



## **Economic and Social Council**

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### **Tenth United Nations Conference on the Standardization of Geographical Names**

New York, 31 July – 9 August 2012

Item 11(e) of the provisional agenda\*

**Toponymic data files and gazetteers**

**Data services, applications and products (for example,  
gazetteers and web services).**

### **The Geographical Names Information System**

Submitted by the Republic of Korea \*\*

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\*\* Prepared by the the Korea Committee on Geographical Names, National Geographic Information Institute, Ministry of Land, Transport and Maritime Affairs.

## Summary

Geographic names have been used and appointed to various lands since our ancestor's time, and it has accumulated to today's geographic names. Geographic names are considered as cultural assets that reflect our history and cultural development for they contain our ancestor's thoughts, wills, and lives. To efficiently manage these geographic names, geographic name management system has been developed in 2003 and latest IT technologies have been applied to enhance the system to be efficient and accessible to the public. Newly developed geographical names management system is provided through the NGII webpage (<http://jimyeong.ngii.go.kr>), Land Portal (<http://www.land.go.kr>), and LOD Service (<http://data.ngii.go.kr>).

## **The Geographical Names Information System**

### **1. Background and Purposes of the Project**

Geographic Names Management System has developed for the purpose of improving geographic names services and tasks between the National Geographic Information Institute's geographic name agencies and local government's agencies (city/county/district and city/province geographical names agencies). Also, it is currently open to the public to provide geographical names. However, due to the duplex database format, it is hard to maintain and update services. Therefore, necessities of system enhancement came to the fore for the improvement of information accessibility and reconstruction of data field for information management of geographic names.

### **2. Project Outline**

#### **2.1 Current Status of the Geographical Names Management System**

In order to improve the database management duplexing, real time information is provided by supplying DB as a View Table while continuous maintenance and updating is applied. Geographical Names LOD (Linking Open Data) Service has been implemented based on geographical names classification system where Ontology schema and instance were constructed to improve user centered interface and web accessibility and facilitation.

Also, dualization of eup/myeon/dong code was reconstructed to improve system performance and to enhance interlink between related data. To enhance the weaknesses of positioning due to usages of different geographic coordinate system, data field structure was reconstructed for managing and integrating metadata and maintaining coordinate system.

#### **2.2 Reconstruction of the Geographical Names DB**

Geographical Name Service was enhanced by reconstructing existing service by database analysis.

##### **2.2.1 Reconstructing Geographical Names DB schema**

- A) Establishing Geographical Names DB Management System according to the standard classification system.
- B) Improving geographical name change history management
- C) Improving geographical names information services through integrated management of name origin history
- D) Improving field structure for managing geographical name metadata
- E) Improving interlinked application area through reconstructing dualized administration code.

##### **2.2.2 DB improvement for service enhancement**

- A) Ontology DB construction using RDF (Resource Description Framework) and OWL (Web Ontology Language) for geographical names LOD service

- B) Integrated Geographical Names Information DB & Ontology knowledge base Construction

### **2.2.3 Geographical Coordinate System Reconstruction**

- A) Geographical names data has been reconstructed to World Geodetic System at a national level.

