HxGN SMART Build

HxGN SMART Build

is pioneering a simple yet powerful platform that will improve profit margins and drive completion of projects safely, on time and on budget.

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Challenges of Building SMART

No go-to solution:
Existing tools are inadequate and complex

Starting off on the wrong foot:
Base planning is model flawed / inaccurate

Missing the big picture:
Limited / no coordination during pre- construction phase

No instruction manual:
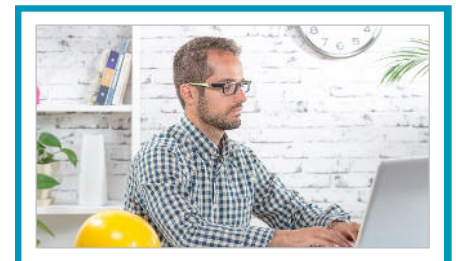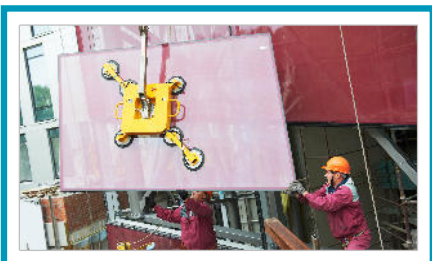Inefficiencies from poor work package / planning

No feedback loop:
Lack of timely feedback from the field

Recipe for finger pointing:
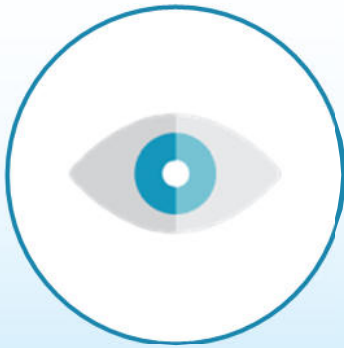Little or no accountability/responsibility

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Isolated Silos of Information

Coordination during construction …

… is a **huge and costly challenge** for the General Contractor …

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…and **cost and time overruns** expose the owner to risk.

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HxGN SMART Build

Clarity
Comprehensive role-based access to the entire project

Connectivity
Centralised information sharing via cloud-enabled private portal

Simplicity
Ease of use and automation replace complexity

From the ground up

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HxGN SMART Build: A Construction Enterprise Solution

Construction Site

Construction Office

Owner

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Your project at a glance

Pre-Construction

Construction

Final Asset Delivery

DESIGN

PLAN

PACKAGE WORK

CONSTRUCT
Progressive Reality Capture
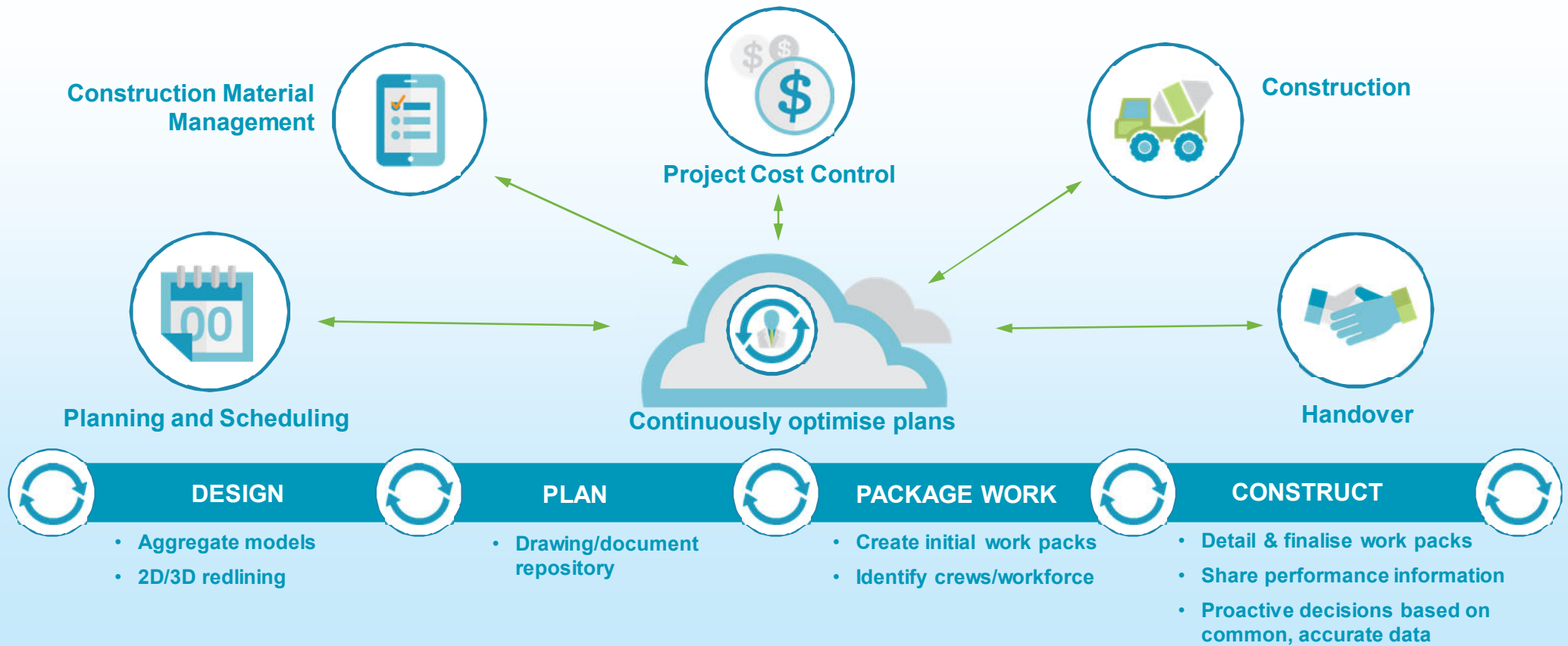
OPERATE

