



3D CAPTURE INSIGHT

Choosing a 3D Capture Solution

A guide to the attributes of a 3D Capture model — and what it takes off your team's plate.

A practical guide for operations, maintenance, engineering and project teams comparing a LiDAR-based 3D Capture solution against traditional site surveys and manual documentation.

00 – OVERVIEW

What is a 3D Capture solution — and what value does it bring?

From a single site visit to a fully measurable, navigable digital twin your whole team can use.

THE SHORT ANSWER

A 3D Capture solution is an online, navigable model of a physical space — captured once, in hours, and reused for training, planning, measurement and asset documentation without another site visit. Because it is built from laser-based scanning rather than a tape measure, published industry data ties reality capture to survey speed up **70–80%**, change orders down as much as **75%**, and site revisits down as much as **90%**.

50K+ SQ. FT. CAPTURED PER PERSON, PER DAY	~2–4mm POINT-CLOUD DIMENSIONAL PRECISION	3 BUSINESS DAYS TO A HOSTED MODEL	1-click ASSET ACCESS FROM IBM MAXIMO
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01 – HOW THE TECHNOLOGY WORKS

LiDAR, explained

The capture camera answers one question: *what does this space actually look like, down to the millimeter?* It uses LiDAR (Light Detection and Ranging) to fire laser pulses at every surface and measure the time each pulse takes to return, building a precise 3D point cloud as the operator moves through the site.

A 360° camera captures true-color imagery at the same time. That imagery is overlaid on the point cloud, so the finished model looks and feels like the real space rather than a bare wireframe.

The result is a single dataset that is simultaneously a **photorealistic walkthrough** and a **millimeter-accurate measurement record** — with schematic floor plans and print-quality 4K photography generated from the same capture.

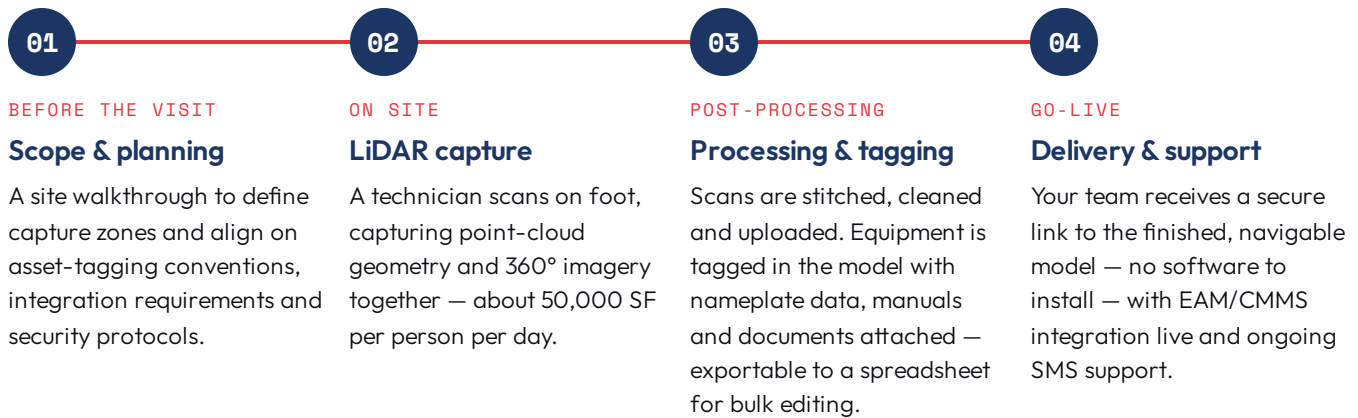


FIG. 1 – LIDAR PULSES MAP EVERY SURFACE INTO A MEASURABLE 3D MESH.

02 – THE CAPTURE PROCESS

From site visit to production use

A technician walks the space with the capture camera at roughly 50,000 square feet per person per day, so most facilities are fully captured in a single visit — with zero disruption to ongoing operations. From there, the raw scan moves through a defined pipeline before it reaches your team.



TYPICAL DELIVERY TIMELINES

3 business days

Hosted, shareable 3D model ready for your team

10 business days

Model with equipment and asset tagging applied

6–8 weeks

Full Scan-to-BIM deliverable for design and engineering



FIG. 2 – SMS TECHNICIANS VERIFYING CAPTURE COVERAGE ON SITE BEFORE LEAVING THE FACILITY.

