

MBS SCHOOL OF PLANNING AND ARCHITECTURE

SECTOR-9, DWARKA, NEW DELHI

GGSIIP University

REPORT ON WEBINAR

Conceptualizing Digital Built Environment with focus on BIM / Emerging technologies in Built Environment

Date: 22nd January 2021

Presenter: Prof. Shrutniwas

Time: 2pm till 3:30pm

Venue: Online Webinar

MBS School of Planning and Architecture organized an online Webinar on “Conceptualizing Digital Built Environment with focus on BIM / Emerging technologies in Built Environment” in collaboration with RICS School of Built Environment, Amity University for 4th year architecture Students of MBS School of Planning and Architecture, Dwarka on Friday, 22nd January 2021 from 2:00 pm to 3:30 pm.

Presenter Brief

Shrutniwas Sharma has worked as a BIM Manager in the Operations Department of Shapoorji Pallonji Engineering & Construction in the area of BIM and overall VDC implementation at the organizational level and execution level. He has also worked as a Research Engineer at Saint-Gobain Research India apart from being an Assistant Professor of Architecture at Amity University, Haryana. He holds B. Arch. (NIT-Bhopal) and M. Tech. in Construction Engineering and Management (IIT-Delhi).

He has worked as a Research Engineer at Saint-Gobain Research India. As an Assistant Professor of Architecture at Amity University, Haryana. He has also worked as a BIM Manager in the Operations Department of Shapoorji Pallonji Engineering & Construction in the area of BIM and overall VDC implementation at the organizational level and execution level.



He talked about grand challenges for the Indian construction industry. This challenge includes low levels of research and development leading to a lack of innovation and delayed adoption of technologies, workforce issues including shortage of young talent due in part to poor construction image, Informal processes and lack of process standardization leading to structural fragmentation. Low productivity, predictability and profits; Insufficient knowledge transfer from Project to Project; and Cultural and mindset issues act as a blocker to any change.

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Grand challenges for the Indian construction industry

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The mind map illustrates various challenges and solutions for the Indian construction industry, including:

- Streamline land acquisition and land procurement procedures
- Streamline project approvals and statutory sanctions
- Strengthen accountability, transparency and governance in public sector projects
- Standardize contracts, contractual procedures, procurement systems and project delivery methods
- Provide investments in sectorial skills development with industry support
- Flaws in the existing system
- Promote modern time-bound dispute resolution and prevention techniques
- Establish national construction quality, sustainability and safety benchmarks
- Ensure worker welfare and well-being
- Encourage adoption of project management and lean principles over the entire life cycle of a project
- Non-performing contractors
- Lack of awareness
- Graduate skill upgradation
- Problems in the planning stages
- Standardization and uniformity
- Updating standards and specifications
- Lack of implementation
- Unaccounted money
- Lack of good quality consultants
- Labour shortage
- Negligent Government
- Adopting technology
- Lack of transparency
- Lack of accountability

Prof. Shrutiniwas Sharma presenting the Webinar

4IR, I4.0, and Construction 4.0

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- A new *Fourth Industrial Revolution (4IR)* is here.
- The resulting framework of this 4IR is *Industry 4.0 (I4.0)*
- Under this framework, the built environment has to opportunity to improve on:
 - Production
 - Business model
 - Value chains
- This transformative framework under the overarching industry 4.0 is being called *Construction 4.0*

The Venn diagram illustrates the relationship between 4IR (outermost circle), I4.0 (middle circle), and Construction 4.0 (innermost circle), showing that Construction 4.0 is a subset of I4.0, which is a subset of 4IR.

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Cyber-physical systems (CPS): Introduction

- CPs is an umbrella concept that can represent intelligent systems such as:
 - the Internet of Things (IoT),
 - Machine-to-Machine (M2M),
 - Industrial Internet,
 - Smart City,
 - Smart Grid, etc.
- The CPS are systems of interconnected physical and digital duals- **Concept of Digital Twin**
- A digital twin is a virtual asset or simulation, running concurrently in real time with its physical twin, with digital and physical twins reciprocally connected by sensors and actuators.*

Physical → Digital

← Digital Twin →

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A new Fourth Industrial Revolution (4IR) framework, where the built environment can improve production, business model and value chains. This transformative framework is under the overarching industry being called Construction 4.0. A Cyber-physical Systems (CPS) is understood as a mechanism that is controlled or monitored by computer-based algorithms, tightly integrated with the Internet and its users. It creates a virtual copy of the physical production system that is also called the Digital twin. This is the first step towards Industry 4.0, where a physical-digital-physical loop is created.

