

# REDUCING THE GAP BETWEEN WORK AS DONE AND WORK AS IMAGINED ON CONSTRUCTION SAFETY SUPPORTED BY UAS

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## **Abstract**

Safety management (SM) is considered a complex task during the construction phase, given the number of high-risk activities that can lead to accidents. The differences between work as done (WAD) and work as imagined (WAI) is one of the main barriers faced by safety management. The Resilience Engineering stand out that improving in safety performance cannot be simply achieved through the use of procedures and barriers, but through the continuous monitoring. On the other hand, the use of Unmanned Aerial Systems (UAS) technology can contribute to the safety management system to support the monitoring of the daily work. This study aims to evaluate how work is performed from RE perspective through the application of the safety checklist based on the assets collected with UASs on site, focusing on the cast-in-place concrete wall constructive process, once it involves high risk of accidents during construction. For this, an exploratory case study in a construction project was conducted in Brazil, involving the following steps: (a) development of a safety monitoring protocol using UASs, (b) field tests for monitoring safety conditions with UASs along 35 weeks, and (c) data analysis. As contribution, this work identifies potential improvements on safety procedures aiming to reduce the differences between prescribed and actual work. In addition, the UASs can be used to perform regular and redundant safety inspections providing information to support managers' decision-making.

**Keywords:** Safety Monitoring, Resilience Engineering, Unmanned Aerial Systems (UAS), Work as done (WAD), Prescribed and actual work, Construction sites.