

Optimization of Precast Construction Planning and Execution Using BIM



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 **Project Controls**
EXPO 

AGENDA

1. DIGITAL TRANSFORMATION OF CONSTRUCTION
2. TYPICAL CHALLENGES OF CONSTRUCTION INDUSTRY
3. DIGITAL TRANSFORMATION IN CONSTRUCTION ACROSS THE GLOBE
4. WHAT IS BIM?
5. PRECAST CONSTRUCTION USING BIM PROCESS
6. CHALLENGES & SOLUTIONS FOR PRECAST USING BIM

DIGITAL TRANSFORMATION OF CONSTRUCTION

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THE STATE OF DIGITAL TRANSFORMATION IN CONSTRUCTION



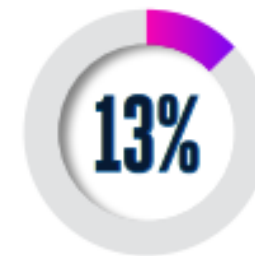
of construction companies worldwide said this is a key priority to drive much needed changes to their processes, business models and/or ecosystems.

with



of companies in stages* 1 and 2 out of 5.

In fact, only














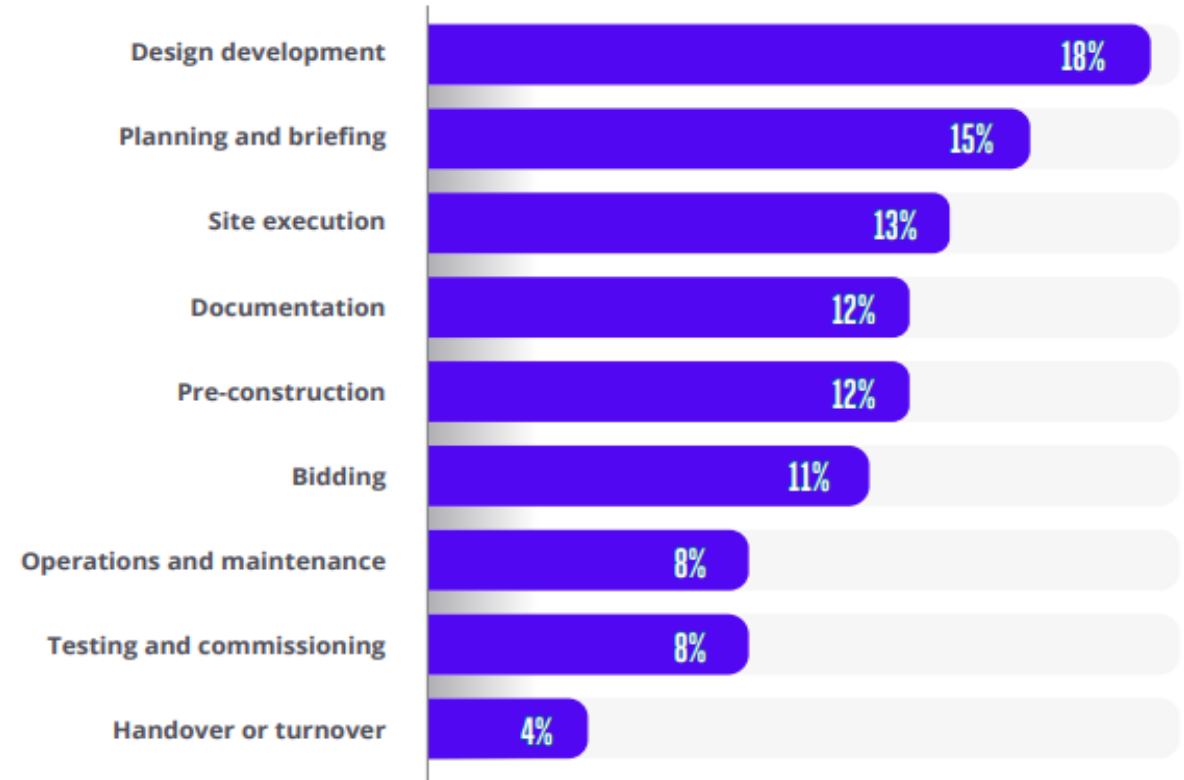
of companies are well on their way to succeeding on their DX journeys.

