



# Building the Future

Integrating Innovation & Sustainability in  
Construction Project Management in  
Nigeria

Danjuma Waniko | Green Building Council Nigeria | August 2024

# The Imperative of Sustainability

- We are facing a triple crisis: climate change, nature loss & environmental pollution
- Construction industry's huge resource footprint makes it a major contributor
- Rising costs & growing resource scarcities add an economic imperative
- Sector faces pressure to respond through sustainable practices
- Rapid urbanization in Nigeria makes a shift more urgent
- Not just about design & operation – also about how we construct buildings



# A Paradigm Shift

- To change how we construct buildings construction project management (CPM) needs a paradigm shift
- Conventional CPM relies on linear processes, siloed operations & outdated methods, contributing to resource inefficiencies
- CPM must be more environmentally responsible & economically viable to respond to the needs of the 21<sup>st</sup> century
- This requires embracing technologies & processes that address inefficiencies & optimize resource use – a willingness to innovate
- Such an approach is crucial for transforming the way we build, ensuring that CPM not only supports but actively drives sustainable development



# Process Innovations



## Waste Minimization & Recycling

Site protocols, on-site sorting, on-site waste processing & prefabrication



## Optimizing Fuel & Energy Use

Energy-efficient equipment, renewable energy, energy management systems & optimized work & delivery scheduling



## Optimizing Water Use

Water recycling, low-water-use equipment, rainwater harvesting, leak detection, concrete mix optimization & advanced curing techniques



## Sustainable Site Management

Erosion control, silt fences & barriers, vegetative cover & sustainable site layout planning



## Lean Construction

Just-in-time delivery, efficient workflow, pull planning



# Technological Innovations



## Integrated BIM

4D BIM for schedule optimization,  
5D BIM for cost optimization,  
digital twins, scenario analysis



## Drones

Site Mapping, Site Layout  
Optimization, Progress  
Monitoring, Site Inspections

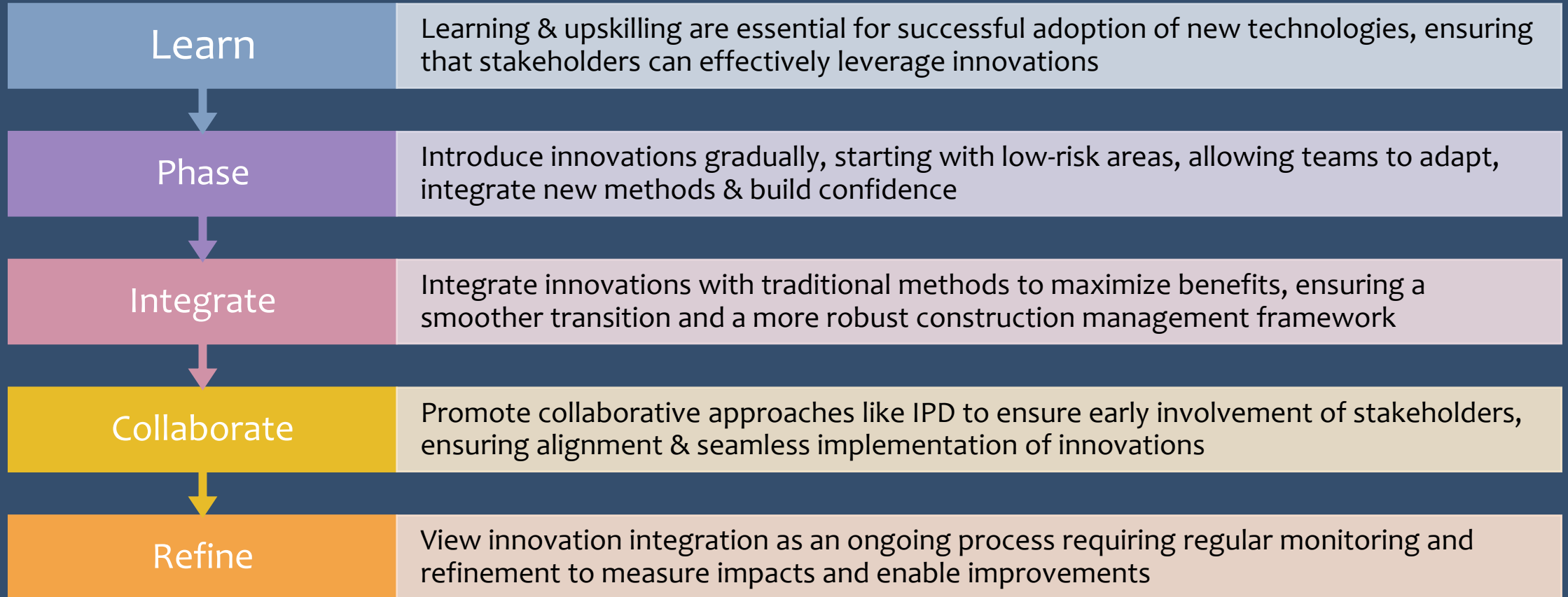


## AI & IoT

Predictive analytics, proactive  
issue detection, smart wearables,  
energy optimization



