Study on facility information registration via facility location based on smart device application and mapping based on picture information

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1. Introduction

Along with the development of IT technology and active use of smart devices, there are signs of shifting from the use of existing web-based devices to smart device application based systems in Korea. However as of now, it required checking up on coordinates via a separate GPS receiver then manual entry was required so there were limitations in dealing with facility information registration maintenance all at once.

This study proposes a one-stop facility information maintenance via smart device applications by mapping facility location and picture information to the map. Using this will lead to the increase demand of city infrastructure along with resolving issues relating to cities via high-tech IT technology and strengthening competitiveness resulting to increase the quality of life of the urban residents.

2. Facility information registration via facility location based on smart device application and mapping picture information

2.1. Definition

The 'facility information registration via smart device applications by mapping facility location and picture information to the map' allows to utilize various sensors including GPS embedded in the smart device, Gyro sensor and defense sensor and also camera feeds to register information of the facility location and pictures to the map.

2.2. Background technology and characteristic

Usually when registering facility information, location value of the facility were measured via the GPS receiver and measured values were mapped to the map. However additional manual efforts including measuring the location value then mapping the value to the map required time and cost which were considered as an issue.

Using smart device sensors and taking pictures of the facility via target facility coordinates and location with the height and inclination of the device and at the same time mapping the location and picture information to the map enables a one-stop maintenance which includes facility information registration, monitoring, on-site maintenance and history tracking.

2.3. Technology concept maps

[Picture 1] Registration via mapping facility location and picture information
on the map based on smart device application

As shown above in [Picture 1], the distance between smart device and facility can automatically be calculated by trigonometry which implies the camera height and inclination. When distance value is found, add the defense value from the facility location based on the smart device location to retrieve the calculated facility location and this along with the picture information will be mapped to the map and ready to be registered in the facility maintenance system.

3. Utilizing facility information registration technology based on smart device application (example)

[Picture 2] Facility Management System using Applications of Smart device

As shown in [Picture 2] the person in charge of facility maintenance will register the facility via smart device and will inspect the facility on a regular and non-regular basis. When failure is found during the inspection, failure application will be submitted and the maintenance team will accept the failure application without additional on-site inspection by using the location and picture information. The person in charge will use the smart device to confirm the process when maintenance is complete. The maintenance history will be stored in the system and can be used for flawless operation and budget allocation.

4. Conclusion

Up to now, facility information registration in different areas required the use of facility location and picture information via PDA or additional GPS devices and manual labor was mandatory.
However universal use of this method was difficult as it were too expensive and required manual efforts resulting to high maintenance costs.
This study enabled a one-stop maintenance system via smart devices excluding additional registration process by immediate registration of facility information.
More continuous study should follow for it can be used in other areas other than facility maintenance.

5. Acknowledgement

6. References

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