

AAQS / INQS CONFERENCE 2026

“QS Quo Vadis? Technology, Transformation and Tomorrow”

TECHNOLOGY & DIGITAL QUANTITY SURVEYING

The Future of the Quantity Surveying Profession in Africa

Conference Research Paper

Swakopmund, Namibia • 22–27 July 2026 • Presentation time: 30 minutes

THE QUESTION BEFORE THE PROFESSION

“QS Quo Vadis?”

Where is the quantity surveying profession heading?

A digital revolution is reshaping how built assets are designed, measured, procured, delivered and maintained. This paper argues the answer is not to resist that change — but to lead it, as an African profession, on African terms.

What this paper covers



01

The evolution of the profession



02

Building Information Modelling & 5D



03

Artificial Intelligence



04

Cloud & the Common Data Environment



05

Reality capture: drones & scanning



06

Big data & predictive analytics



07

Blockchain & smart contracts



08

Digital twins & whole-life cost



09

Sustainability & the carbon QS



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The Continental imperative



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The future quantity surveyor



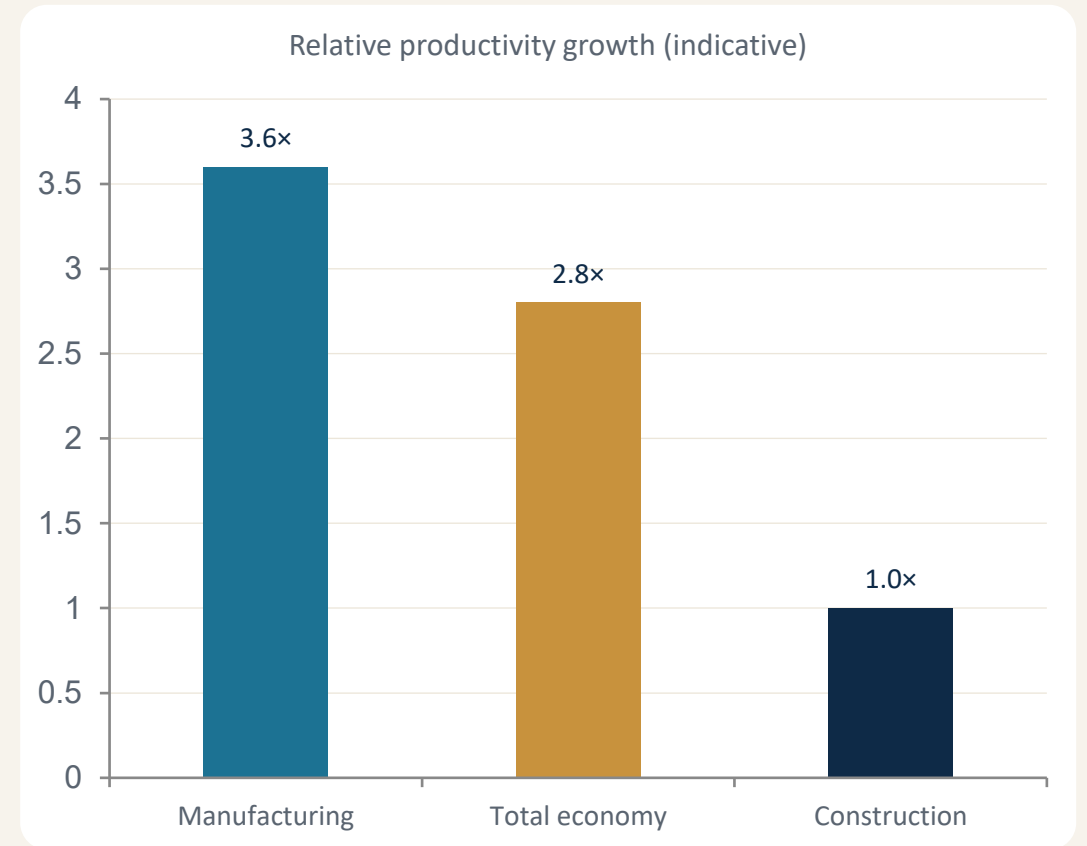
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Recommendations & conclusion

The productivity imperative

Construction has lagged the wider economy on productivity for decades. **The McKinsey Global Institute estimates construction labour productivity has grown at roughly a third of the rate of manufacturing** — and that closing the gap could add trillions of dollars in annual global value.