Project Control & Management
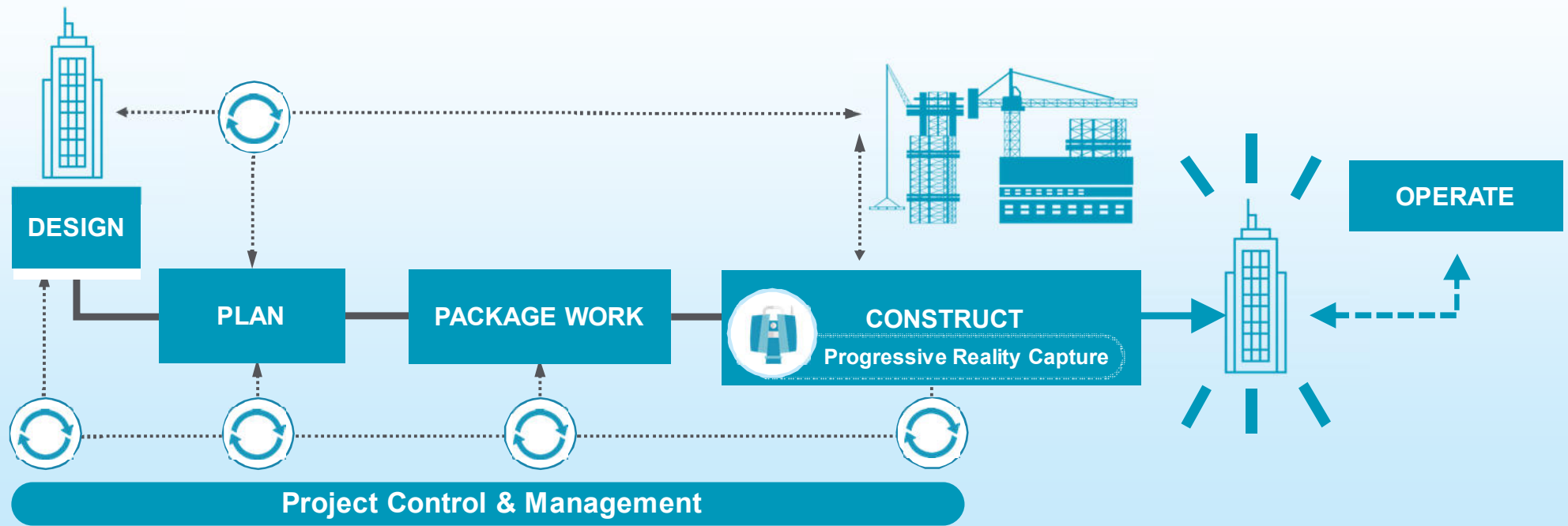
Full transparency throughout life of project

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HxGN SMART Build Hub: Common Data Environment — the Walls Disappear

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Project Control and Management : HUB

Construction Material Management

Project Cost Control

Construction

Planning and Scheduling

Continuously optimise plans

Handover

DESIGN	PLAN	PACKAGE WORK	CONSTRUCT
• Aggregate models • 2D/3D redlining	• Drawing/document repository	• Create initial work packs • Identify crews/workforce	• Detail & finalise work packs • Share performance information • Proactive decisions based on common, accurate data

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Project Control and Budget Tracking with No Surprises

Dynamically react to issues & deviations and manage change

Understand and manage schedule and cost impacts of deviations

Accurately reflect 'real' project status against budget, forecast & performance
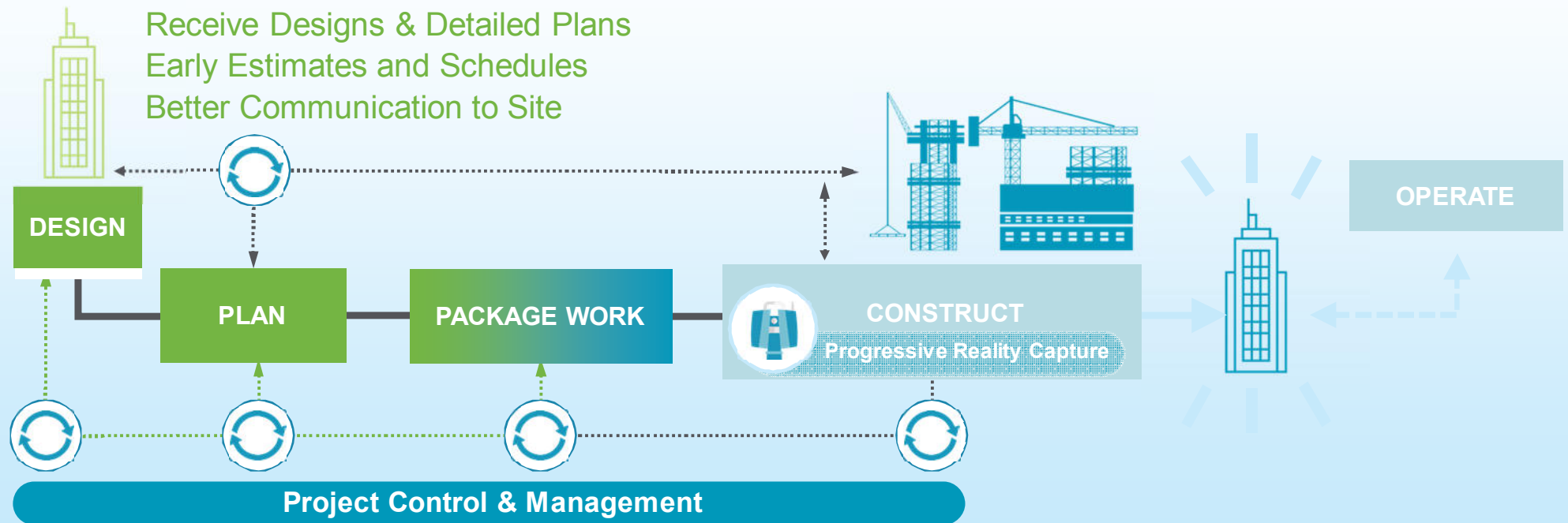
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Phase 1:
Pre-Construction