HOW CAN CONSTRUCTION COMPANIES BENEFIT FROM DIGITAL TRANSFORMATION?

- Improve productivity and better performance
- Connected Construction
- Safety and Risk Management
- Improved cost of construction

CHALLENGES VIEWD BY COUNTRIES

	Effectively managing risk	Data security	Completing projects on time and on budget	Workforce safety
 UK	1	2	3	
 GERMANY	1	2		3
 FRANCE	2	1		
 ANZ	1			2
 CHINA				3
 JAPAN				2
 KOREA			2	1
 INDIA	3		1	2
 SINGAPORE	2	1		
 US	1		2	3
 CANADA	1	2		3
 BRAZIL	1	2		



WORLDWIDE BIM ADOPTION

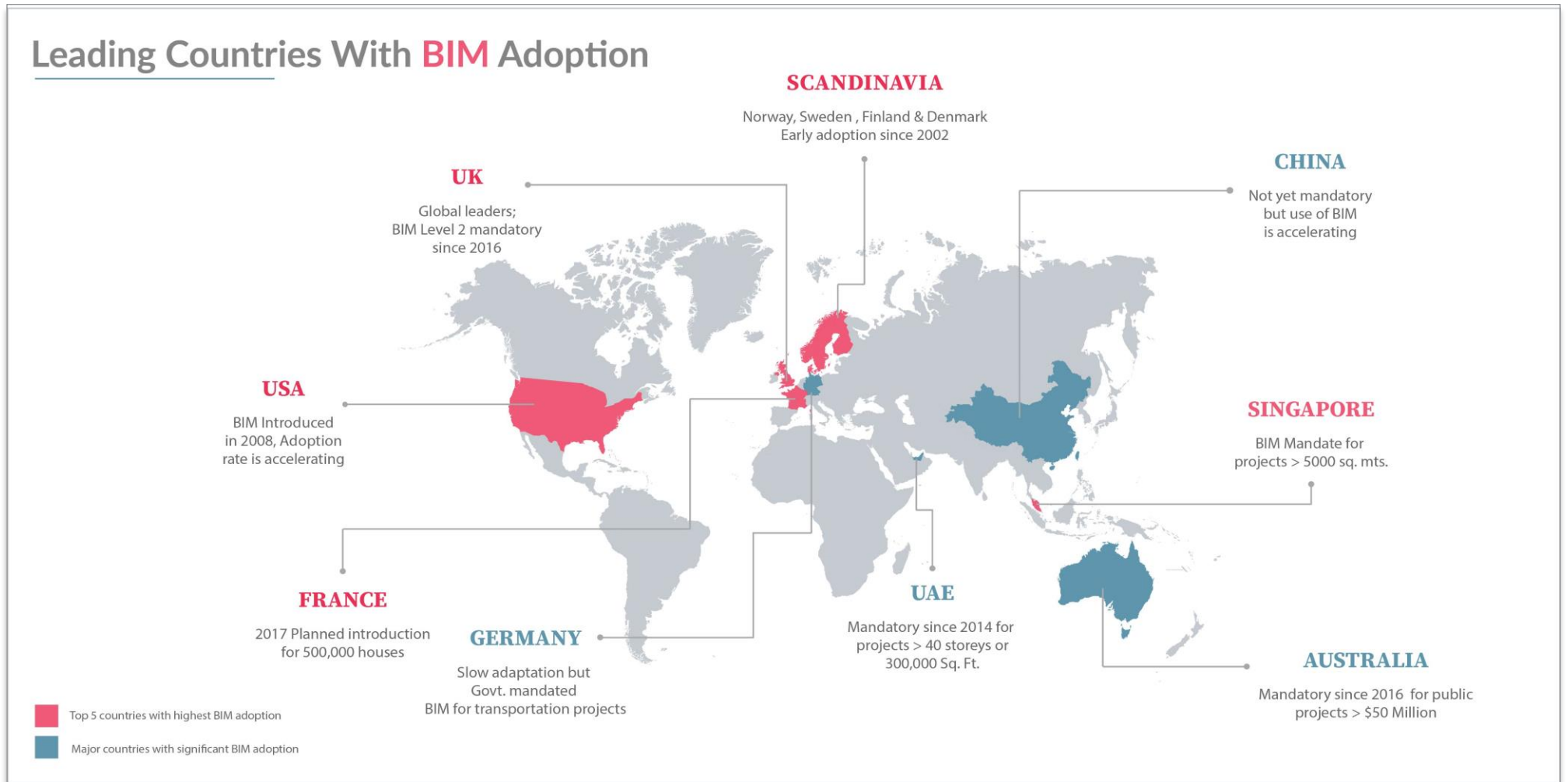
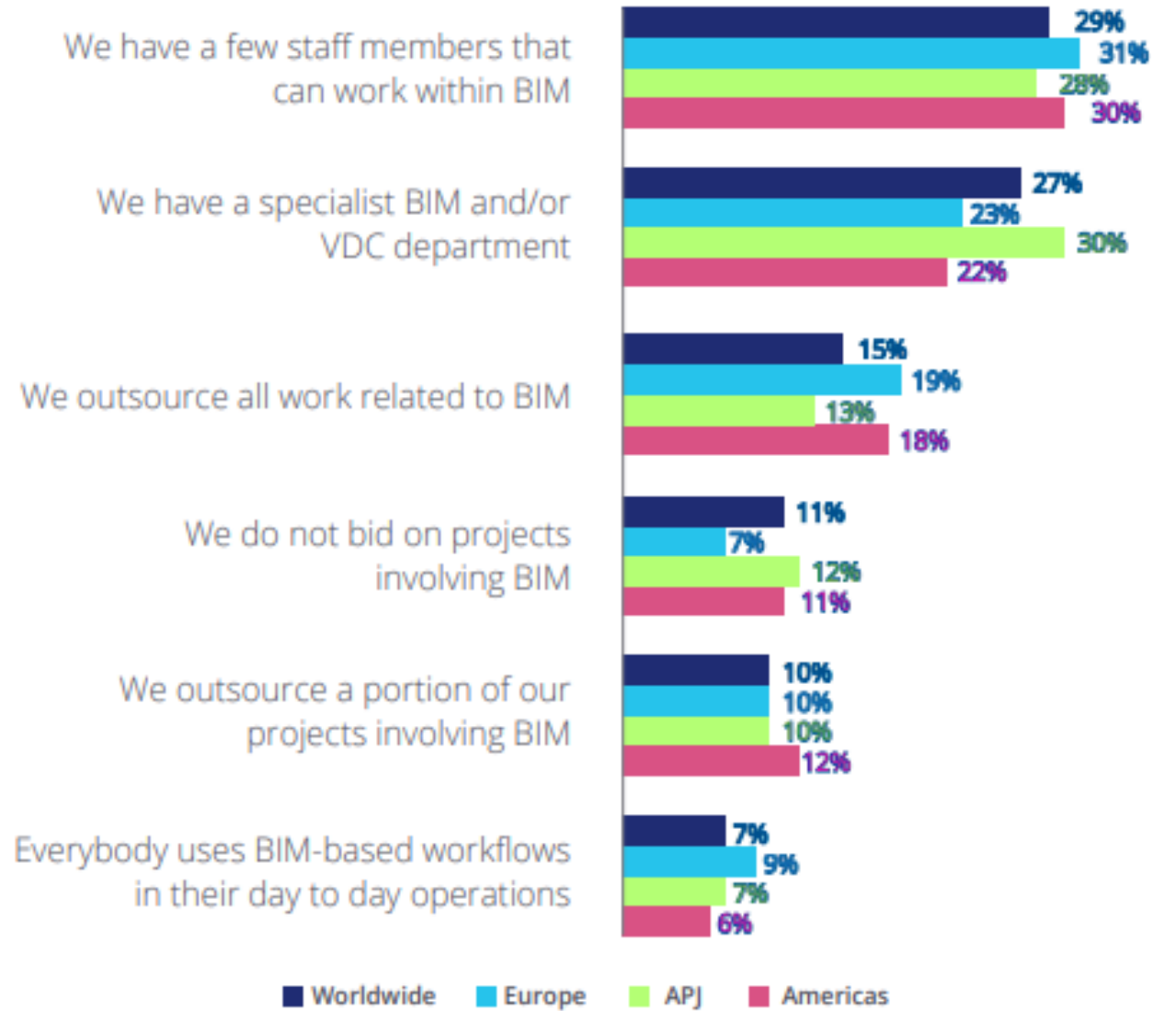


