

Leveraging on Contactless Technology to Track and Locate Prefabricated Components: A Digital Platform Based Approach



Presented by:

Mr. Lin Shijing (SJ)
CEO & Co-Founder of Hubble.Build



HUBBLE
.BUILD

Building Better Cities of Tomorrow

About Hubble.Build

We are Asia's leading technology company focused on the construction industry.

Established since 2016, we have built on a strong foundation in data engineering and smart analytics. We are motivated by a shared goal to use technology to transform our sector and root out inefficiencies.

We believe the future of construction is autonomous self-building and we're on a mission to build the world's first autonomous construction site via our Hubble.Build platform.

Our Hubble.Build platform aims to keep your 4M data (Man, Machine, Material and Money), workflows and teams in sync for a seamless collaboration.



Our incredibly talented team

Located across the Asia region, our team members are committed and motivated by common purpose to bring technologies to our customers, helping them to transform and build better cities of tomorrow for all.

Awards & Accolades



Top 15 Most Promising Startups
SG:D TechBlazer awards 2018



Represented Singapore in APICTA
Awards 2018 in Guangzhou, China



Finalist for Ministry of National
Development R&D Award 2019



CEMEX Ventures Top 50
Global Startups



Awarded by BCA-IMDA to build
Singapore's first Construction
Digital Platform



Approved AIS Payroll Software
Vendor

Challenges

- Supply of prefabricated modules disrupted by the implementation of the Malaysia Government Movement Control Order (MCO) due to lack of production sites in Singapore.
- During the onset of the COVID-19 pandemic, tracking of prefabricated modules and planning resources and equipment ahead of time became even more complex, resulting in months of delay for construction projects in Singapore.
- Skyrocketing storage fees due to lack of holding facilities also deterred construction firms from making advance delivery of prefabricated modules.
- Existing method of creating and updating of components scheduling have been manually carried out in excel which is time consuming and tedious.
- Difficult to keep track of the state of prefabricated components in real-time, as it requires intensive human intervention, which causes communication with stakeholders to be delayed.



News report on Singapore construction delay attributed by the disruption in Prefabricated Prefinished Volumetric Construction (PPVC) supply.

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Part A				Part B				Part C				
21st	Pre-Casting	Pre-C	APC1-01	APC1-02	APC1-03	APC1-04	APC1-05	APC1-06	APC1-07	APC1-08	APC1-09	APC1-10
		Pre-C	APC2-01	APC2-02	APC2-03	APC2-04	APC2-05	APC2-06	APC2-07	APC2-08	APC2-09	APC2-10
		Pre-C	APC3-01	APC3-02	APC3-03	APC3-04	APC3-05	APC3-06	APC3-07	APC3-08	APC3-09	APC3-10
		Pre-C	APC4-01	APC4-02	APC4-03	APC4-04	APC4-05	APC4-06	APC4-07	APC4-08	APC4-09	APC4-10
		Pre-C	APC5-01	APC5-02	APC5-03	APC5-04	APC5-05	APC5-06	APC5-07	APC5-08	APC5-09	APC5-10
	Post-Casting	Post-C	APC6-01	APC6-02	APC6-03	APC6-04	APC6-05	APC6-06	APC6-07	APC6-08	APC6-09	APC6-10
		Post-C	APC7-01	APC7-02	APC7-03	APC7-04	APC7-05	APC7-06	APC7-07	APC7-08	APC7-09	APC7-10
		Post-C	APC8-01	APC8-02	APC8-03	APC8-04	APC8-05	APC8-06	APC8-07	APC8-08	APC8-09	APC8-10
		Post-C	APC9-01	APC9-02	APC9-03	APC9-04	APC9-05	APC9-06	APC9-07	APC9-08	APC9-09	APC9-10
		Post-C	APC10-01	APC10-02	APC10-03	APC10-04	APC10-05	APC10-06	APC10-07	APC10-08	APC10-09	APC10-10

Existing manual tracking method via excel

Proposed Integrated Digital Delivery Platform

Digitalize and Visualize the entire value chain of Prefab Components Production, Delivery to Installation with transparency and efficiency

Component Directory

Manage your prefab components in timely manner

- Bulk import and update your large component list
- Centralise all component profiles and manage all components progress in one place