03 – THE FINAL DELIVERABLE

What you get — and what it replaces

DIMENSION	SMS 3D CAPTURE SOLUTION	TRADITIONAL ALTERNATIVE
Site measurements	Millimeter-accurate measurements of the entire space, captured once	Taken by hand — prone to human error and missed areas
Viewing the space off-site	Fully immersive, easy-to-navigate online model, accessible from any computer	Flying out to the site or reviewing static photos — costly and rarely comprehensive
Documentation completeness	100% of the visible environment, including overhead MEP, structural steel and hard-to-reach areas	Only what a surveyor remembers to measure; hidden elements are often missed
Dimensional accuracy	Point-cloud precision to within roughly 1.9–4mm	Tape-measure methods carry inconsistent, uncontrolled tolerances
Asset information	Tagged equipment linked to maintenance records, P&IDs and inspection history in IBM Maximo	Nameplate data and manuals scattered across binders, drives and memory

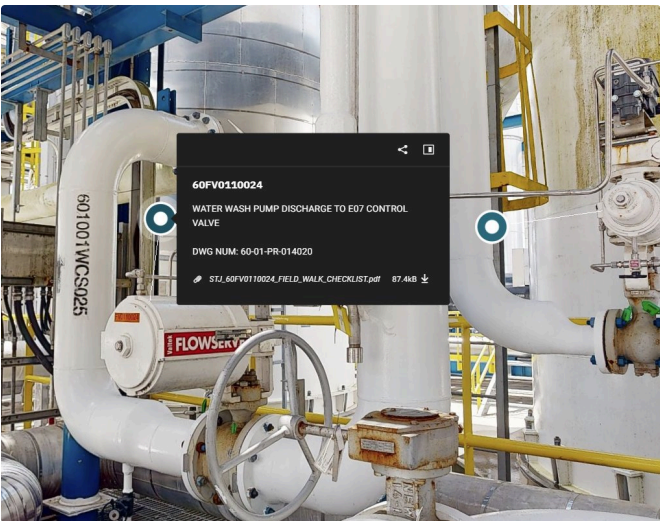


FIG. 3 – ASSET TAGGING IN ACTION: TAG, DESCRIPTION, DRAWING NUMBER AND FIELD CHECKLIST, ONE CLICK AWAY.

EAM-LINKED DOCUMENTATION

Every asset, in context

Tags placed directly in the model carry the details your technicians need — tag number, service description, drawing reference and attached documents such as field-walk checklists and O&M manuals.

Because SMS is an IBM Platinum Business Partner, the model connects to **IBM Maximo**: click an asset, see its work history, and plan the approach — with the same accurate view for every stakeholder.

BEYOND THE WALKTHROUGH – OUTPUTS FROM ONE CAPTURE

Schematic floor plans

Measured 2D plans generated from the scan for space planning and layout work.

Point cloud & BIM

Exportable geometry for CAD, BIM and design-and-construction platforms.

Print-quality imagery

High-resolution stills for reports, audits and bid packages.

04 — THE CORE DISTINCTION

*A manual survey records what someone remembers to measure. A 3D Capture model records **everything** — down to the millimeter — so nothing has to be measured, or visited, twice.*

CORE CAPABILITIES

Six ways 3D Capture delivers immediate value

01

Remote reference & collaboration

Give every stakeholder an accurate, navigable view of the facility without a site visit — cutting travel and compressing planning timelines across teams and time zones.

03

Facility documentation

A permanent record of layouts, equipment locations and current-state conditions that supports safety audits, regulatory inspections and capital planning.

05

Training, onboarding & knowledge transfer

Realistic, on-demand training on your actual facility, without disrupting live operations or pulling supervisors into repeated walkthroughs.

02

Renovation & project estimates

Verified dimensions across the entire space in scope, so estimates are built on reality rather than assumptions — and change orders from missed measurements disappear.

04

Navigation & wayfinding

Personnel and contractors locate equipment, access points and critical infrastructure quickly, with spatial understanding before they arrive on site.

06

Future project development

Project teams view the full area in scope in spatial context — identifying conflicts and validating assumptions before work begins.



FIG. 4 — MECHANICAL SYSTEMS CAPTURED WITH OVERHEAD PIPING AND LABELS INTACT.



FIG. 5 — SITE-LEVEL NAVIGATION: EVERY TAGGED ASSET PLOTTED ACROSS THE FACILITY.