Image courtesy of United BIM.

BIM PROJECTS AND SKILLS



WHAT IS BIM?

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BIM IS PROCESS...

“BIM is the digital representation of the physical and functional characteristics of a facility and also the process of creating, using, and maintaining such a shared knowledge resource as a tool for decision making throughout the lifecycle of a facility

CONSTRUCTION PHASES & BIM



POWERFUL BACKEND BENEFITS OF USING BIM IN PRECAST

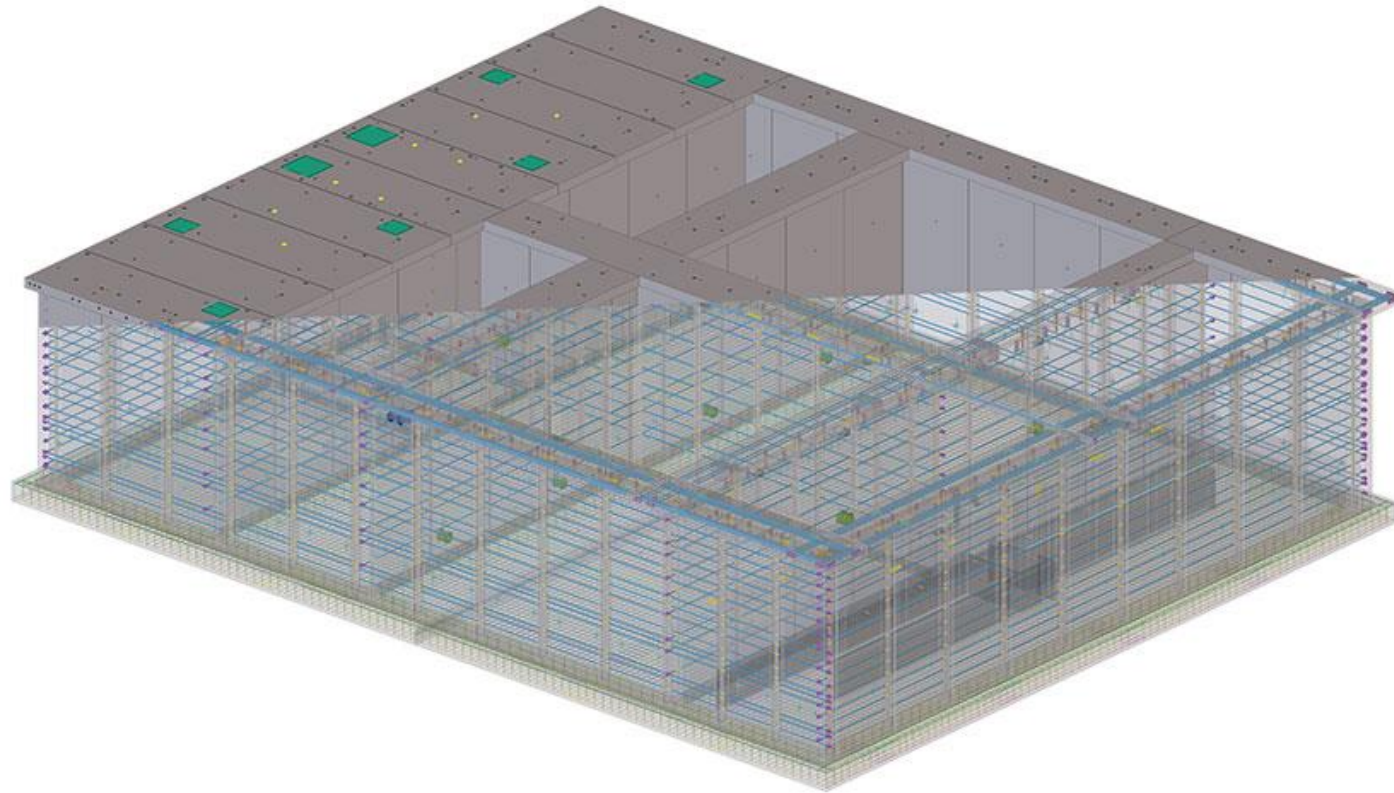


Image courtesy of Dutchland, Inc.

Transparent view of a precast, post-tensioned concrete tank using Tekla Structures.

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PRECAST CONSTRUCTION USING BIM PROCESS