Digitalisation is the principal lever for closing that gap — placing the quantity surveyor, the profession of cost and value, at the centre of the transformation. For Africa, the AfDB has put the annual infrastructure financing gap in the tens of billions of dollars, sharpening the same urgency.

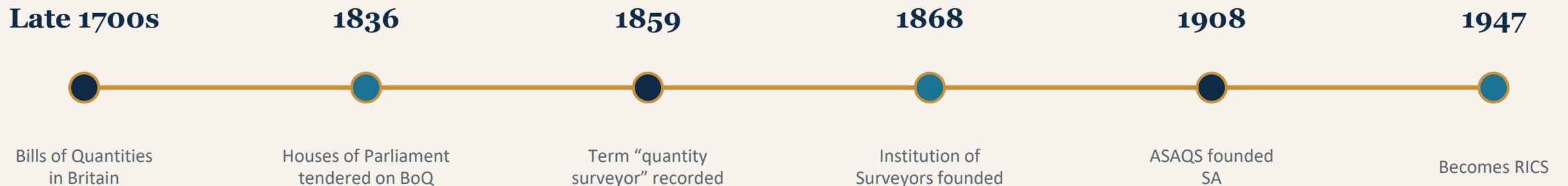


Indicative comparison after McKinsey Global Institute (2017).

Counting the cost — older than the profession

“For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?”

Luke 14:28 — the principle of cost planning, recognised long before modern construction economics, BIM or AI.



From measurer to construction economist

THE TRADITIONAL QS

- Manual take-off from printed drawings
- Bills of quantities, by hand
- Cost estimating & cost planning
- Tender documentation
- Contract administration
- Financial control



THE DIGITAL QS

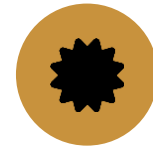
- Automated quantity extraction from models
- Real-time cost modelling (5D)
- Cloud-based collaboration
- Integrated financial dashboards
- Data-driven forecasting
- Whole-life cost & sustainability

Building Information Modelling

More than 3D geometry

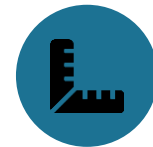
- Geometry
- Quantities
- Specifications
- Cost data
- Scheduling information
- Asset-lifecycle attributes

A single, coordinated source of project information shared by all parties.



Governed by ISO 19650

The international standard (2018) for managing information with BIM — superseding the UK PAS 1192 framework. Defines the common data environment and structured information exchange.