Wall Chart

Visualise your production, delivery, and installation progress in real time

- Ensure the prefab component production, delivery and installation are on schedule
- Achieve just-in-time component delivery to secure optimum inventory on site and avoid over-ordering

Dashboard

Track overall project progress at one glance

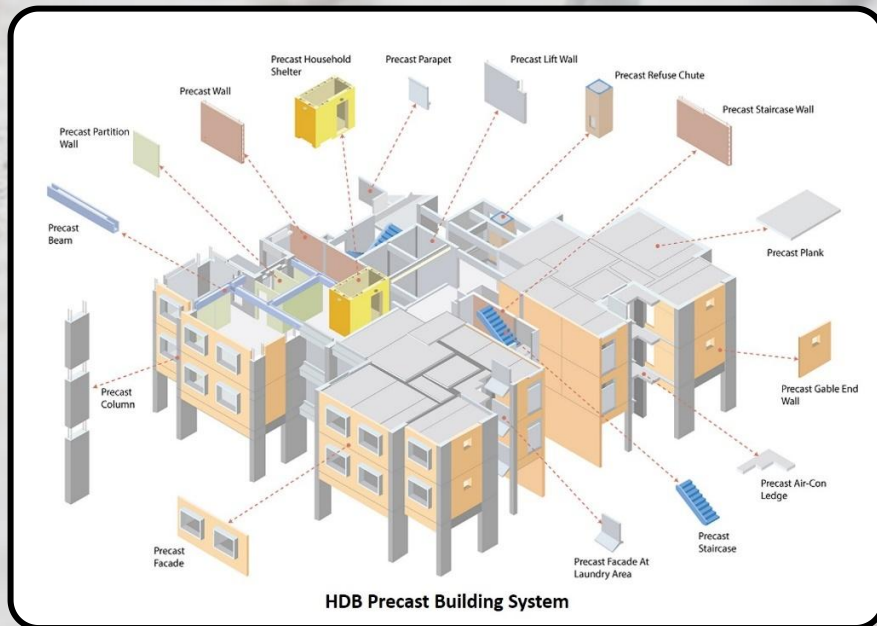
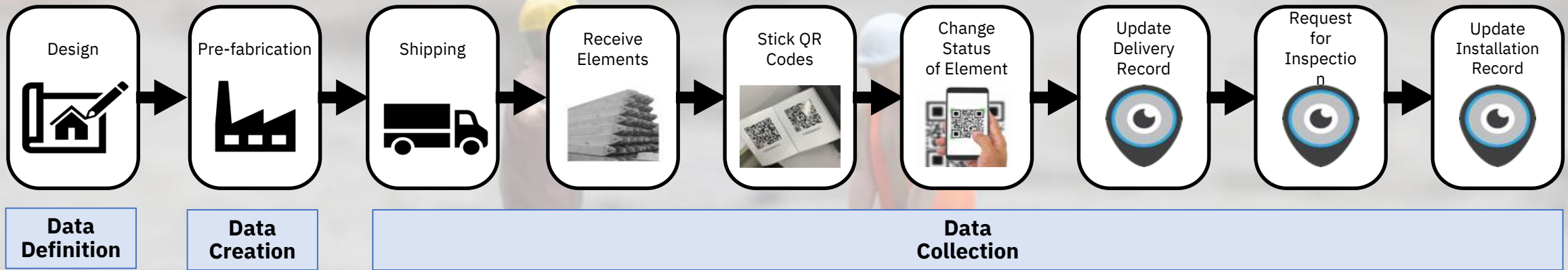
- Actionable Indicator of project progress for management to monitor planned vs actual.
- Insights into progress details before problems emerges
- Maximize collaboration amongst contractors according to installation progress

Records

Digitalize component record update with QR Code

- Track your materials in an efficient way via a unique QR code on-the-go
- Real time synchronization from mobile submission on site to office
- Avoid double work on site and in office to update records

