Study on non-facility management methods via spatial domain decomposition method as found in facilities.

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1. Introduction

Korea takes advantage of high-tech IT technologies to study management method and technologies of many city based facilities including roads and harbors. The local government has recently adopted location based facilities maintenance management solution via GPS and it is used in 'streetlight maintenance management system' and 'facilities maintenance management system'.

As shown above, active studies are being executed relating to facilities maintenance management but on the other hand there are signs of limitations in non-facilities management including road damage, boardwalk damage and ponding found in park playgrounds.

This study aims to propose 'Management method of split spatial domain' which enables non-facilities to be managed in the same manner as facilities by splitting cells in the spatial domain and manage location information of the split cell area in a single record.

2. Management of non-facilities as facilities via utilizing 'management method of split spatial domain'

2.1. Defining non-facilities

What exactly is 'non-facilities'? Unlike facilities which are city facilities such as streetlights, bench, bus signs, fire station and bus stops, non-facilities relates to all spatial area that requires maintenance and management including roads, playgrounds and boardwalks.

2.2. Defining 'Management method of split spatial domain'

What is 'management method of split spatial domain'? It enables management via a single record by dividing the spatial domain in consistent cell unit size then grouping the various location information found in the split cells.

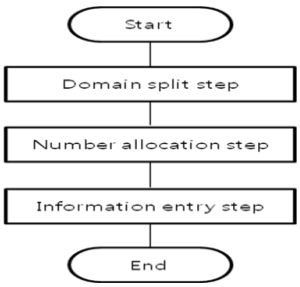
2.3. Background technology and characteristic

Usually when managing non-facilities in spatial domains including road damage, boardwalk damage and ponding found in playgrounds, the maintenance sign was displayed on the road or a written sign 'maintenance zone in 50m on right side of the front entrance' was shown. The existing 'Maintenance method in managing non-facilities' only allowed the related personnel to understand the exact location and showed signs of limitation on history management when there was a change or retirement of the related personnel.

However this study proposes 'Management method of split spatial domain' which divides the spatial domains in consistent cell unit size and systemizes the divided cell area with a facility as it will result to allowing a non-facility to be managed as a facility.

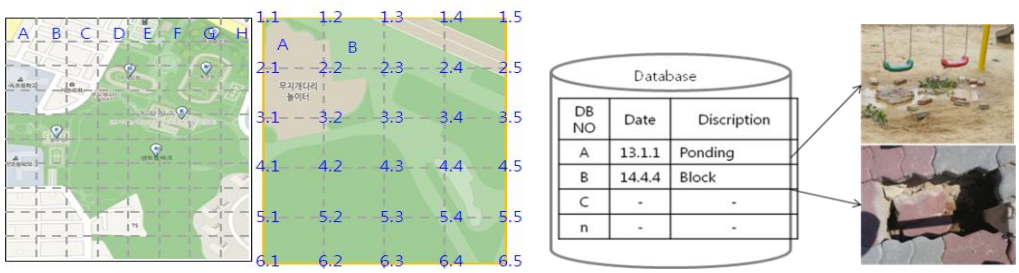
3. Non-facility history management via method on spatial domain split

As shown in [Picture 1], there five steps that compose the 'Method on spatial domain split'. The five steps involved are start, domain split, number allocation, information entry and termination. The 'Start step' recognizes the size of the cell unit on the special domain split and 'Domain split step' splits according to the fixed cell size. The 'Number allocation step' allocates the numbers for it should recognize the split cells as a facility and 'Information entry step' keeps maintenance of non-facilities with the same method as facility maintenance method, or in other words it is the step information of road damage restoration is entered.



Block Number	Classification	Area	Date	Area Coordiantes	Discription
1	Road	5.5 ㎡	2011. 7.22	+37’22’4.55” +127.5’45.20”	Damaged roads
2	Road	9 ㎡	2000. 5.1	+37’22’4.55” +127.5’45.16”	Damaged roads
.					
n	Road	11.5 ㎡	2012. 7.1	+37’22’4.56” +127.5’45.15”	Damaged roads

Picture 1. Phase on Non-facility using Facility Method via Management Method of Spatial Domain Split



Picture 2. History Management Key Map of Non-facility using Facility Method via Management Method of Spatial Domain Split

A more detail version of [Picture 1] which depicts the non-facility using the facility method which divides the spatial domain in a consistent cell unit size as shown in history management key map of non-facility using facility method via management method of spatial domain split in [Picture 2] then the split cells will set up a reference point with multiple coordinate. Based on this coordinate, all location information generated from the cell unit is managed in a single record which results to managing non-facilities as a facility.

4. Conclusion

Maintenance of city facilities including streetlights, security lights and CCTV is important but maintenance of parks and playgrounds widely used by the urban residents which is considered as non-facility is very important in terms of public order and safety. Unfortunately for the time being, all things considered as non-facility including is road damage, boardwalk damage and ponding found in playgrounds is almost non-existent.

This study proposed an effective way to manage spatial domain via ‘Management method of split spatial domain’ which allows non-facilities to be managed as a facility and this will lead to providing a more pleasant and safe city atmosphere.

Various studies on non-facility maintenance should follow in the future which will present a more competitive city and the quality of life for all urban residents.

5. Acknowledgement

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6. References

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