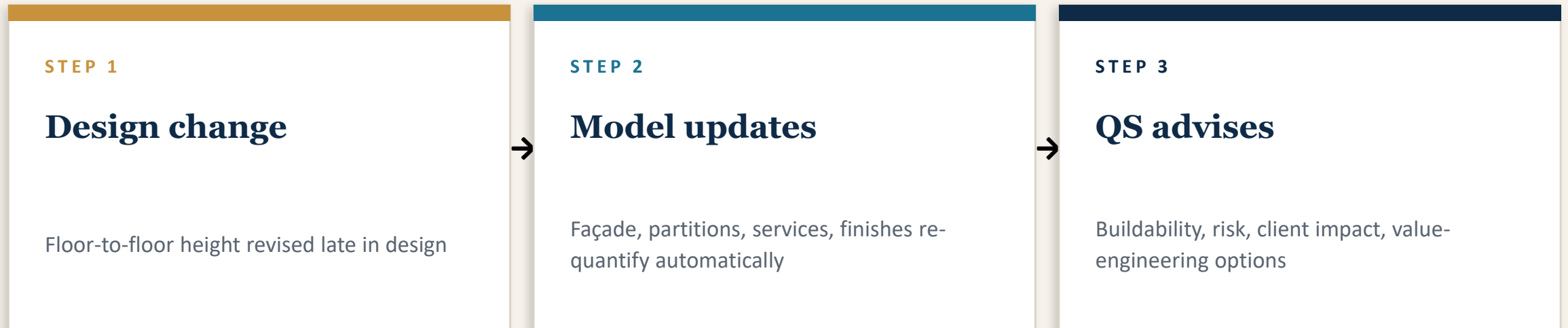


Why it matters to the QS

Reliable model-based cost advice depends entirely on the quality, structure and classification of the underlying information — so the QS must help shape model standards — and align them with the ASAQs SSM, the NIQS BESMM and our sister national frameworks.

Cost as the fifth dimension

5D BIM links cost (5D) and time (4D) to the 3D model. Quantities flow from model objects to rates, so an estimate becomes a **live model of project cost** that responds to design change.



Less time measuring, more time advising — the recurring signature of digital transformation.

BIM in Africa: barriers & momentum



Skills shortage

Limited supply of trained BIM personnel



Cost of tools

High software licence & hardware cost



Infrastructure

Connectivity & power-reliability gaps



Resistance

Cultural inertia in established workflows

Momentum is building. South Africa — through cidb and GBCSA — has advanced furthest. Adoption is rising through NIQS, INQS and sister institutes across Nigeria, Kenya, Ghana and Namibia. These barriers are real, but none is immutable — each can be brought down by training, investment and collective will.

Artificial Intelligence across the workflow



Automated estimating

Parametric estimates from past projects in minutes



Predictive cost modelling

Anticipate likely outturn cost from project traits



Risk forecasting

Flag conditions historically tied to overruns



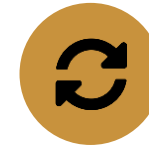
Contract analysis

NLP surfaces unusual or onerous clauses



Procurement optimisation

Smarter sourcing and package strategy



Schedule prediction

Forecast programme outcomes

AI augments the professional — it does not replace judgement.

Opportunity and obligation



Opportunities

- Faster decision-making
- Broader, more consistent forecasting
- Fewer routine errors
- Earlier risk identification
- Higher productivity



Risks to govern

- Data privacy & security
- Over-reliance on automation
- Cybersecurity exposure
- Erosion of core skills
- Bias — models trained on non-African data can be confidently wrong here

Machine speed + human accountability is safer and stronger than either alone.

AI doesn't make you more productive — it makes you faster.

True productivity comes only when automation is combined with the redesign of underlying processes and a firm focus on client outcomes. Otherwise, organisations simply automate their flawed assumptions — at greater speed.

The real differentiator is not AI itself, but the ability to translate customer understanding into organisational change.

The Common Data Environment



Continuous collaboration

Teams work from centralised, cloud-hosted information accessible anywhere — cost data shared, reviewed and approved in near real time.



One governed source

Under ISO 19650 the CDE is a single, controlled, auditable source of project information — version-controlled and secure.



Accelerated by COVID-19

The pandemic turned cloud collaboration from convenience to necessity — proving its resilience and the need for strong data governance.

Platforms: Autodesk Construction Cloud, BIM 360, Procore, Bluebeam, CostX, MS Teams — alongside Africa's QSPlus 5 (integrated take-off + cost estimate + Qsplus Cloud), supporting ASAQS SSM and NRM 2.

Drones, laser scanning & digital measurement

Capturing the physical world, digitally

- Drones (UAVs) & photogrammetry
- Terrestrial & aerial laser scanning
- Point clouds → scan-to-BIM
- GPS surveying & digital terrain models



Earthworks & volumes

Fast, accurate cut/fill and stockpile measurement on the corridor, mining and rehabilitation projects that dominate our pipeline



Safety

Measure hazardous or remote areas without access



Evidence

Dated records strengthen valuation & dispute resolution

Big data, benchmarking & prediction

Construction generates enormous data — historically under-used. **The QS, as the profession of cost and value, is best placed to capture and interpret it.**



Cost databases

Structured history of real project cost



Market intelligence

Anticipate price movements & fluctuations



Benchmarking

Replace assertion with demonstrable comparison



Predictive analytics

Analyse risk trends across portfolios

Data is becoming the construction industry's most valuable asset. A coordinated African cost-data effort — led by AAQS with the national institutes — is one of the most valuable things this profession can build.