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Phase 1: Pre-Construction

Pre-Construction

Construction

Final Asset Delivery

Receive Designs & Detailed Plans
Early Estimates and Schedules
Better Communication to Site

DESIGN

PLAN

PACKAGE WORK

CONSTRUCT
Progressive Reality Capture

OPERATE

Project Control & Management
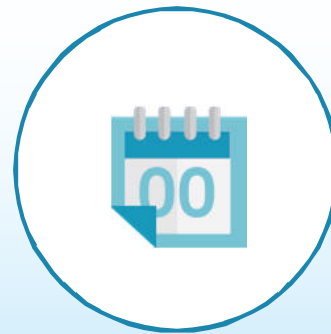
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Pre-Construction Planning

1 Receive designs and project documentation

2 Establish estimates and budgets

3 Procure, create detailed plans and work instructions

4 Communicate plans, instructions and information

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SMART Build: Project & Model Management

Project & Model Mgmt

Planning & Scheduling

Project Cost Controls

Construction

Enterprise-Level Capability
Single, Complete Project Information Model

Revit 3D BIM Model

IFC Interchangeable Model

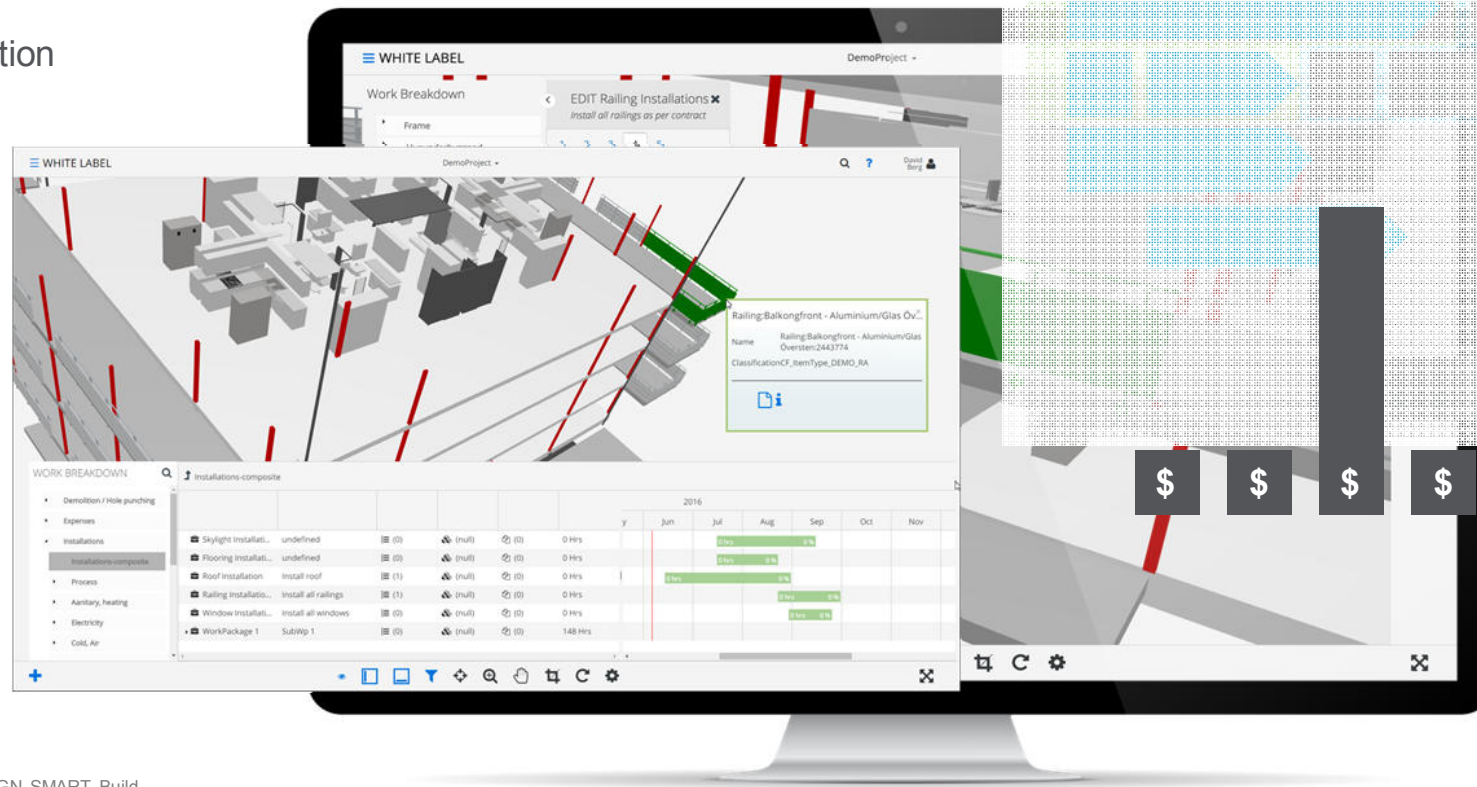Intergraph 3D Models

Sensors & Devices

Construction Applications

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SMART Build: Planning & Scheduling

Project & Model Mgmt

Planning & Scheduling

Project Cost Controls

Construction

HEXAGON

Centralised Data Hub And Archive

Increased end-user adoption

One common, mobile-enabled data environment for all

Single archive for drawings, contracts, models, etc.

