



# DATA CENTRE SOLUTIONS

DEVELOPING DIGITAL INFRASTRUCTURE IN A HYBRID WORLD

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**WE'RE READY FOR AI.  
ARE YOU?**

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## Digitisation in the field: construction's next frontier



Intelligent and useful field-centric technologies are reshaping how construction projects are executed and governed. What began as isolated point solutions, RFID tags, a drone here or there, has coalesced into an integrated digital fabric that now layers machine-learning, analytics, computer vision, and predictive AI across scheduling, production control, quality, safety, and equipment management.

BY SHANTHI RAJAN, CEO OF LINARC

EARLY ADOPTERS are already reporting double-digit gains in labor productivity, 30–40 percent reductions in rework, and a measurable drop in lost-time incidents. For executives under pressure to deliver predictable margins and safer job sites, AI-powered field digitization has moved from “nice to have” to strategic imperative.

### From static schedules to real-time, AI-driven workflows

The days of printing a two-week look-ahead and hoping it survives the week are numbered. Today, an AI-first field app syncs crews, materials, and inspections in real time; machine-learning engines weigh past productivity and weather to reshuffle priorities before anyone clocks in. Geo-

fenced timecards confirm boots are on site, and voice notes auto-transcribe into the master schedule—turning yesterday’s static plan into a living system.

### 3-Step Live Workflow Setup

- Deploy a cloud platform that merges CPM schedules, cost codes, and mobile crew boards in one interface.



- Activate geo-fencing on time cards so payroll starts only when craft workers cross the gate.
- Turn on schedule recommendations; review daily “proposed shifts” instead of manually re-sequencing tasks.

**Impact:** Contractors unlock direct labor savings by compressing the wait-and-see gaps that traditionally consume 5–10 percent of field hours. Project managers and schedulers gain schedule transparency that they can forward to owners and public stakeholders.

**Visual verification at production speed – Powered by Computer Vision**

Progress reporting has long been hampered by subjective walk-throughs and after-the-fact punch lists. Computer vision engines now ingest drone imagery, mast-mounted cameras, and helmet-cam feeds, comparing as-built conditions to BIM in near real-time. The software flags out-of-tolerance welds, missing embeds, or misrouted conduit before downstream trades mobilize.

- Integrate drone and stationary camera feeds directly into your field data environment.
- Map photo IDs to model elements so that exceptions land on the exact task and cost code.
- Automate “ready for next trade” notifications once the dependent tasks are completed.

**Pain point addressed:** Rework, which typically accounts for 2–6 percent of project cost, is detected and corrected early, preserving both margin and

schedule buffer. Warranty exposure drops because photographic evidence of compliance is updated.

**Sensor-enabled data decisions replace guesswork**

Embedded IoT sensors now cover concrete pours, MEP systems, and heavy equipment. Data from these can be integrated into mobile apps and analytics to provide feedback and foresight. From logistical production planning to curing timelines, sensors and tags can elevate site management.

**Predictive Sensor Rollout Guide**

- Use mobile apps to read sensors, RFIDs, and BLEs for onsite updates.
- Real-time cloud connections can immediately process these to give instant feedback and identify issues.
- A connected schedule can impact upcoming field tasks and the critical path.

Why it matters to executives: IoT-enabled projects can reduce costs by up to 29%. This significant cost reduction is achieved through enhanced real-time data exchange, remote monitoring, and improved project efficiency and safety. The accuracy of site data improves the quality of decisions.

**Safety automation and compliance intelligence**

Computer-vision models detect missing PPE, edge exposure, and unsafe proximity to operating equipment, triggering real-time alerts and logging incidents for trend analysis. Facial-recognition turnstiles verify worker

credentials, ensuring site access safety. Impact sensors inside helmets feed data to AI models that distinguish genuine impacts from dropped gear, accelerating root-cause analysis without false alarms.

**Smart Safety Deployment Steps**

- Link AI safety cameras and smart PPE sensors to your live site map; violations surface as geotagged pins.
- Automate corrective-action workflows so foremen receive instant tasks instead of weekly safety reports.
- Sync credential databases with access control to stop out-of-date workers at the gate.

**Risk-management payoff:** Lower incident rates translate into favorable EMR scores and reduced insurance premiums, while owner confidence grows when AI-validated safety metrics are reported daily instead of monthly.

**Jobsite connectivity that never blinks**

Digitization is only as strong as the network spine that supports it. Private 5G, CBRS, and mesh Wi-Fi maintain high-bandwidth links from subterranean parking decks to rooftop penthouses, ensuring the AI models at the edge receive fresh data seconds after it’s generated. Offline-first apps buffer data when the signal drops, then sync automatically, keeping AI predictions intact and eliminating version conflicts.

**Always-on network blueprint**

- Stand up a site-wide mesh or private cellular network during mobilization, not after issues appear.

**Metrics That Win Boardroom Approval**

KPI	Typical Baseline	Digitized Field Target	Source of Improvement
Labor productivity (hours/CSI unit)	1.00	1.12–1.18	Optimized task sequencing & reduced waiting
Rework cost (% of contract)	3–6 %	<2 %	AI computer-vision detection & AR validation
Schedule variance (critical-path days)	10–15	<5	Change propagation
Lost-time incident rate (per 200 k hrs)	2.5	<1.5	Safety analytics
Equipment downtime (% of shift)	8–12 %	≤5 %	Predictive telematics & autonomous correction