Smart contracts & procurement integrity



Distributed ledger

Tamper-resistant, transparent record of transactions, variations and approvals.



Smart contracts

Self-executing terms — payment released automatically on verified completion.



Why this matters for Africa

Where procurement integrity and timely payment are persistent challenges, transparent and tamper-resistant transactions could **materially reduce the opportunities for corruption — Kenya, Nigeria and Rwanda have already piloted distributed-ledger applications in public-sector settings** and strengthen public confidence in how construction funds are spent.

Shorter payment cycles · fewer disputes · a trustworthy audit trail for the final account.

Whole-life asset management

A digital twin is a living digital replica of an asset, continuously updated from IoT sensors. Where BIM shows the asset *as built*, the twin shows it *as it operates*.

Most

of an asset's whole-life cost is incurred after construction — in operation, maintenance and renewal.



Operational economics

Model and optimise lifecycle cost, maintenance and renewal with live data.



A more durable role

For African infrastructure — where maintenance funding is often the binding constraint on service delivery — the QS who advises across decades, not only to practical completion, holds a more strategic and durable position.

Measuring carbon as well as cost

The skills that define the QS — measurement, costing, disciplined resource analysis — are exactly those needed to measure and manage carbon.



Lifecycle costing

Whole-life cost & value



Carbon analysis

Embodied & operational carbon



Energy modelling

Performance & efficiency



ESG reporting

Sustainability benchmarking

For Africa — where climate risk is acute and much of the built environment is still to be built — embedding carbon discipline from day one, supported by GBCSA and its peers in Nigeria, Kenya, Ghana and Namibia, is a generational opportunity.

The scale of the delivery challenge

Tens of billions

of US dollars a year — Africa's infrastructure financing gap (AfDB, 2018). Behind it sit Agenda 2063, PIDA and the AfCFTA — all depending on our ability to deliver.

Rapid urbanisation

Populations concentrating in fast-growing cities

Housing shortages

Acute deficits across much of the continent

Constrained finance

Limited public funding relative to need

Leapfrog the legacy — but clear the barriers

THE OPPORTUNITY — LEAPFROG

- As with mobile money, skip paper-based legacy systems
- More predictable, higher-quality delivery
- Greater transparency reduces corruption
- Stretch scarce public funds further
- Mobile-first, cloud-based working fits the context; standards harmonisation via SADC MRP

THE BARRIERS — TO ADDRESS

- Shortage of digital skills & trained QSs
- Limited digital investment, esp. smaller firms
- Connectivity & power-reliability challenges
- Institutional resistance to change
- Risk of a two-tier profession

The future quantity surveyor

A T-shaped professional

Deep in construction economics — broad across the digital, analytical, sustainability and cross-border regulatory (SADC MRP) domains that surround it.



Adaptability. More than mastery of any one tool, the capacity to keep learning — and to keep professional judgement at the centre — will determine who thrives.

Recommendations



Professional bodies (AAQS, ASAQS, NIQS, INQS)

Digital competency · BIM certification · AI ethics · SADC MRP + standards harmonisation



Universities

Embed BIM, data & AI in curricula · interdisciplinary training



Governments

Digital procurement · smart infrastructure · enable innovation



QS firms

Invest in technology & data · upskill staff · innovation strategy

CONCLUSION

Technology is no longer optional

It is not a threat, but an opportunity — to increase professional value, improve efficiency and accuracy, expand services, and strengthen the strategic relevance of the quantity surveyor.

The future African QS combines technical expertise, financial knowledge, digital capability and strategic thinking — a construction economist for the digital age.

QS Quo Vadis?

Embrace Technology, Transformation and Tomorrow.

Thank You

Questions & Discussion

Technology & Digital Quantity Surveying — The Future of the Profession in Africa

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