Clear, timely communication – no redundancies

Templated solution configuration reduces effort/cost to initiate new projects

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Collaboration & Coordination
Efficient and Accessible

Remove silos to improve accuracy between field and office

Access all data without expensive software or plug-ins

Improve execution with dynamic flow between people, processes and sensors

Use of existing office and mobile devices reduces overhead

Collaborative ecosystem compresses schedules and reduces delays

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Pre-Construction — Planning
Dynamic and Proactive

Model integration correlates work breakdown structure across application modules

Data-driven takeoff of construction quantities streamlines estimates

Collaboration capabilities facilitate rapid creation of schedules

Quickly communicate construction sequencing via 4D & 5D animations

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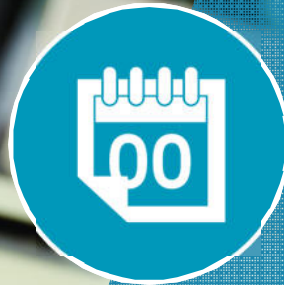
Project Control

Increase predictability / lower risk
by managing:

- **Critical quantities**
- **Costs**
- **Performance and forecast**

Capture field issues to manage / control scope change

Keep apprised with visual reporting of project status to key stakeholders

Clarify accountability and responsibility with control over costs, progress and earned value metrics

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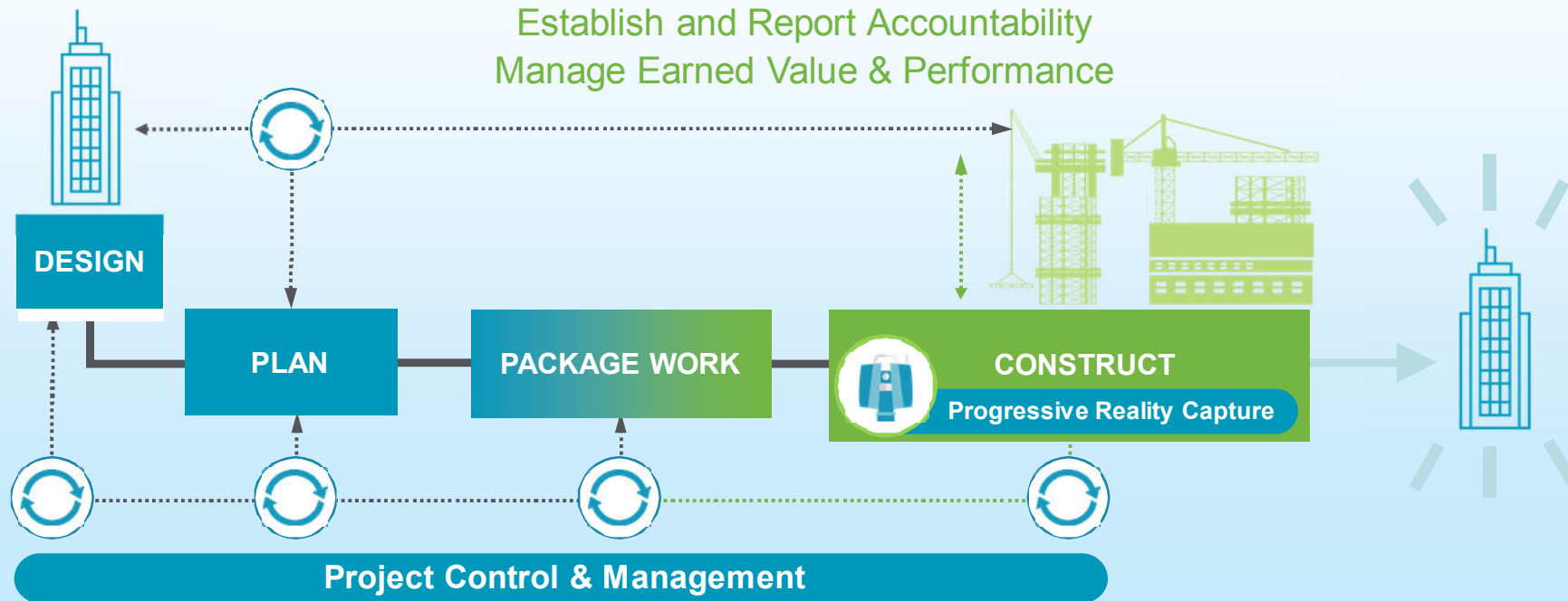# PHASE 2:
Construction Execution

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Phase 2: Construction

Pre-Construction

Construction

Execute Plans Capture/Report Progress
Establish and Report Accountability
Manage Earned Value & Performance

Final Asset Delivery

DESIGN

PLAN

PACKAGE WORK

CONSTRUCT

Progressive Reality Capture

Project Control & Management

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An Execution Plan that is Clear and Connected