Dynamic relevance

- ▶ Journey of digitization of built environment practices
- ▶ Continuously evolving tools
- ▶ Evolving data management issues
- ▶ Evolving data security issues

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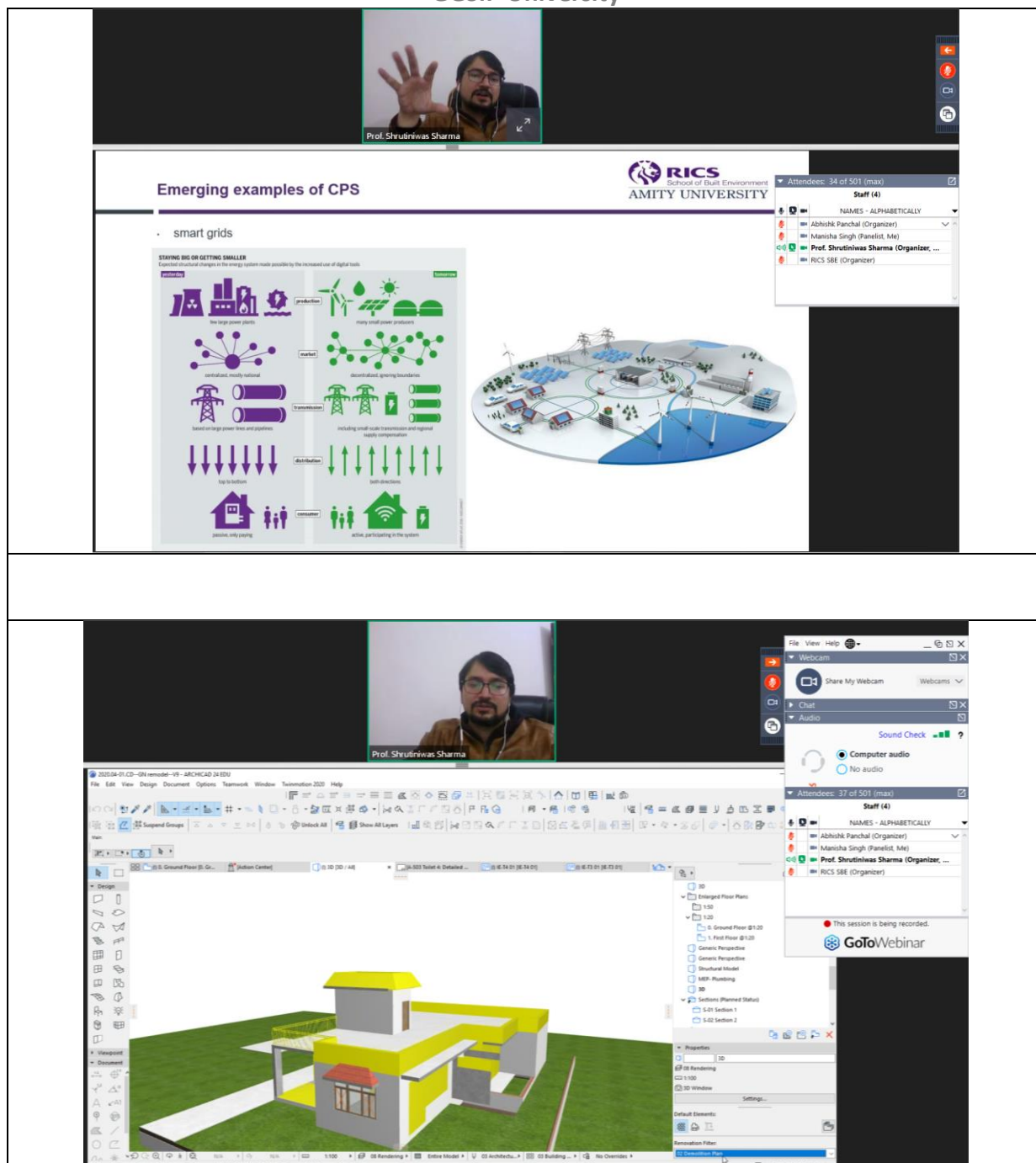
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Prof. Shrutiniwas Sharma ended the webinar by showcasing his projects as examples for BIM. MBS institute thanked RICS SBI for organizing such an informative webinar for the students and exposing them to the innovative techniques used in architecture design.

Report Prepared by *Ar. Sahil Singh Kapoor*, Assistant Professor, MBS School of Planning and Architecture, Dwarka, New Delhi.