Shaping the Digital Site: CHEC's Digitalization Experience and SGBuildex Collaboration

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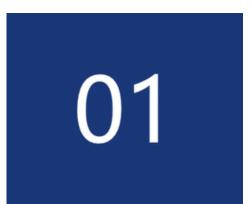CHINA HARBOUR

Overview

- **Shaping the Digital Site:** CHEC's Vision for a Smart and Connected Future
- **Why We Must Transform:** The Risk of Fragmented Site Data
- **Connecting the Site:** Our Digital Platform Ecosystem
- **Laying the Foundation:** SGBuildex Integration for Smart Piling
- **From Site to Nation:** Building Singapore's Geotechnical Data Hub
- **Real-Time Intelligence:** From Field Data to Executive Action
- **Leading the Way:** CHEC's Role in Singapore's Digital Built Environment

Shaping the Digital Site: CHEC's Vision for a Smart and Connected Future

01

Shaping the Digital Site
CHEC's Vision for a Smart and Connected Future

- In alignment with Singapore BCA's Digitalization Transformation Roadmap, CHEC Singapore is actively shaping the digital site of the future — one that is smart, connected, and deeply data-driven.

- We see digitalization not merely as a technological upgrade, but as a strategic enabler that reshapes how we plan, construct, monitor, and manage our projects. By integrating systems, automating workflows, and enabling real-time collaboration across stakeholders, we aim to build infrastructure that is **safer, greener, more productive**, and ultimately of **higher quality and value** to our clients

- Our digitalization journey aligned with Singapore's national vision for a resilient and forward-looking built environment. Through deep digital integration at both corporate and site levels, we strive to lead by example in this sector-wide transformation.

Why We Must Transform: The Risk of Fragmented Site Data

02

Why We Must Transform:
The Risk of Fragmented Site Data

01.

Projects involve many people, each with their own data — sometimes aligned, often conflicting.
 Data may also get lost in translation, misfiled, delayed, or duplicated due to process gaps. A simple example is the concrete Delivery Order (DO).

On site, the engineer stationed at the DO checkpoint verifies the mix, performs slump tests, and clears dispatch. But after a long day of casting, they may forget to update the records — or worse, the DO sheets get wet in the rain and become unreadable.

02.

Missing data not only affects QA/QC tracking but also delays subcontractor payment claims, leading to miscommunication, audit gaps, and disputes.

Strategic Partnership

Our digital effort goes beyond platform implementation — it includes strategically selecting partners who share our commitment to transformation.

For instance, in our recent large-scale 10,000m³ concrete pour, we partnered with Pan-United, who enabled full digital DO and concrete dispatch tracking. The system helped ensure real-time mix validation, truck movement monitoring, and timely delivery to casting points, significantly reducing manual lapses and improving operational visibility.
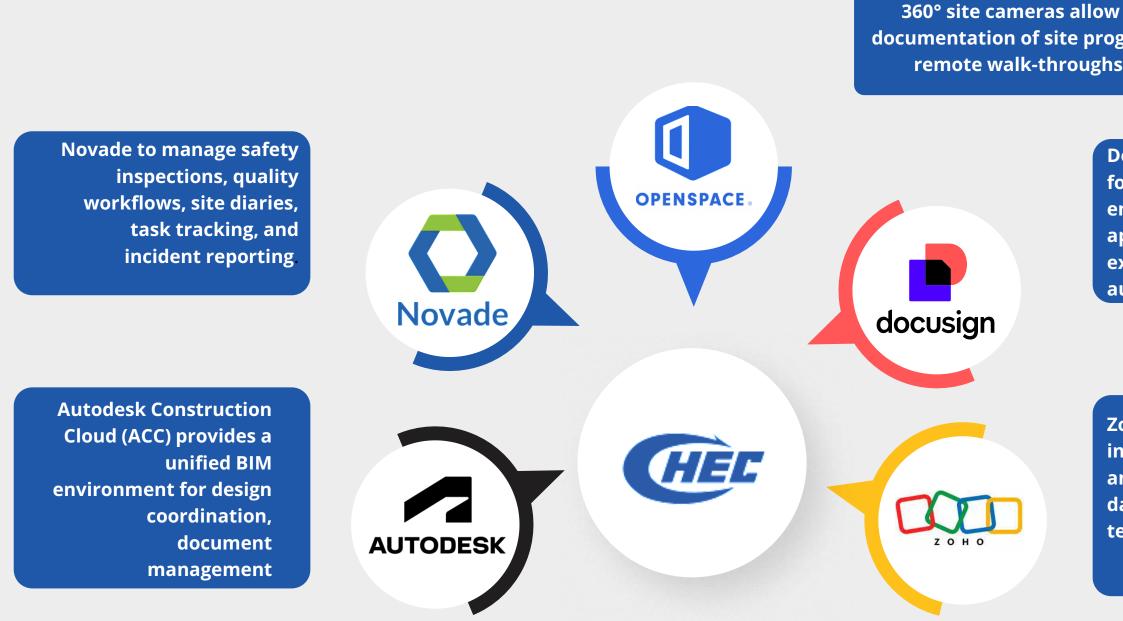
Connecting the Site: Our Digital Platform Ecosystem

03

Connecting the Site:
Our Digital Platform Ecosystem

At the core of our digital strategy is a suite of integrated platforms that enable full visibility and control across project, commercial, and compliance functions. These systems interconnect seamlessly to support data accuracy, traceability, and timely decision-making

360° site cameras allow for time-stamped visual documentation of site progress. These images support remote walk-throughs & progress validations

Novade to manage safety inspections, quality workflows, site diaries, task tracking, and incident reporting

DocuSign supports our push for workflow automation, enabling secure digital approvals and contract execution with complete audit trails.