Execute plans and instructions and increase degree of automation
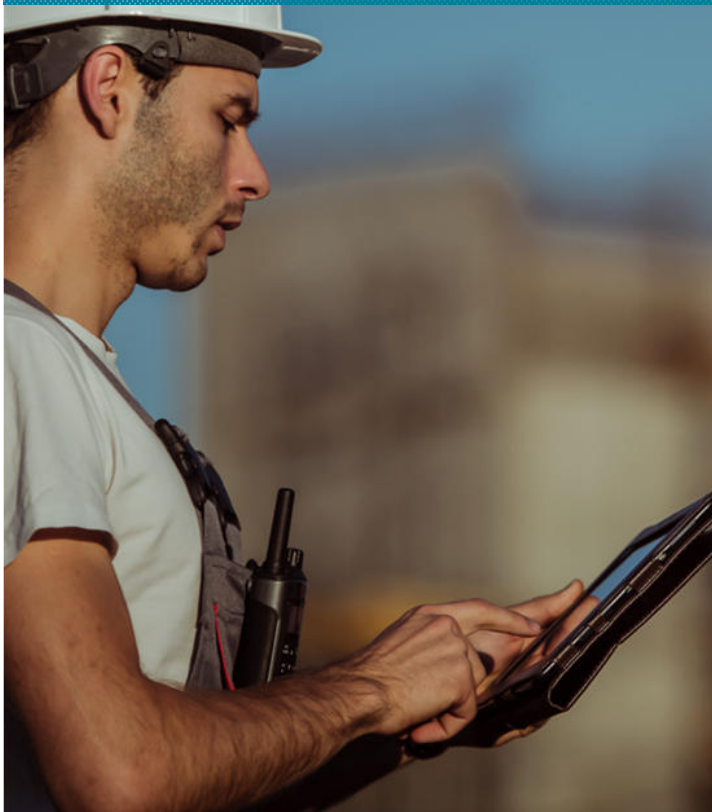
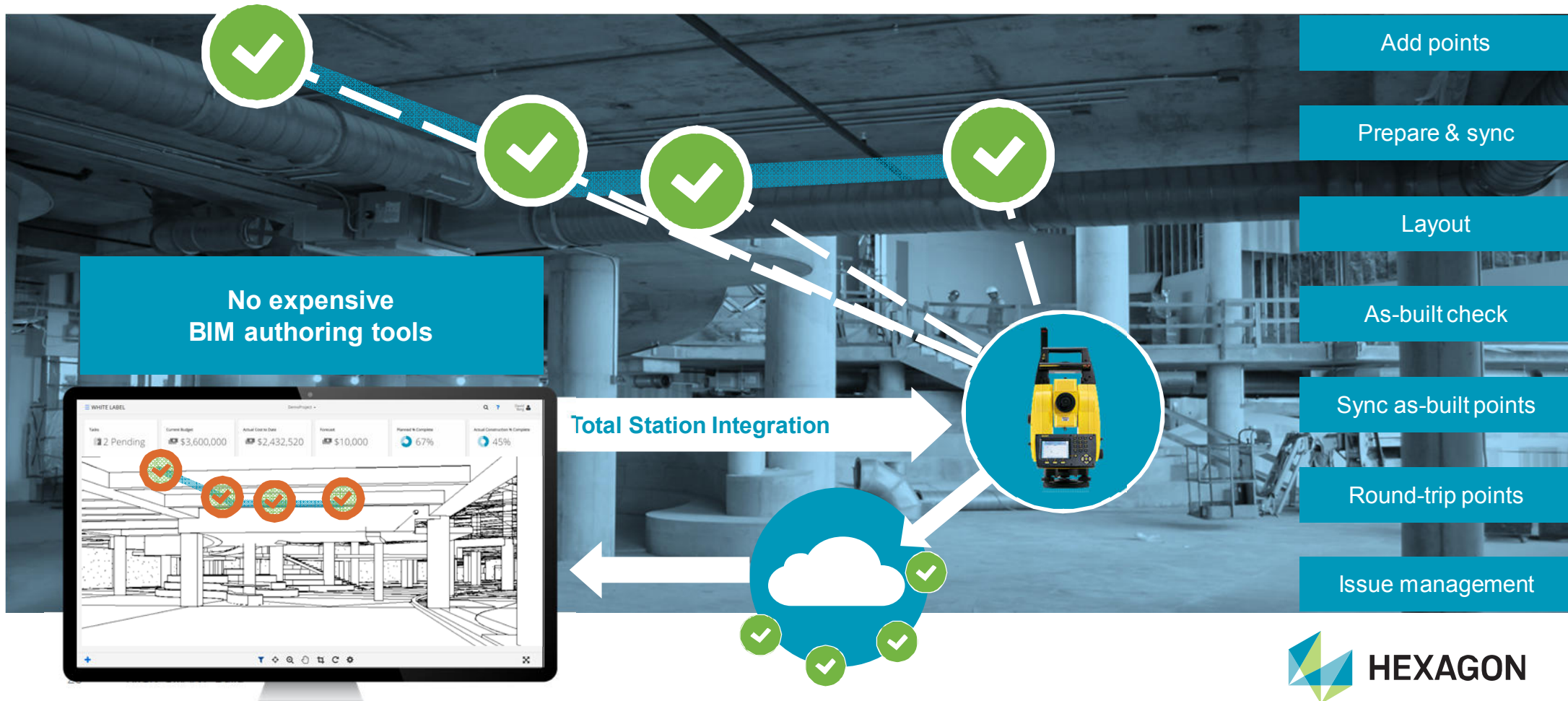Capture/report progress and deviations

Capture & analyse earned value

Establish and report accountability

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In Practice

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Office to Field – Field to Office: Total Station

