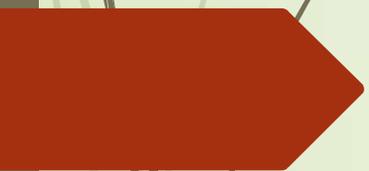


# Technology Revolutionizing the Traditional Construction Industry



**M. RAJ REDDY**

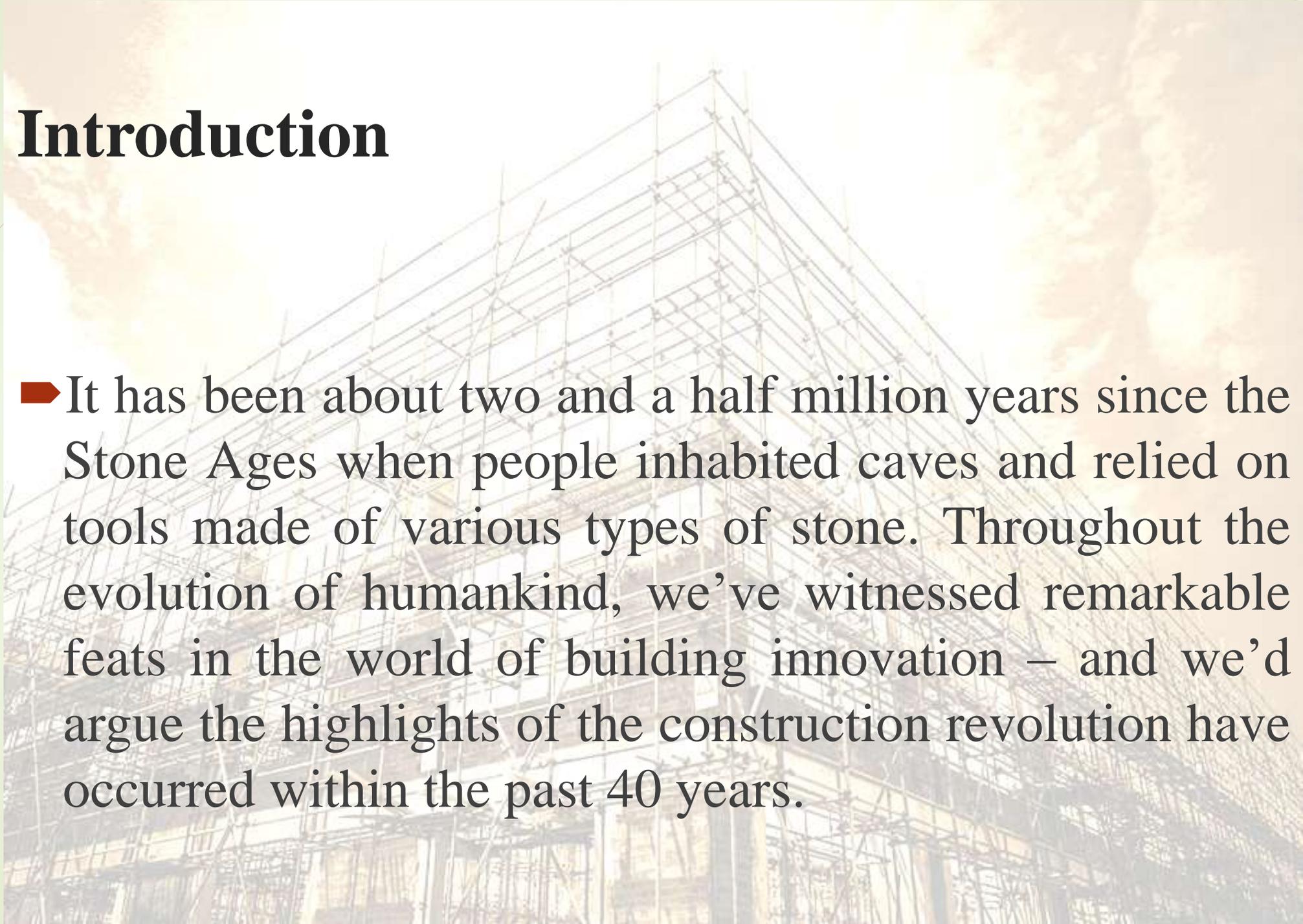
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# Introduction

- It has been about two and a half million years since the Stone Ages when people inhabited caves and relied on tools made of various types of stone. Throughout the evolution of humankind, we've witnessed remarkable feats in the world of building innovation – and we'd argue the highlights of the construction revolution have occurred within the past 40 years.
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# Trends developed

