

## METHOD, SOFTWARE, MOBILE DEVICE AND SERVER FOR CONSTRUCTION PROGRESS MONITORING

### Fields of use

Construction

### Current state of technology

Available for demonstration

### Type of cooperation

R&D cooperation and technology licensing opportunity

### Intellectual property

Patent pending

### Developed by

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### How it works!



### Automated Continuous Construction Progress Monitoring



### Background

The construction of a building is a multi-step process. To improve the efficiency of the construction, a detailed 3D model is prepared in advance with all the elements involved. The model also includes an order and timeline of the installation of the elements. A computer implementation of such a 3D model is called a building information model, and the upgrade 4D model. Three dimensions refer to the geometry of the elements that will be installed at a given time during construction. The fourth dimension refers to the timeline. The actual construction may be affected by a delay in the installation of a single element. This can lead to project completion delays and unplanned financial costs. This invention solves the need for automated construction site monitoring and provides a continuous real-time representation of the situation on construction sites as a digital twin.

### Description of the invention

The invention enables efficient continuous and fully automated construction progress monitoring in real time, inside and outside the building under construction, without additional work activities, as the wearable devices are installed on all work equipment contributing to the construction. It is a fully automated system that enables the acquisition of 3D data using wearable devices and to identify elements based on their geometry in the 3D digital model of the building. The wearable devices are equipped with a 3D scanner and other components, where the identification of the elements takes place in real time during construction, and a direct comparison between planned and actual execution is possible to provide an immediate insight into the status of the project.

### Main advantages

- Continuous and complete automated monitoring of all changes occurring during construction, and identification of built element within the building information model (BIM) in real-time.
- Through recording of all changes, we achieve cumulative presentation of the building, the so called as built 4D model.
- Automated comparison of as-designed 4D model with as-built 4D model and thus enabling immediate identification of deviations from plans.
- The invention is revolutionary and unique in the field of construction monitoring.