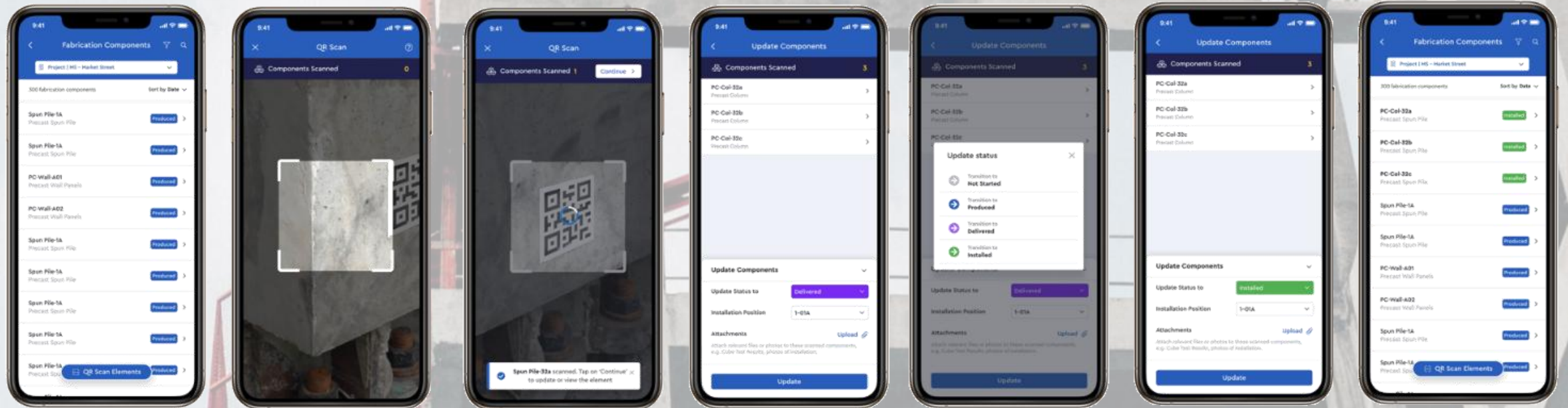
Model of Data Collection Across the Material Management Activity Timeline



Overview of a typical precast building system for HDB

Dynamic Quick Response (QR) Code Contactless Technology

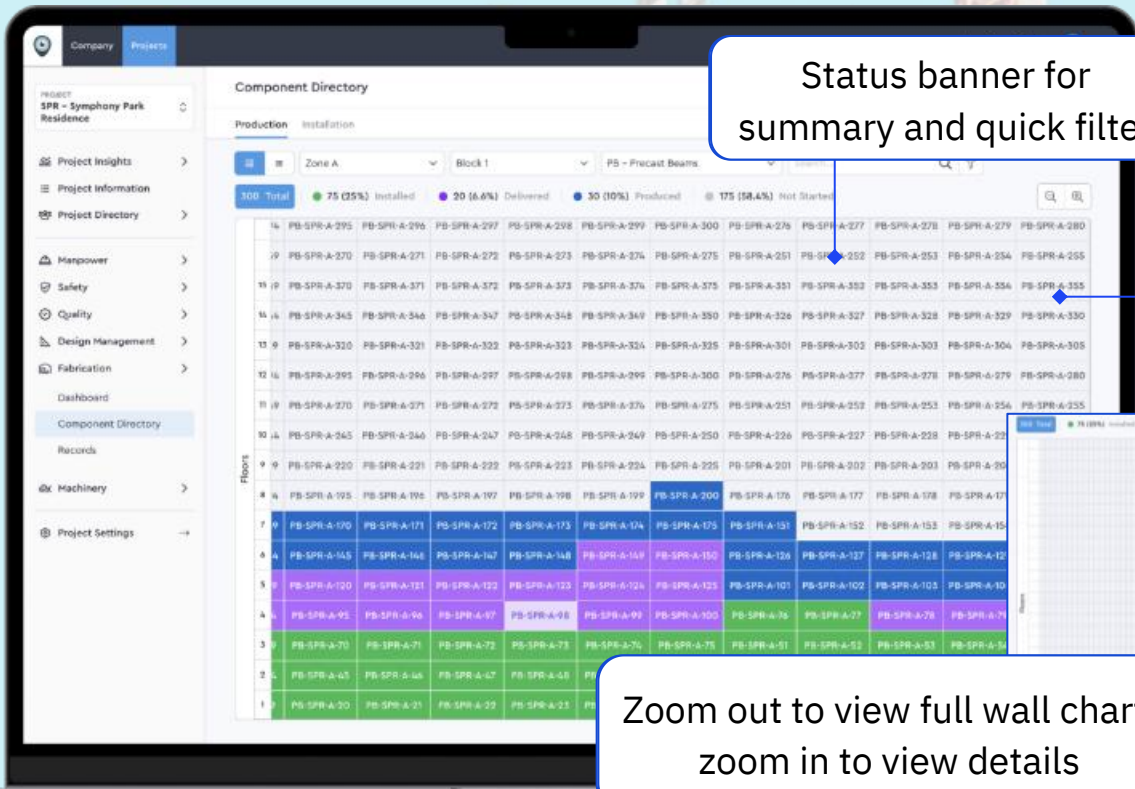
Update precast components status in real-time