05 – WHY IT MATTERS: THE BUSINESS CASE

From a single site visit to measurable savings across the project

The value of a 3D Capture model shows up long before the final walkthrough — in the hours, trips and change orders it removes from a project.

BUSINESS LEVER	IMPACT	REAL-WORLD / FIELD EVIDENCE
Site survey speed	↑ 70–80%	A traditional six-hour manual survey is often completed in about 90 minutes with laser-based capture — 4–5× the documentation speed.
Change orders & rework	↓ up to 75%	Point-cloud precision of roughly 1.9–4mm lets prefabricated components fit correctly the first time, virtually eliminating field adjustments.
Site revisits	↓ up to 90%	Comprehensive first-visit capture removes the travel and labor cost of sending a technician back for a forgotten measurement.
Project initiation timeline	↓ 50–60%	As-built drawings and BIM coordination models are produced in a fraction of the time when all data is captured on the first visit.
Material waste	↓ 20–30%	Precise dimensional data lets teams order exactly what's needed instead of over-ordering to cover hidden irregularities.
Capital planning & renovation estimating	↓ 3–5% ON BIDS	Millimeter-accurate as-built data supports tighter contractor scoping and more reliable estimates; one utility investing \$250–300M a year in capital projects reports up to 400% ROI from digital-twin-based planning.

Industry estimates put rework and design clashes at up to 20% of a typical project budget; teams equipped with reality capture bring that below 5%. Source: published reality-capture industry data.

TRAINING & ONBOARDING

Beyond the measurable levers above, 3D Capture models support safety training and new-hire onboarding. Employees learn layouts, equipment locations and safety procedures through a self-paced virtual walkthrough rather than in-person shadowing — sparing supervisors repeated walkthroughs and keeping new hires out of areas with live equipment until they're ready. One contractor used 3D digital twins this way to onboard roughly **5,000 journeymen and apprentices across 80 locations**.

Source: published digital-twin training case data.

WHO USES IT

Four teams. One model. Different problems solved.

MAINTENANCE & RELIABILITY

Plan outages without guessing

Link work orders to exact locations, verify isolation points before arriving, and brief contractors on equipment they've never seen.

Click asset → See work history → Plan approach

ENGINEERING & PROJECTS

Design with real constraints

Verify clearances before equipment ships, route large components through actual spaces, and compare as-built to drawings in minutes.

Measure → Route → Validate → Install

SAFETY & TRAINING

Train before they arrive

Walk new hires through equipment virtually, review incident locations remotely, and build spatial awareness without site access.

Orient → Familiarize → Assess → Deploy safely

REMOTE COLLABORATION

Coordinate without travel

Give engineers full context from their desk, show contractors exactly where to go, and get vendor input without a site visit.

Share link → Review together → Approve remotely

INDUSTRY EXPERIENCE

Proven in complex, high-stakes environments

TURNAROUND PLANNING Manufacturing & production Continuous process, batch and pharma/GMP facilities	SAFETY TRAINING Energy & utilities Power generation, substations, water/wastewater	CAPACITY PLANNING Data centers & mission-critical Hyperscale, colocation, critical infrastructure
WAYFINDING & M&E TRACKING Healthcare & campuses Hospital, university and corporate campuses	COMPLIANCE AUDITS Transportation & airports Terminals, rail stations, ports, transit centers	LAYOUT OPTIMIZATION Distribution & logistics Fulfillment centers, cold storage, cross-docks

“Reduced our turnaround planning time by 40% and eliminated multiple site visits. The Maximo integration is seamless.”

DIRECTOR OF MAINTENANCE · FORTUNE 500 MANUFACTURING PLANT

One capture. *No second trip.*

Choosing between a 3D Capture model and a traditional survey isn't really a technology decision — it's a decision about how many times your team is willing to measure, visit and re-check the same space. A single capture replaces the return trips, the missed measurements and the change orders that come from working off memory and photos. It is faster, more accurate, and reusable for the life of the space.

PARTNER WITH SMS

Strategic Maintenance Solutions has delivered 1,000+ successful projects for Fortune 1000 organizations over 25+ years. We scope, capture and deliver — with the EAM integration expertise a general scanning firm can't match. Talk to an SMS engineer about how 3D Capture can support training, planning and asset documentation for your facility.

GENERAL INQUIRY

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LEARN MORE

HEADQUARTERS

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