1. Mechanization
2. Computer-Aided Design (CAD)
3. Building Information Management (BIM)
4. Off-site Fabrication
5. Modular Construction
6. Mobile Devices(Augmented Reality, Virtual Reality, GPS, Cloud Mobile Technology)
7. Construction software and data ecosystem
8. Robotic Total Stations (RTS)
9. Self-repairing (Self Healing) Concrete
10. Personal Protective Equipment (PPE), Wearable Technology
11. Geo Spatial Technologies

# Digitalization: A smarter and cost-efficient sector

- Now more than ever, a digital transformation of the construction value chain is deemed as a necessity in the effort to build an inclusive and cost-efficient sector.
- What makes construction even more special is the fact that its development has a direct impact on many different financial sectors which in one way or another are part of the supply chain. Machinery and product manufacturing, infrastructure, and real estate are just a few examples.
- The importance of the construction industry is also reflected in its integral presence in other parts of the country's economy: energy efficiency, job market, demographic alterations, environmental issues, data protection, and education.
- In other words, digitalization isn't the final destination for the industry but the tool for achieving the goals set both by UN, SDG's and Governments



# Regulatory Action

- However, construction companies can't proceed with this substantial paradigm shift without the support of the Governments through regulatory action and R&D investment.
- Good news is that the construction sector has already embarked on the digitalization journey and is on the verge of a revolutionary change. This is gradually achieved through the increase of digital maturity and the adoption of new digital tools and processes.



# Present Trends and The Digital Revolution in Figures

- 2019 is expected to be a breakthrough year for the construction Industry. During the year, construction technology investment has grown by 30% and equals to \$ 1.05bn. The total value of the sector is expected to exceed \$ 10trn by 2020.

# Augmented Reality

- AR is something that's bound to open many new opportunities for the construction industry even though it will come with cost.
- \$90B increase in global AR market by 2020



# Construction Software Data Ecosystem

- ➔ Real-time collaboration software is expected to function as the digital backbone for the construction process from start to finish
- ➔ **95% of data is construction is thrown away**



# Building Information Modelling(BIM)

- ➔ BIM Technology will be the catalyst for a fundamental change in how we manage, design and develop a construction project.
- ➔ **88% of construction stakeholders believe that BIM can enable better design insight**



# Modular Construction

- The use of standardised process to assemble as much as possible off-site before they complete the construction project on site can cut down the costs and lead times
- **Construction projects can be completed 65x faster through modular construction**



# Self Healing Concrete

➤ Many of the industry experts believe we will start seeing self-healing concrete being used on roads, buildings, and homes