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CHALLENGES IN CURRENT PRECAST CONSTRUCTION METHODOLOGY

Inaccuracies in Coordination

Greater drawing errors due to lack of visualization

Higher modification / rework

Costly material wastage and hiccups in construction process

BENEFIT USING PRECAST CONSTRUCTION

Reduce Engineering Cost

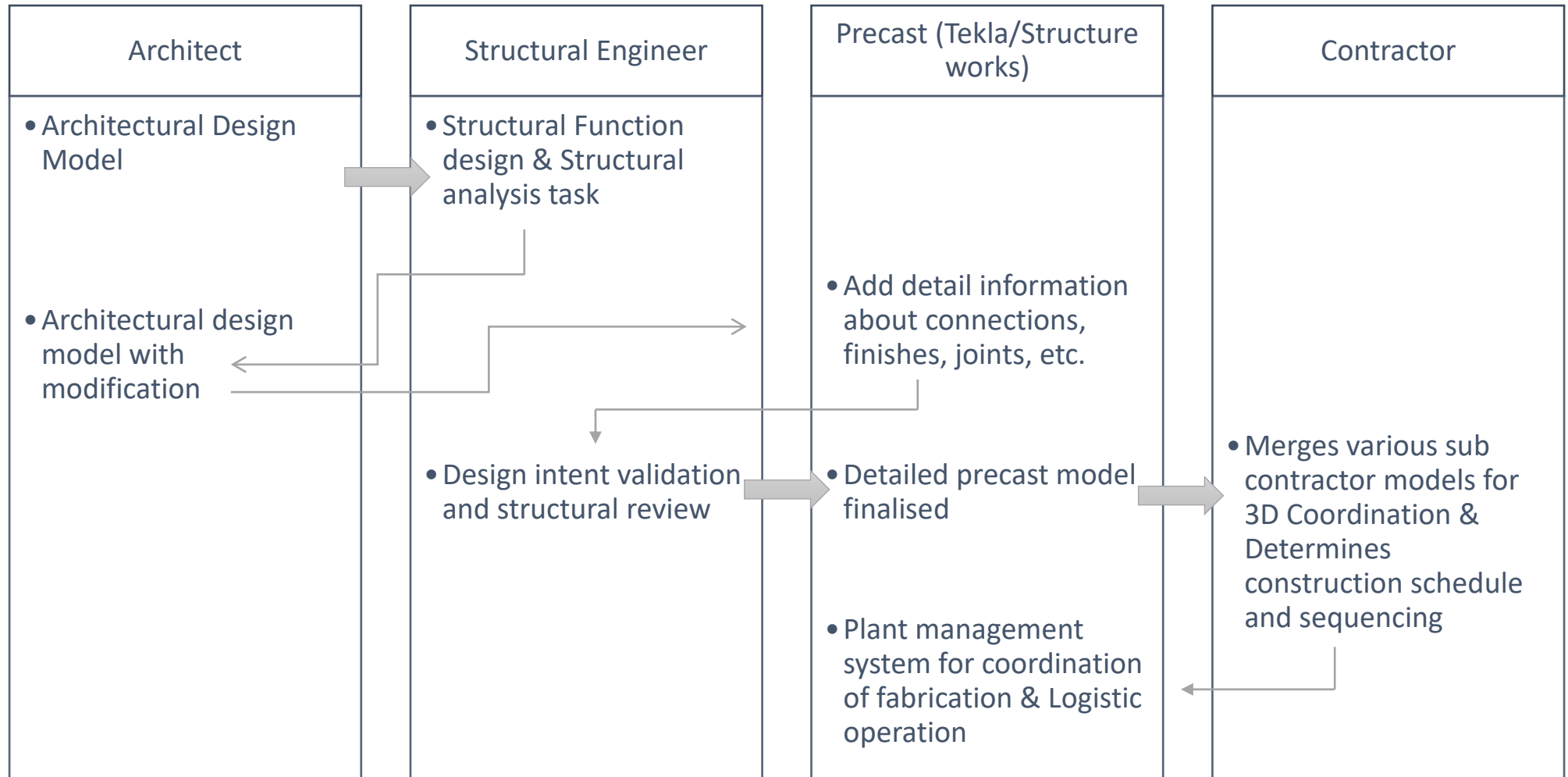
Enhanced cost estimation accuracy

Drastic reduction in engineering lead-time

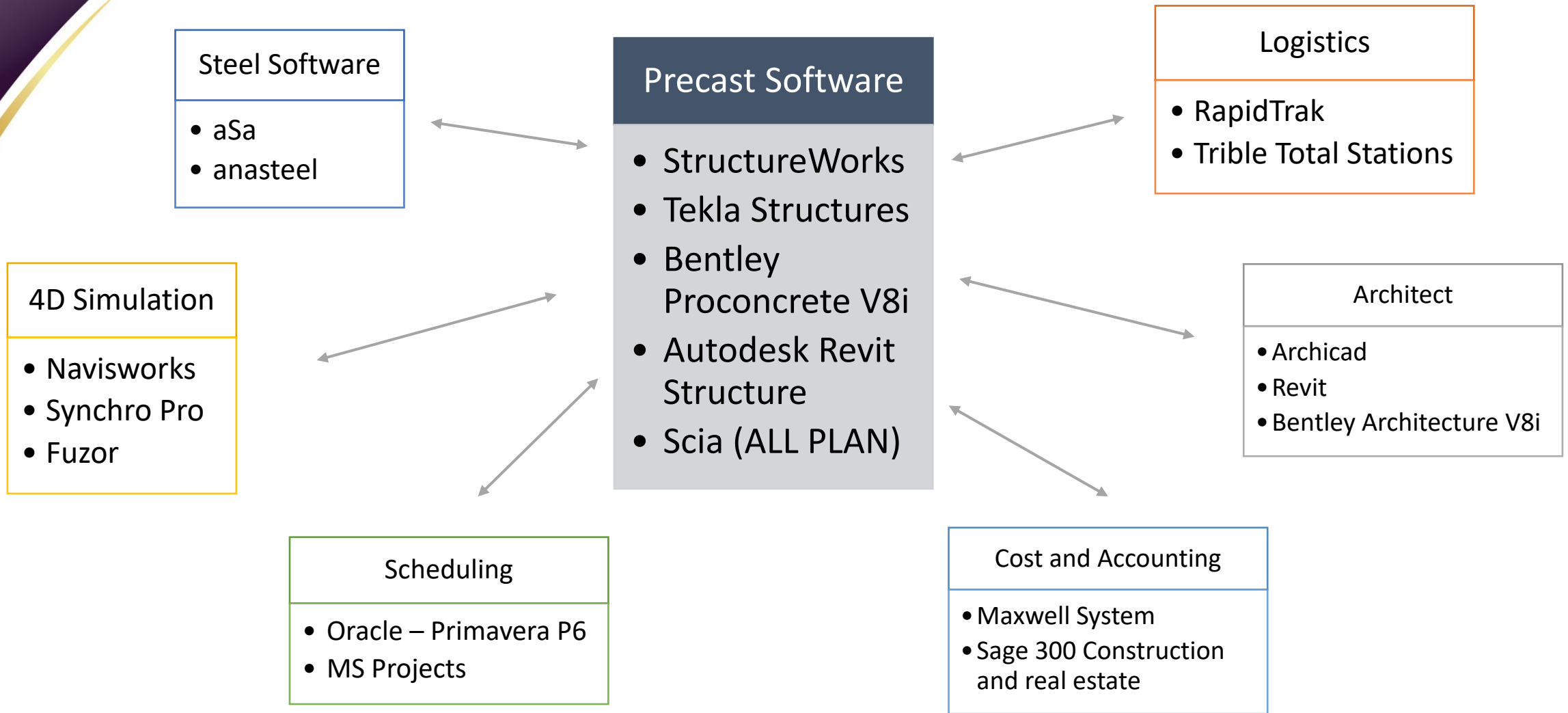
Improved customer services

Support for automation in production

BIM WORK FLOW FOR PRECAST CONSTRUCTION



BIM USES FOR PRECAST FIRMS



BIM USES FOR PRECAST FIRMS

<input type="checkbox"/>	Marketing	<input type="checkbox"/>
<input type="checkbox"/>	Estimating	<input type="checkbox"/>
