CLAIMS

What is claimed is:

1. A method for monitoring project status based on multiple camera units, comprising:

loading an equal-scale building information modeling (BIM) 3D model of a project design into a system as a benchmark model;

performing virtual layout of the multiple camera units based on the benchmark model to determine layout location, number and attribute setting of the multiple camera units; the layout location, number and attribute setting of the multiple camera units are simulated based on the benchmark model so that different types of camera units can be integrated at the same time, and the collection frequency and photography parameters of different camera units can be adjusted to select a combination of multiple camera units with the widest coverage, highest collection efficiency, better durability, and lower cost by the virtual layout, then according to the layout location, number and the attribute setting of the multiple camera units, performing actual layout and debugging of the multiple camera units at a project site corresponding to the benchmark model;

performing multi-dimensional and real-time collection of an image data of the project site based on the multiple camera units and transmitting the image data of the project site to the system; and analyzing the image data of the project site via a built-in algorithm of the system to build a real 3D model of the project site;

comparing the real 3D model with the benchmark model to complete difference analysis between the real 3D model and the benchmark model; and

determining change of a project status of the project site based on results of the difference analysis between the real 3D model and the benchmark model, so as to monitor the project status of the project site.

2. The method of claim 1, further comprising:

after the equal-scale BIM 3D model is loaded as the benchmark model, defining

a type of a project design object in the benchmark model according to an attribute information of the equal-scale BIM 3D model.

3. The method of claim 2, wherein the type of the project design object comprises at least one of terrain surface, excavation surface, building structure type, and electromechanical device.

4. The method of claim 2, wherein the comparison between the real 3D model and the benchmark

model is performed through steps of:

identifying a construction object and a surface feature object in the real 3D model;

associating the identified construction object with the project design object; and

comparing a project status of the construction object with the project status of the project design object, and determining whether the surface feature object exists in the benchmark model, so as to complete the difference analysis between the real 3D model and the benchmark model.

5. The method of claim 4, wherein the difference analysis between the real 3D model and the benchmark model comprises object existence difference analysis, appearance difference analysis and geometric shape difference analysis.

6. The method of claim 4, wherein the comparison between the real 3D model and the benchmark model further comprises:

before the difference analysis between the real 3D model and the benchmark model, analyzing and calculating the number, position coordinate, geometric shape, size and occurrence of the construction object.

7. The method of claim 1, wherein the attribute setting of the multiple camera units is determined through a step of:

determining a model, collection frequency and photography parameters of the multiple camera units.

8. The method of claim 1, wherein the multi-dimensional and real-time collection of the image data of the project site based on the multiple camera units is performed by automatic collection or manual collection.

9. The method of claim 1, further comprising:

after the monitoring of the project status of the project site, generating an early warning if monitoring results of the project status of the project site do not meet preset requirements.

10. A system for monitoring project status based on multiple camera units, comprising:

a first module;

a second module;

a third module;

a fourth module; and

a fifth module;

wherein the first module is configured to load an equal-scale BIM 3D model of a project design into a system as a benchmark model;

the second module is configured to perform virtual layout of the multiple camera units to determine layout location, number and attribute setting of the multiple camera units, the layout location, number and attribute setting of the multiple camera units are simulated based on the benchmark model so that different types of camera units can be integrated at the same time, and the collection frequency and photography parameters of different camera units can be adjusted to select a combination of multiple camera units with the widest coverage, highest collection efficiency, better durability, and lower cost by the virtual layout, and the second module is also configured to perform the actual layout and debugging of the multiple camera units at a project site corresponding to the benchmark model according to the layout location and the attribute setting of the multiple camera units;

the third module is configured to perform multi-dimensional and real-time collection of an image data of the project site based on the multiple camera units and transmit the image data to the system, and to analyze the image data via a built-in algorithm of the system to build a real 3D model of the project site;

the fourth module is configured to compare the real 3D model with the benchmark model to complete difference analysis between the real 3D model with the benchmark model; and

the fifth module is configured to determine change of the project status of the project site based on results of the difference analysis between the real 3D model and the benchmark model, so as to monitor the project status of the project site.