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# 빅데이터 기반 공간정보 플랫폼 설계

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## Design of Spatial Data Platform on Big Data

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### 요 약

최근 국토 정보를 다루는 지적측량분야의 수익성은 악화되고 있다. 수익구조를 강화하기 위해서는 지적측량 외의 사업분야에 진출해야할 필요가 존재한다. 현재의 국토 정보를 효과적으로 다루기 위해서는 공간정보 플랫폼 설계가 필수적이다. 이러한 배경으로 본 연구에서는 빅데이터 기반 공간정보 플랫폼을 제안한다.

### ABSTRACT

In these days, the profitability of cadastral survey for national spatial information is getting worse. In order to reinforce the structure of the profitability, there exists the necessity to launch new and various businesses except the cadastral survey. In manipulating national spatial data effectively, it is necessary to design a platform for spatial information. Against this backdrop, we propose a platform for spatial data on the basis of Big Data in this paper.

### 키워드

공간정보, 공간자료, 공간산업, 빅데이터, 주제도

## I. Introduction

So as to improve the structure of the profitability, it is necessary to consider new and various businesses as well as the cadastral survey [1]. In manipulating national spatial data [2] effectively, it is necessary to design a platform for spatial information. With our proposed platform for spatial data on the basis of Big Data [3-6] will give a help to prepare for the risk of national spatial data industry. In Session 2, we consider critical success factors and decision causes for the management of spatial information with mentioning opportunities and threats in the spatial industry. In Session 3, we design a model for spatial data with detailed

descriptions. In the last session, we make conclusions with reflected benefits in relation to the implementation of designed services.

## II. Related Works

In this session, we consider the present status in the spatial data industry in three points of view; opportunities, threats, and directions. Firstly, in the perspective of opportunity, there are many institutions for national spatial data. These institutions could certainly cope with important and urgent projects and tasks related the spatial data management, if there be a new nationwide business as well as a maintenance

task of existing business. Also, there exist secure incomes of the cadastral survey. Secondly, in the perspective of threat, there exists a technological gap with respect to cadastral surveys. This gap comes from the lack of manpower. The discussion about opening for private institutions is another threat to national spatial data industry. Against the threats, we should expand the spatial data industry with low budget and trial and error. And we should plan the cultivation of technology manpower in the field of spatial data industry. Considering the above remarks, we need to design a platform of spatial data management. It is possible to develop the platform and maintain it with relatively low investment and budget. The ripple effect of returns of investment would be certainly great and its experience be applied to another related industry if failed.

### III. Proposed Model

Now, we propose a new platform (Figure 1) of spatial data in order to manage nationwide spatial information. The adjusted domains of the platform are thematic map and application service and several modules are considered in this platform; developing services, establishing data collection spots, selecting pilot areas, selecting contents, and establishing marketing strategies. The platform would better be operated freely. The utility fees will be burdensome to users and then will not attract participate from them. The platform should have for public benefit.

(1) Developing services: The platform is designed for using thematic maps with various services such as thematic map itself, land registration map and related spatial information. The design and arrangement of UI(User Interface) should be considered for novices so as to help a user take a thematic map and refer to its other information easily.

(2) Establishing data collection spots: In collecting data, we consider the terminal of IoT(Internet of Things) and beacon. To collect Big Data of spatial data, we can add and modify huge thematic maps. The big volume of collected spatial data would create new business of spatial industry. The terminal of data collection spots is used by IoT technologies such as CCTV(Closed Circuit Television), beacon, and so on. The CCTV already in place could be used and additional beacon be added to collect data

such as street or accident condition.

(3) Designing applications: For nationwide usage of the above services, the to-be platform should include various applications such as thematic maps and spatial information. The applications will be used in and linked to the living of a user.

(4) Selecting pilot areas: Some pilot areas are selected so as to let the platform be used on a national scale. The pilot areas will be used to verify the practicality of the platform to improve the completeness degree of applied services. In selecting pilot areas with applications for services of spatial data, we give priority to an area with high completeness GPS(Global Positioning System) accuracy, comparatively high population density, and business zone rather than residential one.

(5) Selecting contents: In selecting contents, we should consider the needs of users.

(6) Establishing marketing strategies: So as to impress proposed applications with various applications on a user, marketing strategies for marketing effectiveness and efficiency should be considered to right customer with right contents in right time through right channel.

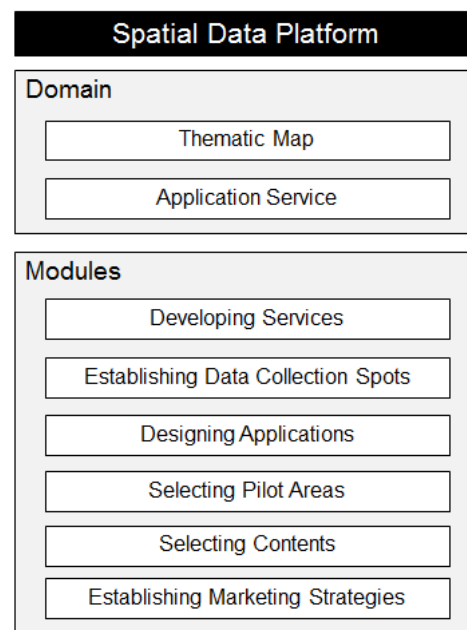


Figure 1. Spatial Data Platform

### IV. Conclusions

The proposed spatial data platform on the basis of Big Data will contribute to convenience

of public and administration. And the platform should be improved and upgraded for the industry acceleration of spatial data and information management

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