➤ 5B metric tons of concrete will be used by 2030



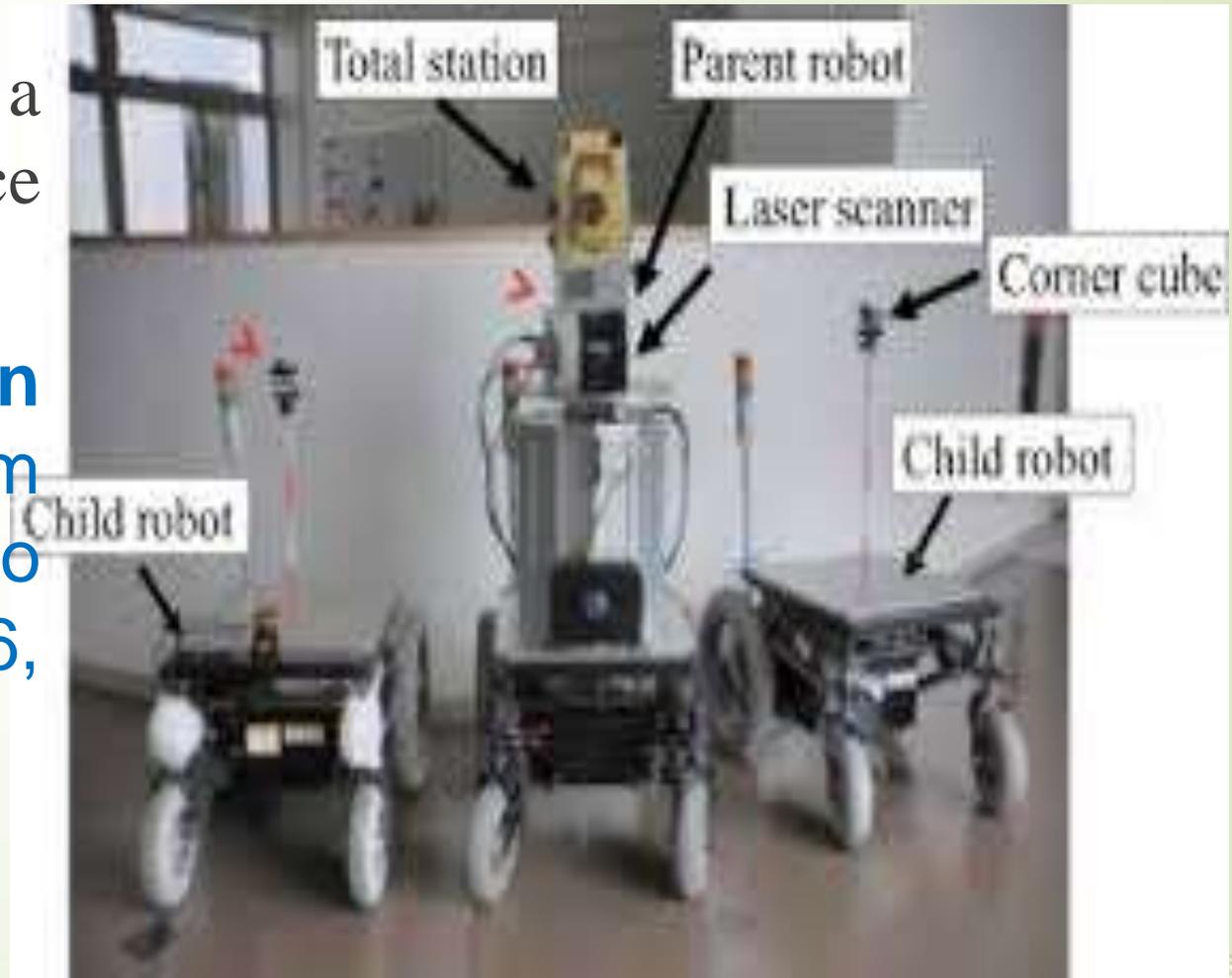
# Drones

- As the technology continues rapidly developing in its accuracy and precision of its readings, even less human involvement will be necessary
- **Drone industry value will rise from \$2B to \$10B in the next decade**



# Robotic Total Stations (RTS)

- ➔ A **robotic total station** is a combination of electronic distance meter and electronic **theodolite**
- ➔ The **Global Robotic Total Station Market** size was valued at \$600m million in 2019 and is projected to reach \$930.6 million by 2026, growing at a rate of 6.4%



# Cloud and Mobile Technology

- Mobile devices can leverage cloud technology from anywhere, at any time. A must-have if you want your business to remain competitive.
- IT spend in construction <1% revenue



# Advanced uses for GPS

- ➔ GPS tracking solutions are now being used in more creative and resourceful ways facilitating the quick and accurate collection of data.
- ➔ **120 Positioning satellites ready to be used in the next 10 years**



# Personal Protective Equipment (PPE), Wearable Technology

Wearable Technology is expected to play a substantial role in boosting safety on site and monitor efficiently the project Progress.

**250 Million Smart Wearables** are predicted to be in use by the end of the year 2019



# Geospatial Technologies

- Technology relating to the collection or processing of data that is associated with location.
- The report finds that the use of **geospatial technology** reduces a project's maintenance time by 56% and the maintenance cost by 60%.
- Geospatial technologies with economic impact assessments that indicate a value of US\$ 2,500.7 Billion in 2019 with an estimated CAGR of 25.9% between 2013 and 2019 with unparalleled value through social impact





# Government's Responsibility

- Governments has the political responsibility to pave the way for a smooth transition to a more digitized era for the industry. This could be achieved through the launch of a flexible cultural governance which prioritizes open IT ecosystems that promote Research and Development.



# 2020 for digital construction technologies

- Without a doubt, 2020 is expected to be a breakthrough year for the construction industry. A data-driven sector with emphasis on collaboration and real-time communication is hopefully around the corner. Only then, construction stakeholders can hope for higher productivity rates and fewer painful project delays.



# Finally

- All in all, the Construction Industry Manifesto for digitalisation explains in a very straightforward way the need for prioritising the digital transformation of a sector with so great impact on almost every aspect of the public life.
- Digital solutions can play a paramount role in the industry's future but the most important factor we should keep in mind is that it will unlock a whole new level of collaboration for the entire sector.
- The digital journey of the sector has just begun and its success is largely depended on the quality of communication between the numerous stakeholders. This is where various associations should show their support and help innovative players of construction to explore the potential of unknown digital territories.

I believe that in a construction industry where people should work smarter not harder. We should try to achieve through collaborations



**Thank you**

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