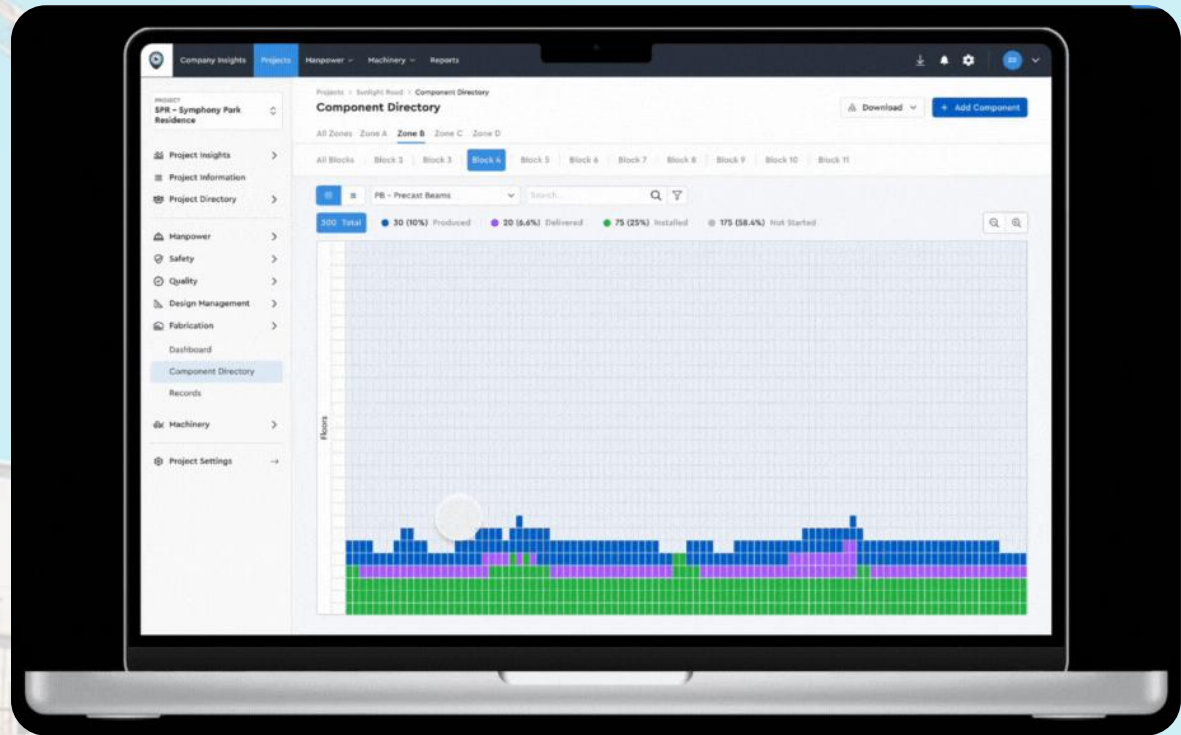
Upload precast components status via QR scan-to-go