## **2.3 System Improvement**

### **2.3.1 Geographical Names Management System Improvement**

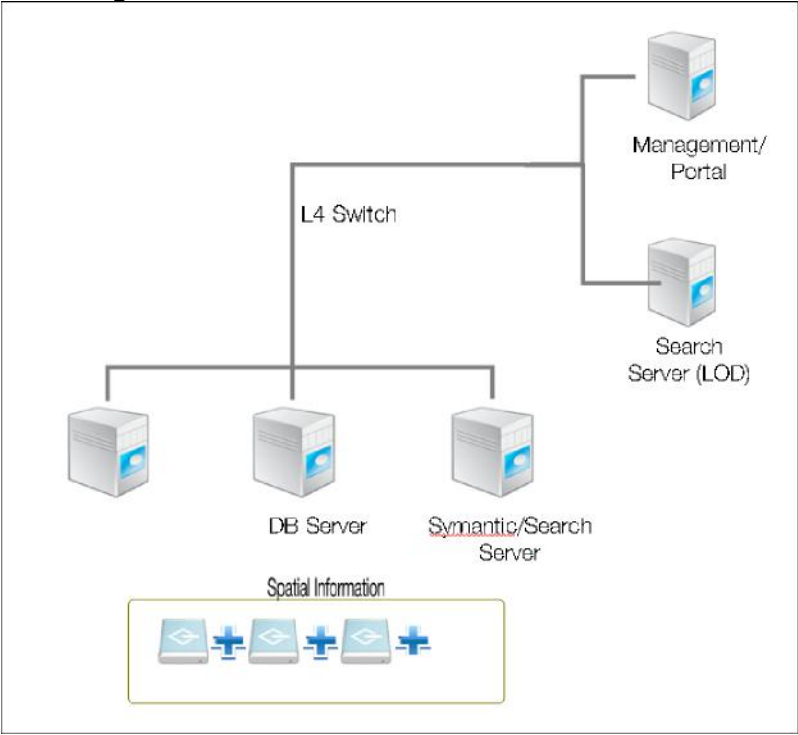
- A) Improving deliberation process by unifying deliberation process (National, city/province, city/county/district)
- B) Saving and inquiring function of deliberation contents and applying hierarchical opinion input function of deliberation contents during deliberation process
- C) Improving history service through managing name change history
- D) Improving origin inquiry through managing name origin history
- E) Enhancing geographical Names statistical service
- F) Improving security with application of authentication certificate (NPKI)

### **2.3.2 Improving Geographical Names Service**

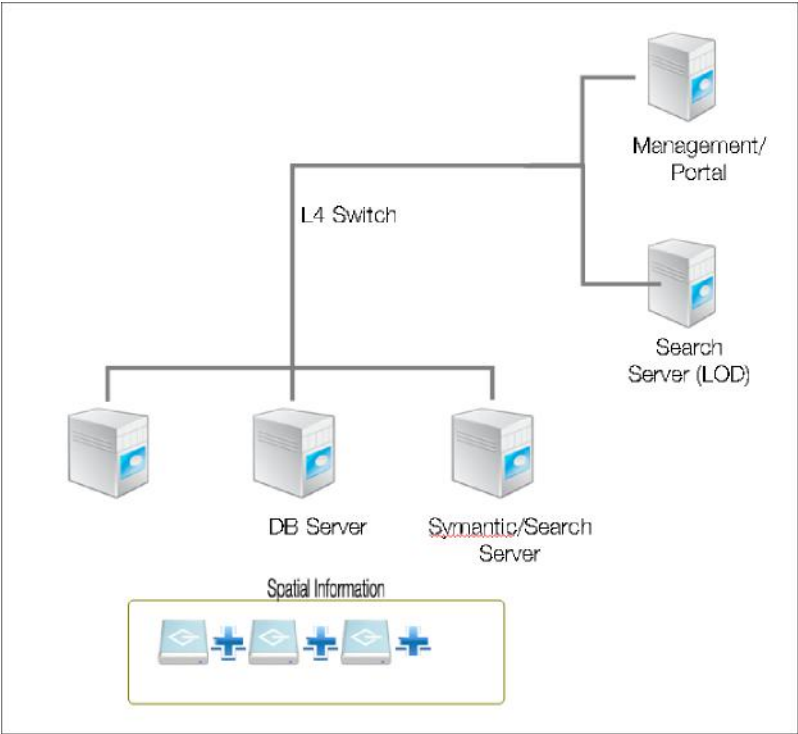
- A) Providing real time services by linking system and portal system
- B) Providing geographical names through LOD system
  - Human oriented geographic system LOD publishing and SPARQL Endpoint supporting by URL base & LOD publish module
  - Data reuse and preparing information sharing through linking with international LOD such as Geonames, OSM and Dbpedia with international standard OWL's samAs attribute.