No expensive BIM authoring tools

Total Station Integration

Add points

Prepare & sync

Layout

As-built check

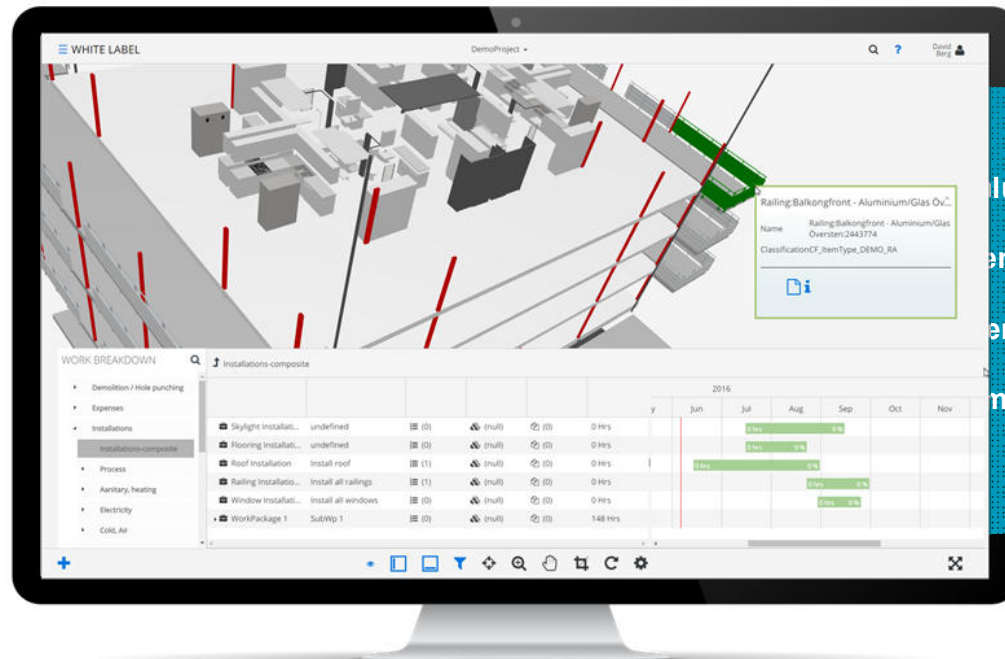Sync as-built points

Round-trip points

Issue management

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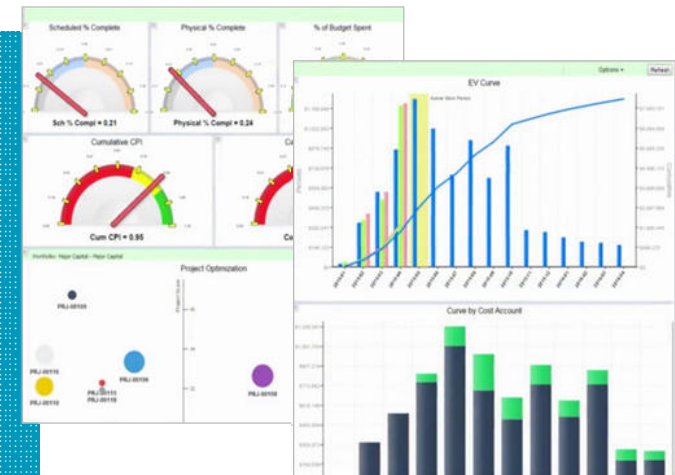# SMART Build: Project Cost Controls

Project & Model Management

Planning & Scheduling
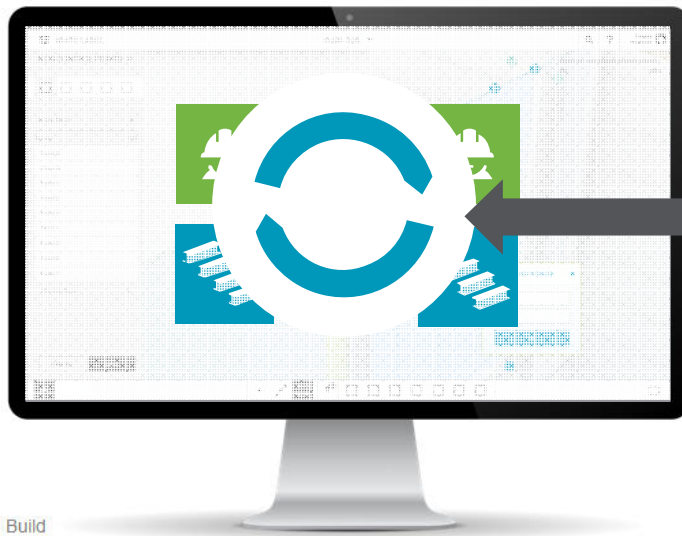
Project Cost Controls

Construction

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SMART Build: Construction

Project & Model Management

Planning & Scheduling

Project Cost Controls

Construction

WORK Package

Progress

Project Dashboards

Track progress with real-time dashboards and 3D visual reporting

Identify issues quickly with dashboard 'pictures' that mitigate impact

Increase efficiency, delivering the exact data the user needs

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Real-Time Reporting

Actual field events immediately reported and updated

Right data, right now with on-demand reports captured on mobile devices in the field

Powerful reporting expedites accurate decision making

Mitigate risk / augment predictability of success with Project Controls

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Smarter Job Site: Office to Field

More speed and accuracy with total stations, connecting models and smart BIM layout points

Quick problem resolution with as-built single points, then round trip back into collaborative model

