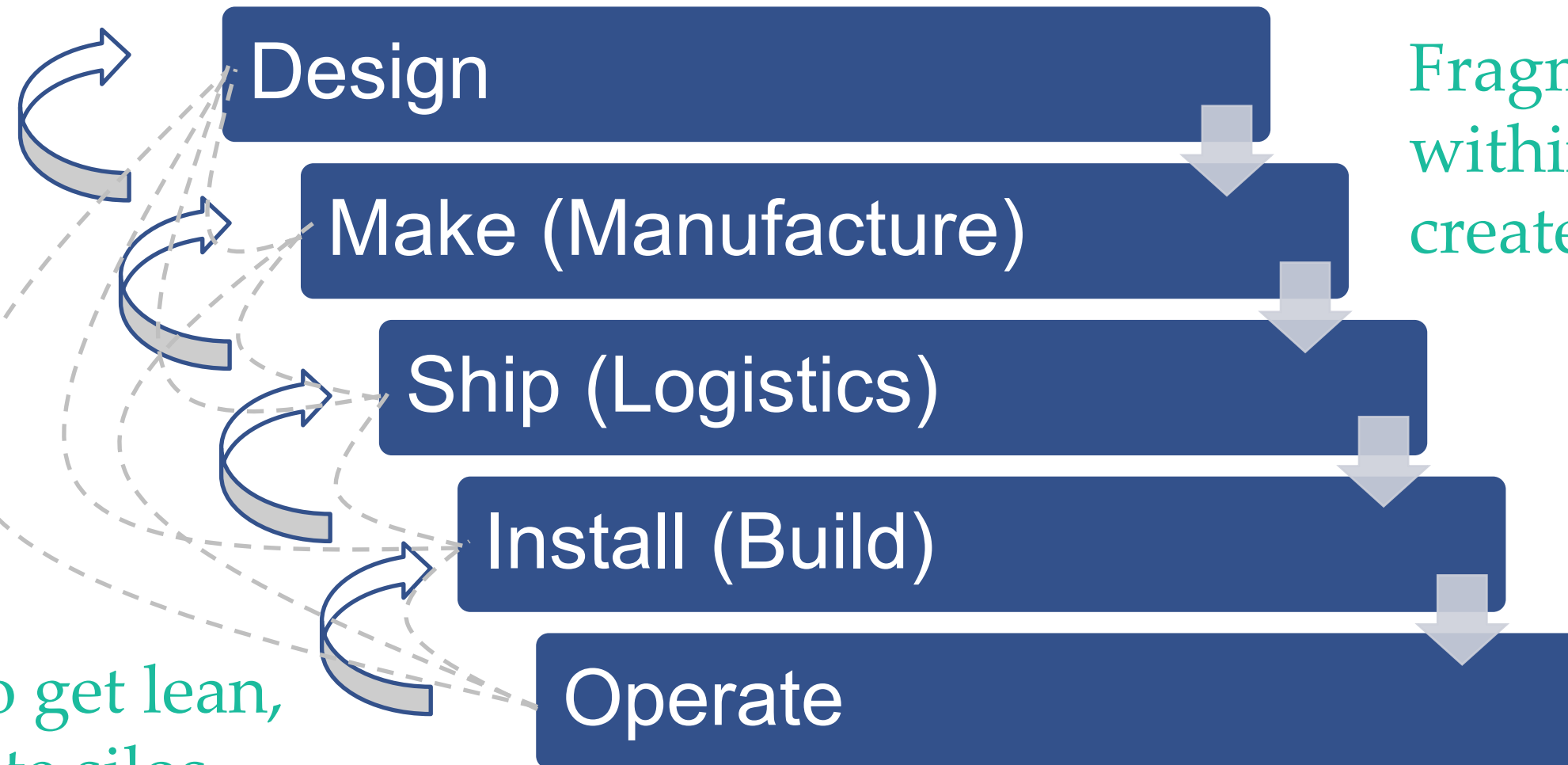
Take Away



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- Bring everything to the front
- Stay within the product mindset
- Organize around products (problems)
- Transparency allows you to stay flat (agile)