| property                 | value   |
|--------------------------|---|
| dc:isfe                  | 성산일출봉 (xsd:string)  |
| ngii:abstract            | <p>해 뜨는 모습으로 불리는 성산일출봉은 전형적인 용화구이며, 높이 179m로 제주도 동쪽 해안에 거대한 고대의 성곽처럼 우뚝 솟아있다. 이 용화구는 해수면의 위치가 현재와 거의 동일했던 약 5만년 전 수심이 얕은 해저에서 수성화산 분출작용에 의해 생성되었다 (Sohn and Chough,1992; Sohn et al.,2002). 성산일출봉은 2000년과 2007년에 각각 천연기념물과 유네스코 세계자연유산으로 지정되었다. 성산일출봉은 수려한 경관을 제공하여 매년 수백만 명의 관광객들을 끌어들이고 있다. 성산일출봉 용화구는 수심이 얕은 해저에서 분출하여 해수면 위로 성장한 것처럼 화산의 탄생과 성장과정을 잘 보여주고 있다. 성산일출봉은 것처럼 수성화산 분출에 만들어지는 거의 모든 종류의 화적구조를 간직하고 있어(Sohn and Chough,1992), 성산일출봉의 과거 화산활동과 화적작용에 대한 정보를 제공할 뿐만 아니라 전세계의 다른 어느 지역에서 만들어지는 여러 수성화산에 대해서도 분출 및 화적작용 해석의 토대를 제공하고 있다. 한라산 정상부 북쪽담 주변에 화산활동은 수 천년 전에 분출한 것으로 알려져 있다. 이 암석들은 최근에 분출하였기 때문에 원래의 화산지형을 잘 보존하고 있다. 한라산의 정상부는 물성이 확연히 다른 두 종류의 용암으로 구성되어 있어 바라보는 방향에 따라 전혀 다른 경치가 나타난다. 북쪽담 정상부의 서쪽은 절성이 아주 높은 조면암질 용암에 의해 용암돔(lava dome)의 자형이 만들어진 반면, 동쪽은 유동성이 큰 조면현무암질 용암이 흘러 관공사면을 형성하였다. 정상부의 남쪽과 북쪽 시면은 용암돔의 붕괴로 인해 가파른 암벽이 만들어져 있다. 제주도의 화산추 또는 오름들은 하와이안 또는 스트롬볼리형 분출에 의해 만들어진 분식구들이 대부분이다. 이들은 분석(scoria)으로 불리는 검은색의 다공질 화산암편으로 구성되어 있다. 반면, 성산일출봉과 제주의 몇몇 오름들은 지하에서 상승하는 뜨거운 이그마가 해수 또는 지하수를 만나 폭발적 반응을 일으켜 만들어진 수성화산들이다(Sohn,1996). 수성화산은 분화구의 크기, 높이, 사면의 경사를 기준으로 하여 용화관과 용화구로 구분된다(Vespermann and Schmincke,2000; Wohletz and Sheridan, 1983). 성산일출봉은 높이 179m,분화구 직경 600m, 분화구 바닥의 고도 90m, 그리고 최대 45°의 가파른 경사를 지닌 전형적인 용화구이다.(Ldts-Literal)</p> |
| ngii:imageURL            | <a href="http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011043295940">http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011043295940</a><br><a href="http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011043368850">http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011043368850</a><br><a href="http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011044309610">http://cosmos.ngii.go.kr/ginnoservice/images/FILE_201012011044309610</a>   |
| ngii:locatedInAdmin      | 제주특별자치도 서귀포시 성산읍 성산리  |
| owl:sameAs               | <a href="http://lod.lju.go.kr/id/resource/Volcano/J1108051629256252608">http://lod.lju.go.kr/id/resource/Volcano/J1108051629256252608</a>   |
| rdf:type                 | 오름/화산   |
| ngii:skoscode            | L.T.Volca(xsd:string)   |
| rdfs:label               | 성산일출봉 (xsd:string)  |
| ngii:hasOrigin           | 제주지질공원 (xsd:string)   |
| ngii:hasX-coordinate     | 946139.06(xsd:string)   |
| ngii:hasY-coordinate     | 1436408.21(xsd:string)  |
| ngii:nearbyAccommo       | 제주관광호텔<br>들꽃농관광호텔<br>성산호텔<br>미도호텔   |
| ngii:nearbyCultAss       | 구구봉<br>일출봉<br>천연기념물제 420호<br>해뜨는오름(세계지질공원)<br>성산일출봉(지질공원)   |
| ngii:nearbyEating        | 돌하르방떡볶이<br>명원가든<br>들꽃농식당<br>성산그린식당<br>성산해오름<br>우리농식당<br>청운식당<br>청진동 떡볶이<br>해뜨는식당<br>해오름식당   |
| ngii:nearbyTourAttract   | 성산일출해양도립공원<br>성산조조가비박물관   |
| is ngii:hasTopography of | 제주특별자치도<br>제주특별자치도 서귀포시<br>제주특별자치도 서귀포시 성산읍<br>제주특별자치도 서귀포시 성산읍 성산리   |