Component Directory - Wall Chart

Visualize Progress



Status banner for summary and quick filter



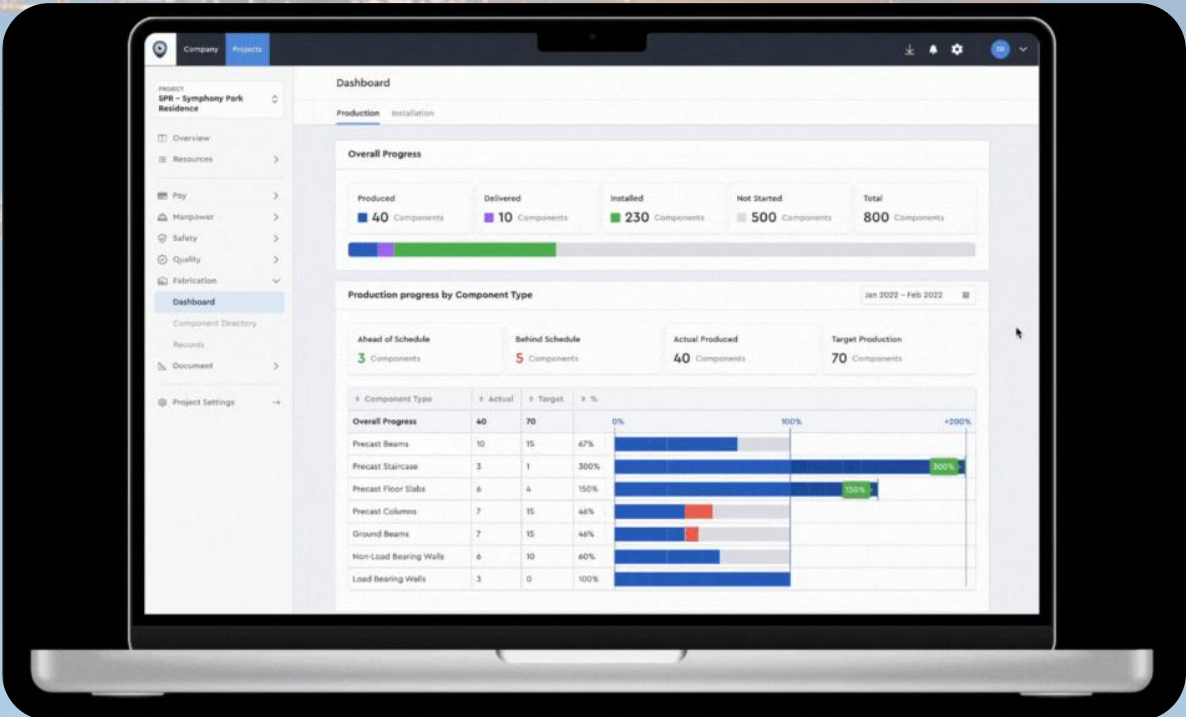
Visualization of Fabrication Components Status for straight site storage and installation tracking