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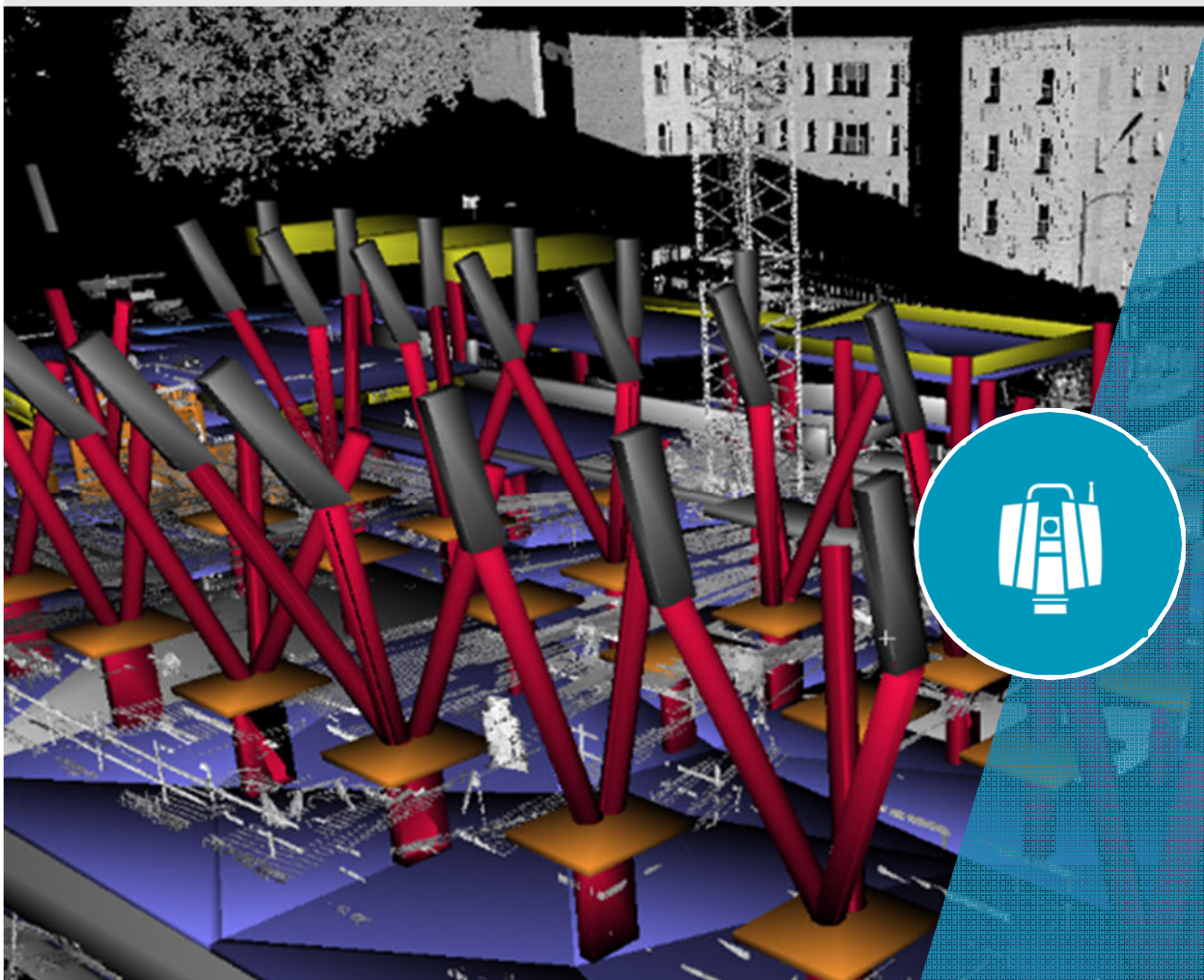
Smarter Job Site: Field to Office

Progressively scan during construction

Reduce rework by comparing with models for deviation detection

Provide a virtual job site for safety inspections

'Project milestone scans' capture behind walls, under floors and above ceilings

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PHASE 3:
Final Asset Delivery

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Phase 3: Final Asset Delivery

Pre-Construction

Construction

Final Asset Delivery
Digital as-built asset

DESIGN

PLAN

PACKAGE WORK

CONSTRUCT
Progressive Reality Capture

OPERATE

Project Control & Management

HEXAGON
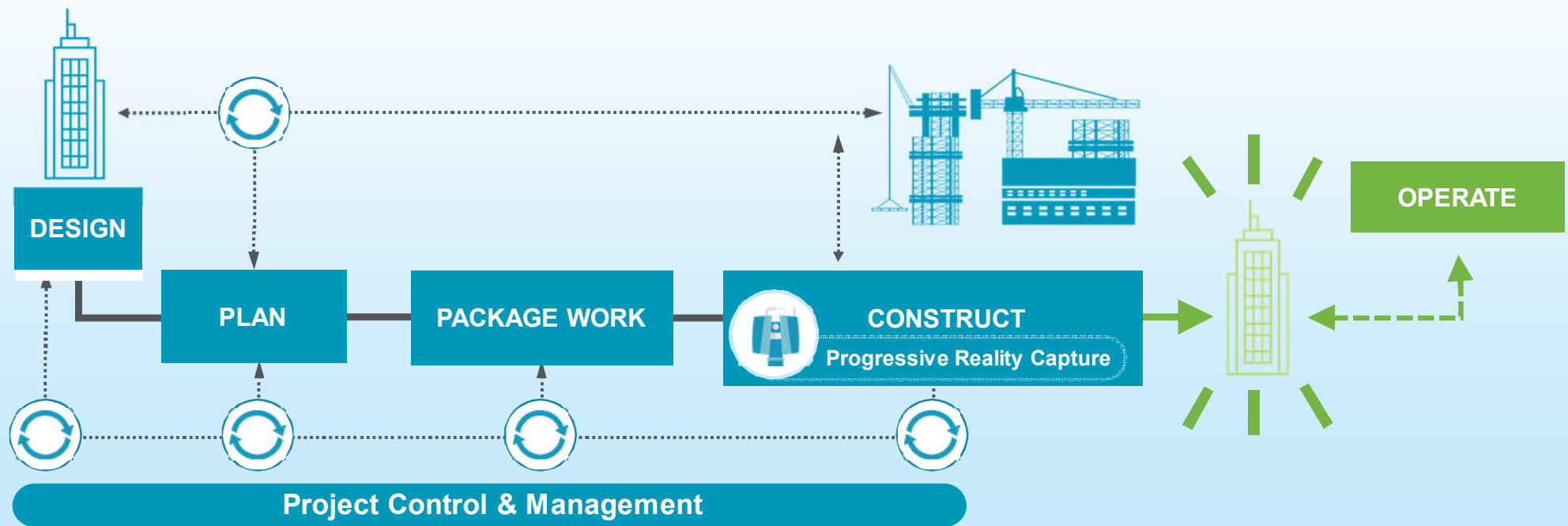
Operate / Maintain As-Delivered Asset