Autodesk Construction Cloud (ACC) provides a unified BIM environment for design coordination, document management

Zoho dashboards integrate inputs from Novade, ACC, and more, to provide live dashboards for project teams and management.

Laying the Foundation:
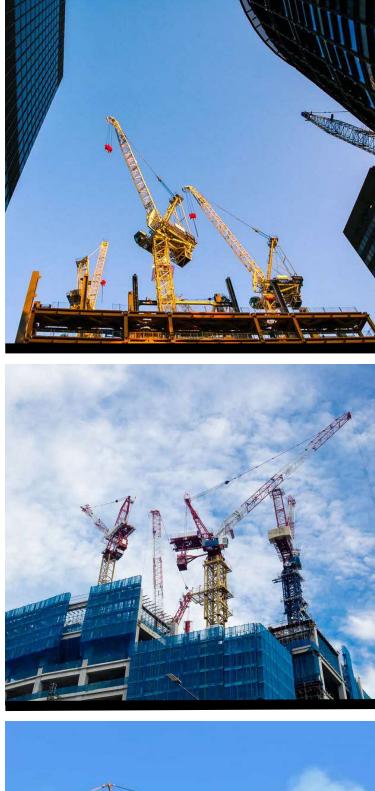SGBuildex Integration for
Smart Piling

04

Laying the Foundation:
SGBuildex Integration for Smart Piling

- As part of Singapore's national initiative to establish a secure, standardized digital ecosystem for the built environment, CHEC is proud to be among the early adopters of SGBuildex — leveraging its data highway to streamline regulatory data flows and improve project transparency.

- To support this integration, CHEC has developed an in-house digital piling progress application in collaboration with our piling partner, JF Foundation. Through this application, JF inputs site-level data such as pile ID, type, depth, concrete volume, and other field records directly into the system. The application then auto-generates key outputs including consolidated bored pile reports and concrete graphs, which help ensure accuracy and reduce manual work.

- Taking this a step further, we've partnered with SGBuildex to connect our system to BCA via SGBuildex's API. This allows us to transmit verified piling data directly from our application to the authorities in a structured, secure, and timely manner — ensuring traceability from site to submission.

- By beginning with piling — the foundation of any development — CHEC demonstrates how digitalization, when integrated with national platforms like SGBuildex, can bring enhanced compliance, faster verification, and stronger accountability to the construction process.

From Site to Nation:
Building Singapore's
Geotechnical Data Hub

05

From Site to Nation:
Building Singapore's Geotechnical Data Hub

- We are looking at extending beyond project-level integration. We believe that by capturing and contributing verified geotechnical data (e.g. soil type, depth, water table) into a centralized national database, the industry can collectively:

  - Improve understanding of Singapore's subsurface conditions;
  - Reduce costly and redundant soil investigations during tenders;
  - Minimize incorrect design assumptions related to soil profiles;
  - Shorten design development timelines;
  - Optimize early-stage project planning and cost estimation.

- We believe, if scaled industry-wide, could dramatically increase **efficiency, accuracy, and sustainability** in the planning and design phases of future developments. With strong data governance and shared access protocols, it could serve as a critical pillar of Singapore's smart built environment.

Data at Source:
Empowering Project and
Executive Intelligence

06

Data at Source:
Empowering Project and Executive Intelligence

- A critical principle underpinning all our digitalization efforts is data at source — the idea that accurate, timely information must be captured where and when it happens. This ensures authenticity, reduces reporting delays, and lays the groundwork for real-time visibility.

- From there, **tiered dashboards** transform raw data into meaningful insights for different users:
  - **For Senior Management**: Dashboards provide an executive overview of project status — covering programme health, procurement, cash flow, preliminaries, and profitability. Key deviations (e.g. delays or overspending) are clearly flagged, and drill-down functions allow top management to identify root causes and intervene early.
  - **For Project Teams**: Project Directors, Managers, Engineers, and Site Supervisors each have access to role-specific dashboards that reflect manpower utilization, progress tracking, safety inspections, QA/QC status, and more. This common situational awareness across disciplines fosters alignment, accountability, and a proactive project culture.

- In this environment, everyone — from C-suite to site — sees the same live reality, allowing faster, smarter, and more coordinated decision-making.

Conclusion

- At CHEC, digitalization is not an isolated initiative. It is a **strategic transformation** of how we manage our people, data, and processes — turning construction sites into **smart, connected workspaces**.

- Through platform integration, real-time dashboards, strategic partnerships (like Pan-United), and our active role in SGBuildex, we are shaping a digital site that reflects **excellence in execution, responsibility in compliance, and leadership in innovation**.

- By doing this transformation today, we help set the foundations for a smarter construction industry tomorrow — one that is well-aligned with **Singapore's vision of a sustainable, digital-first built environment**.

We are building a closer world!
We are sharing a better life!
We are creating a brighter future!