Zoom out to view full wall chart, zoom in to view details

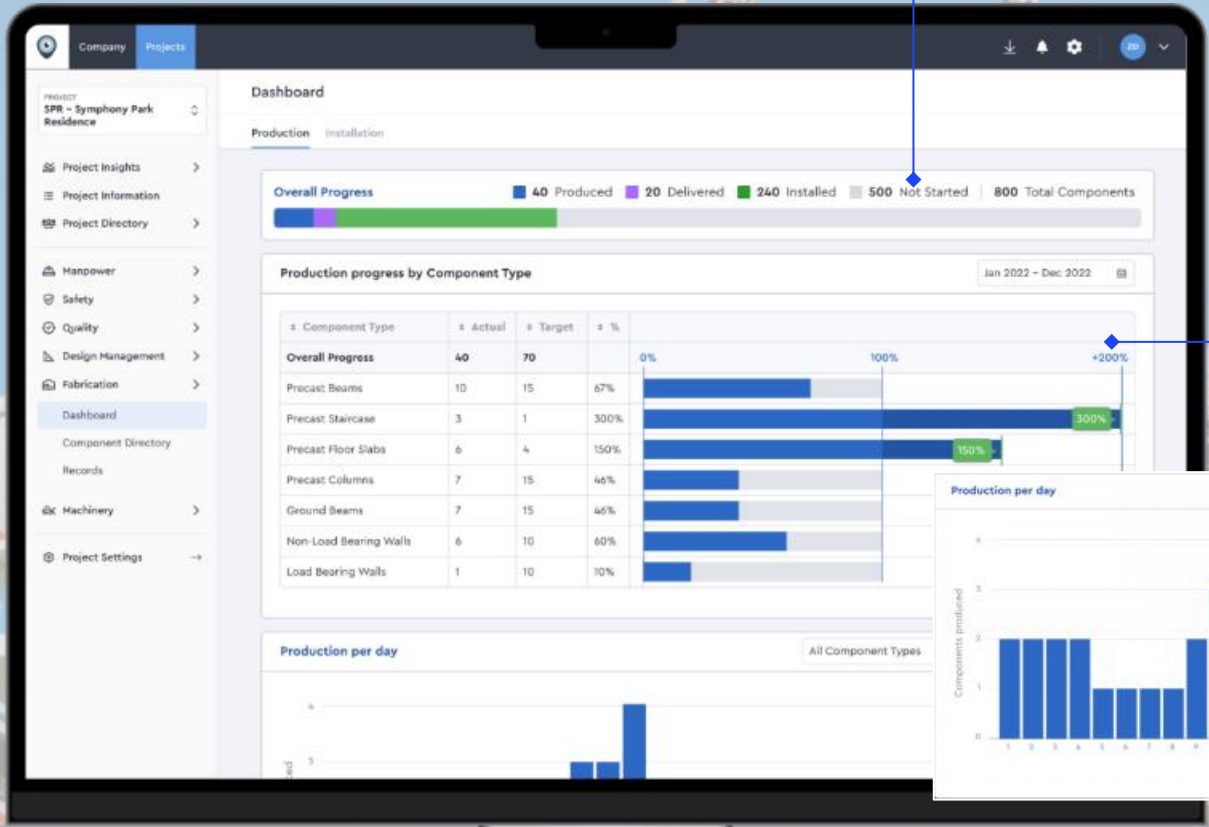
Dashboard

Enhance and Monitor Performance

Installation and Production Progress by on a glance



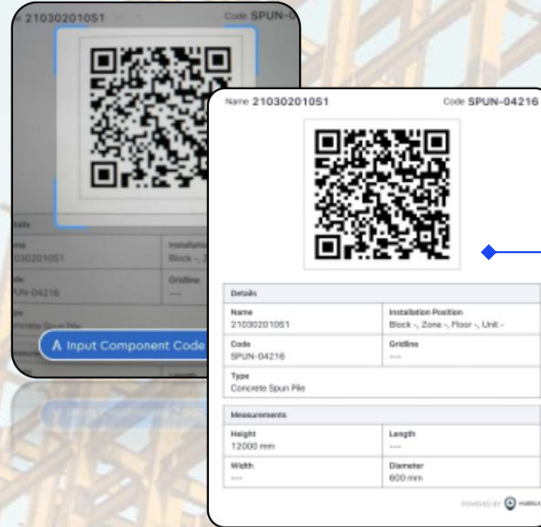
Breakdown of progress by Component type, identify surplus or delays based on target.



Trends for production rate per day

Records

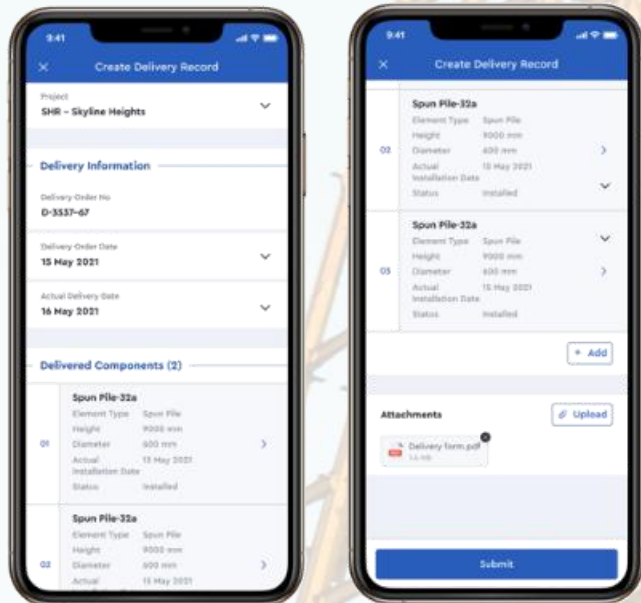
Digitalize component record update with QR code