<input type="checkbox"/>	Design	<input type="checkbox"/>
<input type="checkbox"/>	Drafting	<input type="checkbox"/>
<input type="checkbox"/>	Procurement	<input type="checkbox"/>
<input type="checkbox"/>	Fabrication	<input type="checkbox"/>
<input type="checkbox"/>	Quality Control	<input type="checkbox"/>
<input type="checkbox"/>	Scheduling	<input type="checkbox"/>
<input type="checkbox"/>	Logistics	<input type="checkbox"/>
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CHALLENGES & SOLUTIONS FOR PRECAST USING BIM

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MINIMIZED CONSTRUCTION WASTE SAVES COST

CHALLENGES

- Material Waste
- Fabrication Error

SOLUTIONS

- Accurate 3D Model
- Model based quantity take-off

BETTER QUALITY CONTROL

CHALLENGES

- low quality manufacturing on site due to incorrect usage or damage
- Weather conditions

SOLUTIONS

- Manufacturing components in an offsite controlled environment
- Large batched of replicated products with 21 days curing and controlled temperature

MINIMUM SITE DISRUPTION

CHALLENGES

- Onsite Fabrication
- Use of heavy Machinery
- Storing material onsite

SOLUTIONS

- Offsite prefabrication cancels out site disruption through seamless logistics
- Minimal use of machinery on site
- BIM Based model coordination

BETTER CONSTRUCTION SCHEDULE REDUCE DELAY

CHALLENGES

- Flawed quantity take-off
- Inaccurate schedule
- Coordination issues

SOLUTIONS

- Prefabricated element take less time
- BIM Based Scheduling



THANK YOU

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