Utilizing the BIM-based standard for supporting 3D digital representation of legal spaces in major infrastructure projects

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SUMMARY

Major infrastructure projects, such as tunnels, roads, and railways, present critical challenges for land administration due to multi-level spatial complexity, stratified ownership rights, and complex spatial relationships. Traditional 2D methods cannot adequately capture these complexities, and existing 3D models remain focused on buildings, lacking the capability to represent the physical and legal dimensions of infrastructure projects. A BIM-based approach, the IFC standard, offers an enhanced 3D representation of ownership spaces, interoperability, lifecycle data integration, and the ability to unify physical and legal data. This paper aims to utilize the IFC standard to support the 3D digital representation of ownership spaces in major infrastructure projects, addressing these challenges and advancing 3D land administration practices. With a focus on the limitations of current 2D methods and addressing the research gap in infrastructure land administration, this research provides a pathway towards improved 3D data management in land administration for infrastructure projects using BIM-based approaches.