Value Creation Waterfall



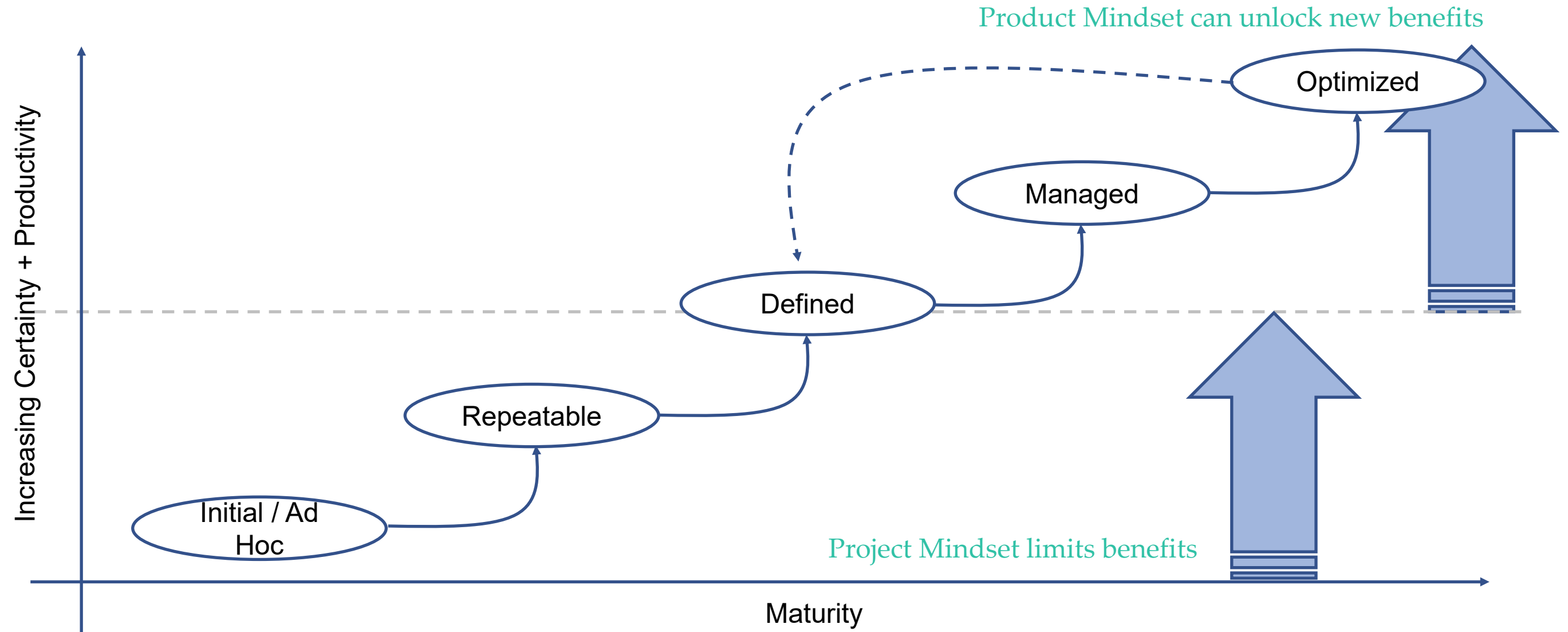
Fragmentation
within the waterfall
creates waste.

Need to get lean,
eliminate silos.

