



# Theme of Hackathon

**Innovation in Construction  
Quality in India**

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## Background

The construction sector in India is witnessing unprecedented growth as the nation moves toward *Viksit Bharat 2047*. However, one of the persistent challenges lies in **ensuring consistent and verifiable construction quality** across diverse geographies, project types and stakeholders. Quality lapses often result in cost overruns, project delays, structural failures, and safety hazards.

Despite the availability of advanced materials, design tools, and technologies, quality control at the construction site level remains heavily dependent on manual inspection, fragmented supervision, and outdated record-keeping. There is an urgent need to innovate — to create *cost-effective, scalable, and field-ready* solutions that ensure construction quality in real time.

## The Challenge

Develop an **innovative solution** that improves **construction quality monitoring, assurance, and lifecycle management** in India. Your solution should focus on **enhancing reliability, transparency, and accountability** across any phase of construction — from material testing to on-site implementation to post- construction evaluation.

## Problem Areas to Explore

Individual / Teams may address one or more of the following sub-problems (or propose their own creative interpretation):

### Smart Quality Monitoring

- IoT or sensor-based systems to track quality parameters (concrete strength, curing, compaction, alignment, etc.) in real-time.
- Use of AI/computer vision for detecting defects, cracks, or workmanship issues at early stages.

### Material Quality Verification

- Portable, low-cost testing devices for field quality checks of cement, steel, aggregates, or concrete.
- Data integration between material suppliers, testing labs, and project management systems.

## Expected Outcomes

Participants should present:

- ♦ **Working model** (digital) that demonstrates the feasibility of their solution.
- ♦ A **clear implementation plan** suited for real-world Indian construction conditions — especially in low-resource environments.
- ♦ **Impact metrics**: cost reduction, time efficiency, safety improvement, and quality enhancement.

## Evaluation Criteria

Innovation & Creativity

Feasibility & Technical Soundness

Impact Potential

Scalability & Sustainability

Implementation (Roadmap)

Presentation & Clarity