# Integration Strategies



# Leading Change: The QS's Role



Expertise in cost management, procurement & contract administration positions QS as essential drivers of innovative practices in construction



Embracing innovation not only benefits projects but also enhances the professional standing of QSs



Gives profession first-mover advantage & positions it as indispensable leader in future of construction project management in Nigeria



# Leading Change: The QS's Role



## Cost Management

Adoption of 5D BIM and AI tools enables real-time cost updates, early identification of cost issues, and more accurate budgeting, enhancing QS role as financial guardians of projects



## Risk Management

Leveraging Digital Twins and AI for real-time monitoring and predictive analytics helps QSs anticipate and mitigate risks, improving project execution and their reputation as strategic advisors



## Economic Sustainability

Expertise in quantification & costing uniquely equips QSs to offer informed advice on cost & benefits of waste minimization, energy efficiency, and water conservation



## Contract Management

Use of BIM and other technologies streamlines procurement, improves contract compliance, and enhances project efficiency, leading to greater client satisfaction and repeat business



# Barriers to Innovation

## Change Resistance

Organizations & professionals are accustomed to traditional methods and may be reluctant to adopt innovations that require them to alter their established workflows or learn new skills

## Lack of Awareness

Stakeholders may not see the value in switching from familiar, albeit less efficient, practices due to a lack of awareness or understanding of the benefits of innovations

## High Upfront Investment

Implementing new technologies and practices often requires significant upfront investment in new software, staff training, etc., which can be prohibitive, especially for smaller professional practices

## Uncertain ROI

Benefits of innovations may not immediately translate into efficiency improvements and clients may be unwilling to pay a premium for the improved services these offer, making stakeholders hesitation to commit resources

## Regulatory Hurdles

Existing regulations may not adequately address the needs of innovations or provide clear guidelines for implementation, potentially adding layers of bureaucracy and increasing the cost and complexity



# Overcoming Barriers: Role of NIQS



- **Promoting Change & Building Awareness:**
  - Industry-wide campaigns to build awareness & highlight the benefits of change
  - Workshops & seminars to equip professionals with skills to adopt innovations
  - Advocacy & leadership to set examples and signal change in direction
- **Mitigating Costs:**
  - Advocacy for incentives like tax breaks, grants or low-interest loans to ease financial burden
  - Encouraging collaboration among industry players to share costs of training, software & infrastructure
- **Strengthening Regulatory Frameworks:**
  - Pushing for updating of regulations to accommodate modern construction technologies
  - Providing compliance support through tools, templates & advisory services



# Staying Ahead: Embracing Innovation in Construction

- Rapid technological change is driving the emergence of new innovations
- Robotics is automating repetitive tasks, improving precision & enhancing safety (e.g., bricklaying, 3D printing)
- AI-driven construction tools are gaining momentum for predictive analytics & design optimization
- New materials like self-healing materials & advanced composites are being developed
- Industry professionals must keep learning and adapting to stay competitive, continuously upgrading skills & embracing innovation
- Qs can lead this evolution by remaining proactive and responsive, ever ready to leverage their knowledge and expertise to drive adoption of these advancements



# Who is GBCN?

- Membership-based nongovernmental organization
- Member of *World GBC & Global ABC*
- **Vision** is “*To be a catalyst for and leader of green building practice in Nigeria*”
- **Objective** is to promote uptake of green building practices to address Nigeria’s pressing urban challenges and as a solution to local & global environmental challenges
- Strategy involves *Advocacy, Education, Standards & Certification*



# How Can You Help?



Signup for membership



Mobilize your network



Become a strategic partner



Sponsor projects & events



Provide advocacy platform

Visit [www.gbcn.org.ng](http://www.gbcn.org.ng) for more information

Or contact [info@gbcn.org.ng](mailto:info@gbcn.org.ng)





Danjuma Waniko

Green Building Council Nigeria

[president@gbcn.org.ng](mailto:president@gbcn.org.ng)

[www.gbcn.org.ng](http://www.gbcn.org.ng)

**thank you**