Project versus Product – The Maturation of a Product

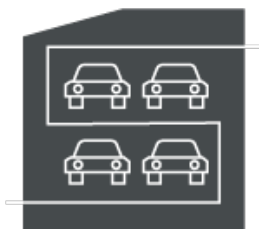


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Organize around products

Structures



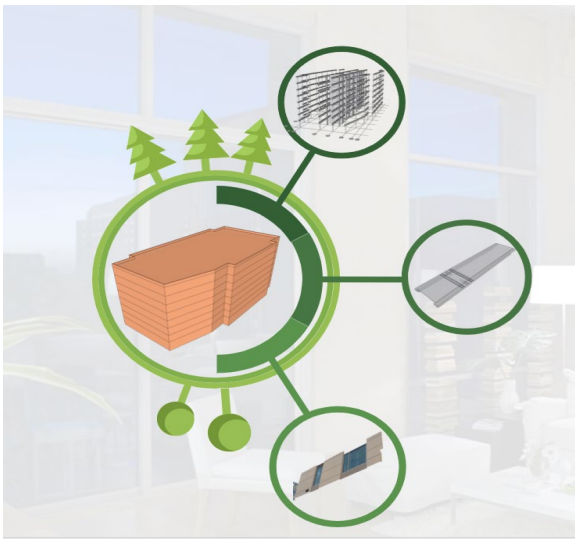
Launched in 2018



Clark PARC™: *Parking structure delivered as a product*



Launched in 2021

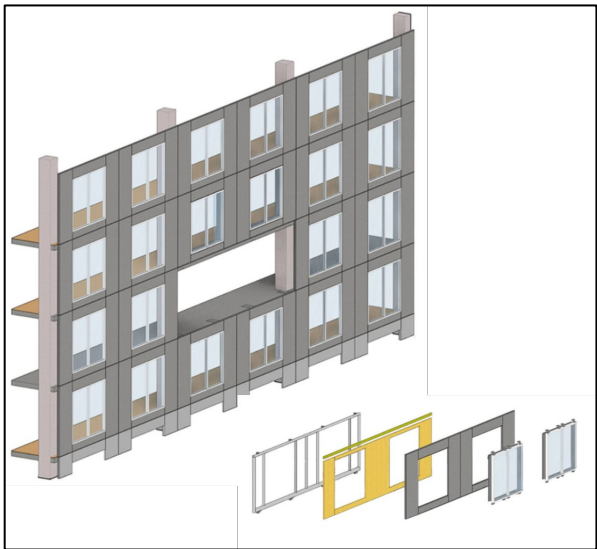


Net Zero™ Office Building Platform

Facades

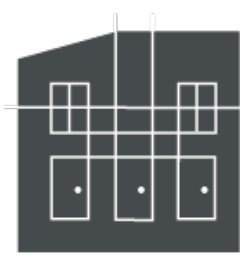


Launched in 2019



Infinite Facade™: *A single source solution for the complete building envelope*

Emerging Markets



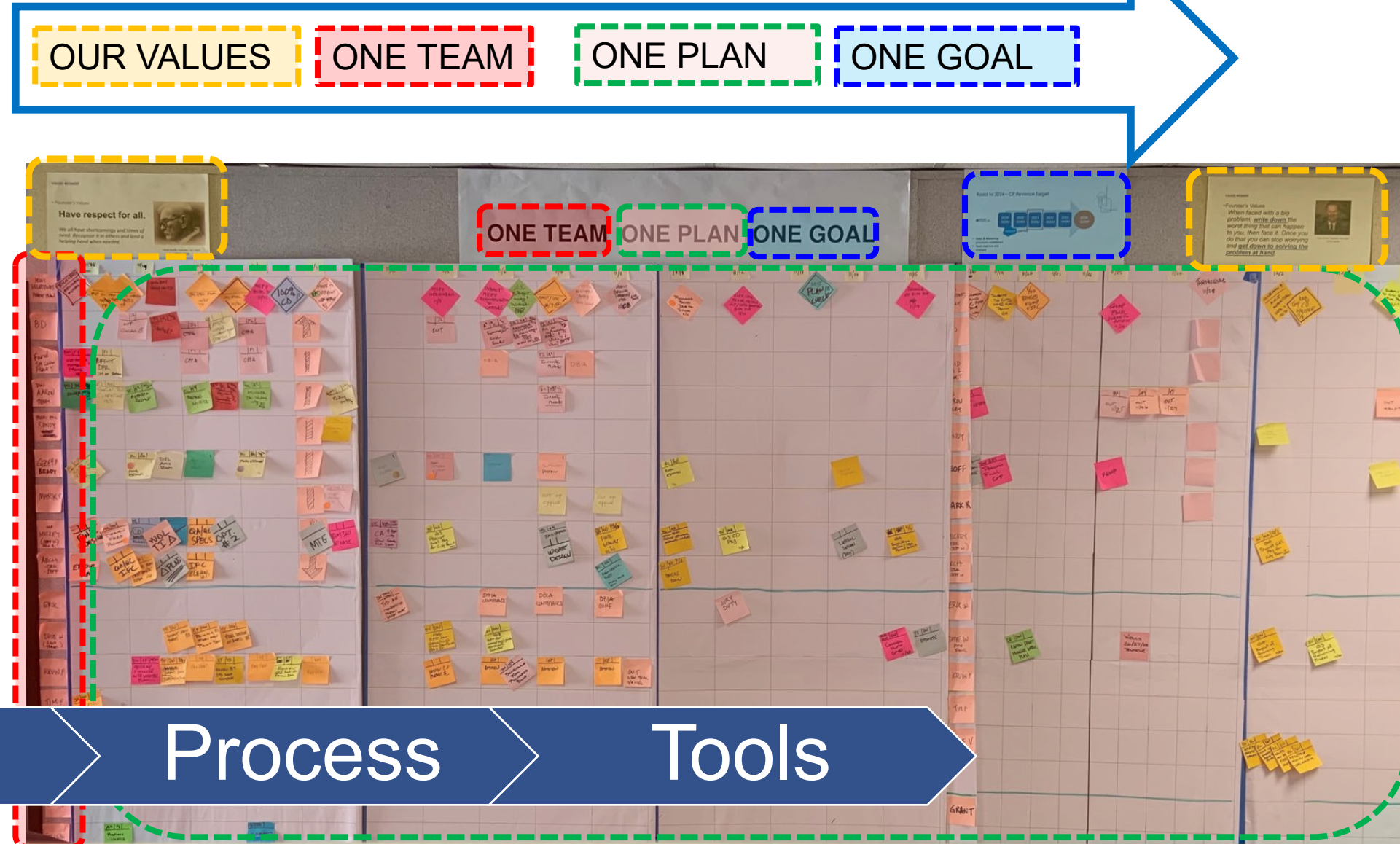
Launched in 2021



Prefabricated Housing: *Ecosystem of prefabricated components and assemblies.*

Transparency creates shared consciousness

"Fuse generalized awareness with specialized expertise" - Gen. Stanley McChrystal



Team of Teams

- Sales / BD, Architecture
- Engineering, Estimating
- Manufacturing, GC Preconstruction
- GC Projects, Product Mgmt.

Questions



Contact Us

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Key Take Aways, Questions & Answers