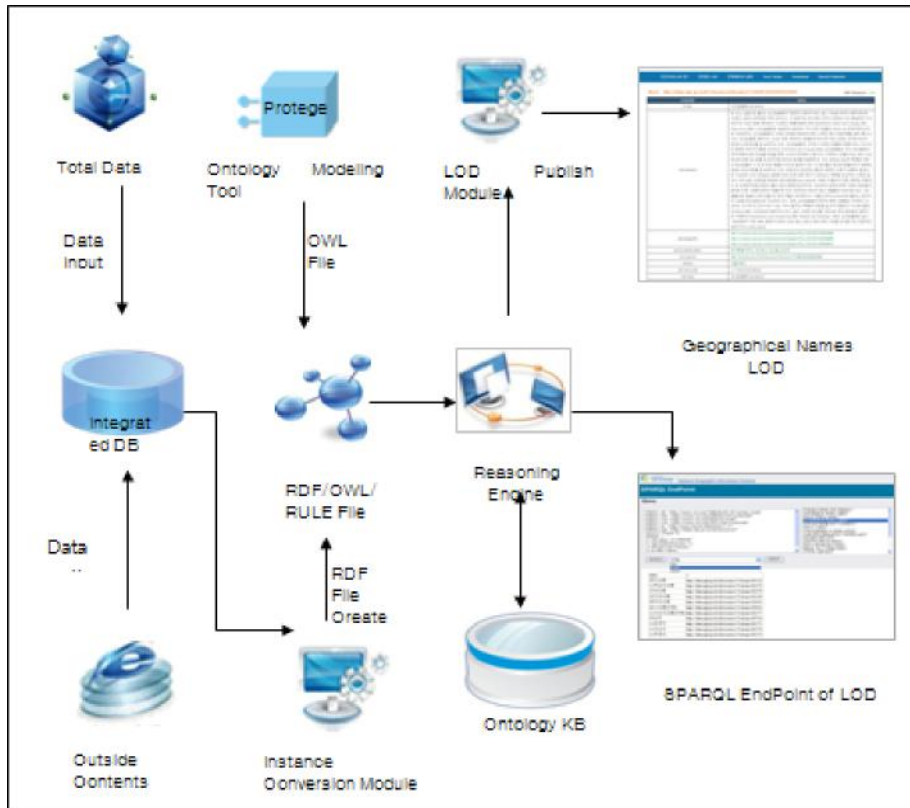
**3. System Composition**  
**3.1 Hardware Composition**



**3.2 Software Composition**



**3.2 Geographic Names LOD Service Composition**



#### 4. Future Extensions

Geographical Names Management System has its aim at providing efficient geographical name tasks for agencies at city/county/district. It is therefore important to integrate the system for enhancing tasks of related agencies and to enhance the renewal system. Also, yearly expansions of LOD services will be needed and private, industry, and public usages should be applicable by providing geographical names in open and standardized semantic web format.