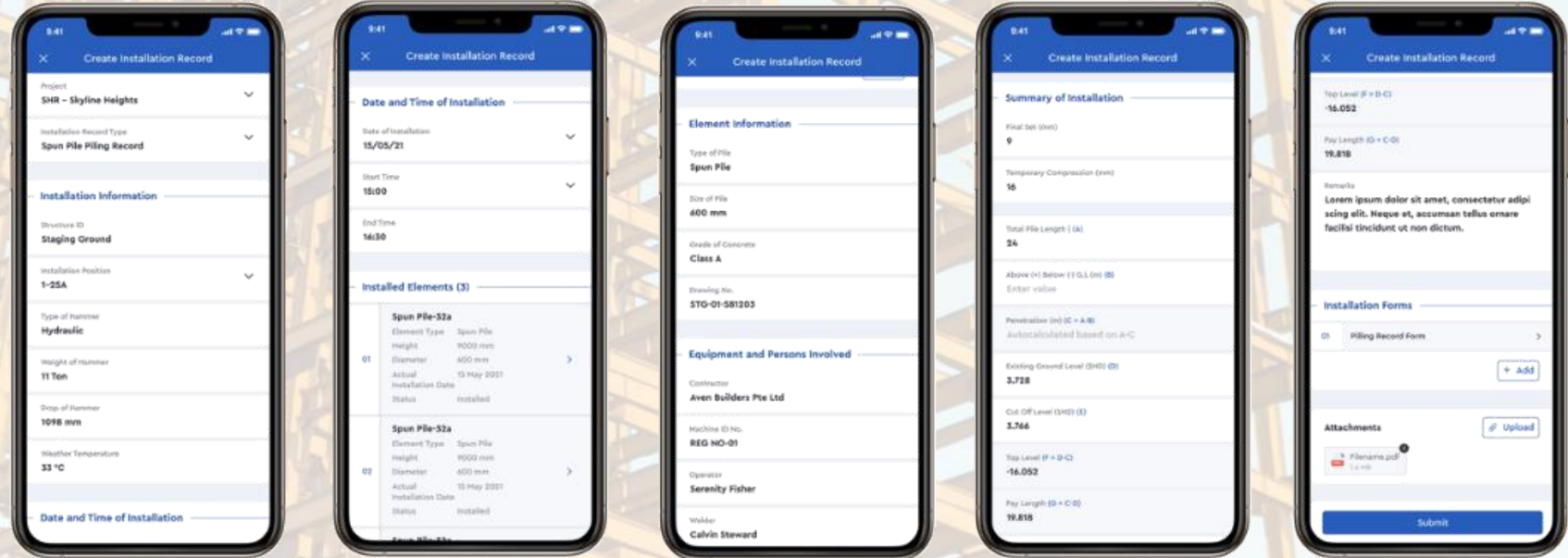
Boost Field Efficiency and Productivity

- Real-time updates between project site, factory site, and offices
- Get anytime, anywhere access to Delivery and Installation Records

Delivery Record



Installation Record



Cost-Benefit Analysis

Fixed Investment Cost

- One time implementation cost by project basis
- Not necessary to purchase any hardware apart from a printer to print QR code labels, given everyone has a camera mobile phone

Variable Operating Cost

- Cost largely associated with GPRS network connectivity and sticker paper labels
- Does not require additional headcount to operate as scanning process can be integrated and manned into existing processes

Direct Benefits

- Reduction of man hours spent on material, manpower and machinery management
- Reduce logistic complexity and avoid incurring expensive storage fees due to overestimating or overordering
- Reduce overall costs of up to 20%

Indirect Benefits

- Improve labour productivity
- Improve process efficiency
- Increase overall construction speed up to 50%

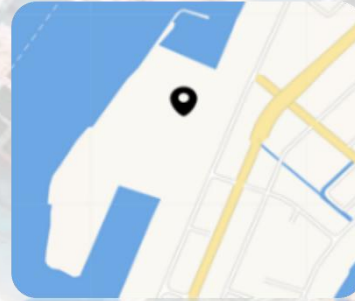
Proven Application

Residential



Development site for HDB Tampines N9C15

Industrial



Development site layout for Offshore Marine Centre 2

**EXPERIENCE THE
TRANSFORMATION**



Scan to Demo



THANK YOU