Single, secure source for all project information for operation and maintenance
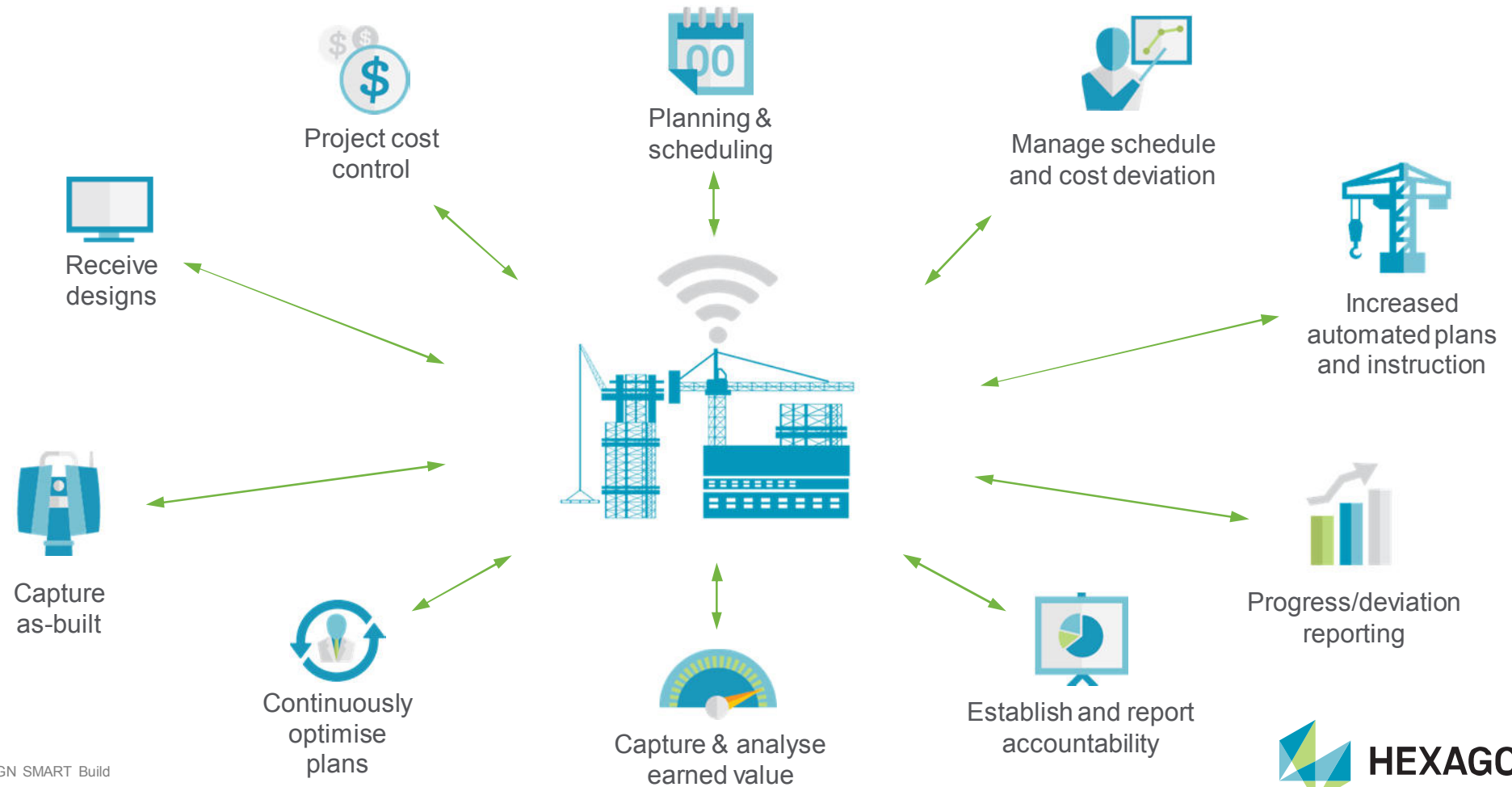
Easily accessible via web browser from all devices – easy to navigate

- **Access to accurate data**
- **Maintenance repairs**
- **Planning future renovations**
- **Retrofit**

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In Summary

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HxGN SMART Build for the Life Cycle of Your Project

Project cost control

Planning & scheduling

Manage schedule and cost deviation

Receive designs

Increased automated plans and instruction

Capture as-built

Progress/deviation reporting

Continuously optimise plans

Capture & analyse earned value

Establish and report accountability

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Benefits of Building SMART

Planning & Pre-Construction

Enhanced collaboration & communication

Higher quality of estimates & budgets

Real-time feedback from site to continuously optimise planning

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Benefits of Building SMART

Project Execution

Automation of manual tasks during project execution

Real-time access to detailed work instructions & packages

Access to up-to-date project information

Real-time deviation reporting back to the office

Measures progress, cost, variances and earned value

Accountability through improved real-time reporting

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Benefits of Building SMART

Project Completion

Automatic creation of accurate as-built digital asset throughout project life cycle, ready for handover

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HxGN SMART Build

Clarity
Comprehensive role-based access to the entire project

Connectivity
Centralised information sharing via cloud-enabled private portal

Simplicity
Ease-of-use and automation replace complexity

From the ground up

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Thank You

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