

Investigation of The Spatial Address Recording System (SARS) Project Process to Be Base the Urban Information System (UIS)

Fanise USLU, S. Savaş DURDURAN, Asli BOZDAĞ, Turkey

Key words: Urban Information System (UIS), Spatial Address Registration System (SARS), land management, planning

SUMMARY

Urban Information System (UIS), is an urban-based application of geographic information systems designed to address the planning, infrastructure, engineering, basic services and administrative information required for the fulfillment of urban activities in a fast and sound manner. The address components have an important place in for consist of sustainability (UIS). Especially address data carries great importance for population censuses, in health, education and public services, in the planning and implementation of public investments and in the creation and updating of voter registers.

(SARS), in Turkey, was created to integrate address information in textual attributes in the Address Registration System (ARS) with geographical coordinates and integrate it with other systems. With this project, it is aimed to give a spatial dimension to the National Address Database in which all address components in the country are textually managed. Thus, it is desirable to establish a more effective and functional Spatial National Address Database. Spatial Address Recording System (SARS) which is relational database (city, district, neighborhood, road, etc.) is carried out simultaneous in land and office environment. During the land process of the SARS project; is performed of confirmation of data generated in the office, collection, addition, deletion, updating of the attribute information and matching with records in the National Address Database. In the office; is provided realization of numerical design by reaching the integration and the correctness of the data obtained in the field at the expected level. In addition, all of these studies should be updated and should be supervised by the authorities. As a result, the sustainability of the project is; it can be seen that the operation of the plant in the direction of land, office and administration is possible with a healthy follow-up. In this case, it can be seen that the sustainability of the project is possible with a healthy follow-up of the project process in terms of land, office and administration. In this study, it is aimed to investigate the process of the (SARS) project in Turkey with the scope of the consumed resources, needed bases, actors involved in the process, and field and office application steps. The problems were investigated related to the preparation, planning and implementation processes of the project and suggestions were developed for sustainable developing the project.

SUMMARY

Kent Bilgi Sistemi (KBS), kentsel faaliyetlerin yerine getirilmesinde ihtiyaç duyulan planlama, altyapı, mühendislik, temel hizmetler ve yönetsel bilgileri hızlı ve sağlıklı bir şekilde irdelenmek amacıyla oluşturulan, coğrafi bilgi sistemlerinin kent bazındaki bir uygulamasıdır. KBS’de adres bileşenlerinin önemli bir yeri vardır. Adres standardı; il, ilçe, bucak, köy, mezra, belediye adı; mahalle adı ve sabit tanıtım numarası, meydan, bulvar, cadde, sokak ve küme evlerin adı ve sabit tanıtım numarası ile site, blok, mevki adı, dış kapı numarası, iç kapı numarası, posta kodu bileşenlerinden oluşur. Adres verileri; nüfus sayımlarında, sağlık, eğitim vb. kamu hizmetlerinde, kamu yatırımlarının planlanmasında ve uygulanmasında, seçmen kütüklerinin oluşturulması ve güncelleştirilmesinde vb. durumlarda büyük önem taşır.

Mekansal Adres Kayıt Sistemi Projesi (MAKS), Türkiye’de Adres Kayıt Sisteminde (AKS) metinsel nitelikte yer alan adres bilgilerinin coğrafi koordinatlarla birleştirilmesi ve diğer sistemlerle entegre edilebilmesi için oluşturulmuştur. Bu proje ile ülke genelindeki tüm adres bileşenlerinin metinsel olarak yönetildiği Ulusal Adres Veri Tabanı’na mekânsal bir boyut kazandırılması amaçlanmaktadır. Böylece daha etkin ve fonksiyonel bir Mekânsal Ulusal Adres Veri Tabanının oluşturulması arzu edilmektedir.

MAKS projesi; ilişkisel veritabanı mantığında (il, ilçe, mahalle, yol, numarataj) arazi ve ofis ortamında yürütülmektedir. MAKS projesinin arazi sürecinde; ofis ortamında üretilen verilerin teyit edilmesi, öznitelik bilgilerinin toplanması, eklenmesi, silinmesi, güncellenmesi ve Ulusal Adres Veri Tabanındaki kayıtlarla eşleştirilme çalışması yapılmaktadır. Ofis ortamındaki çalışmada ise; sahada elde edilen verilerin beklenen seviyede doğruluğa ve entegrasyona ulaşmasıyla numarataj tasarımının gerçekleştirilmesi sağlanmaktadır. Tüm bu çalışmaların proje sürecinde bilgi alınan ve birlikte kararlar verilen yetkili idare tarafından güncellenerek yürütülmesi beklenmektedir. Bu durumda projenin sürdürülebilirliğinin; projenin arazi, ofis ve idare yönüyle işleyişinin sağlıklı bir şekilde takibi ile mümkün olduğu görülmektedir.

Bu çalışmada, Türkiye’de MAKS projesinin sürdürülebilirliğinin sağlanmasında projenin işleyiş süreci; tüketilen kaynaklar, ihtiyaç duyulan altlıklar, süreçte yer alan aktörler ve saha ve ofis uygulama adımları ile incelenmiştir. Projenin hazırlık, planlama ve uygulama süreçlerine ilişkin karşılaşılan sorunlar ve bunların çözümüne yönelik öneriler geliştirilmiştir.

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1. SPATIAL ADDRESS REGISTRATION SYSTEM

Spatial Address Registration System Project (SARS) is a system established to integrate the infrastructure created by combining the address information kept as text with the geographical coordinates into other systems and spread this system throughout the country. The SARS is designed to give a spatial dimension to the National Address Database (NAD), where addressing, numbering and building documents are textually overlaid on all address components of the country (URL-1). This system is an effective, multi-purpose address information system that meets certain standards, which is based on national and international standards (URL-1). Within the scope of the SARS project, the system was activated in 10 provinces across Turkey in 2016, in 30 provinces in 2017 and in 34 provinces in 2018. In addition, there are administrations that are also activated, while there are others where the efforts have been continuing.

There are many benefits of keeping address data in the spatial form. Some of those are;

- Authorized administrations, which have Geographical Address Information System, can manage the system without loss of work and duplication,
- Through the creation of a data sharing infrastructure, the need for faster and more reliable execution of work is provided,
- By allowing the integration of the spatial NAD with the competent management systems and by forming the relevant infrastructure, processing of the correct data in the system as soon as possible will be ensured,
- Citizens can access the processes related to addressing components and building documents more quickly and accurately,
- The system can be used as a base for many applications.

2. SPATIAL ADDRESS REGISTRATION SYSTEM PROJECT PROCESS

Within the scope of the SARS Project, the following process steps are followed to make a standard work for each province and to come up with a standard system as a result (MAKS, 2017).

- The collection of data in Competent Authorities (GIS data, verbal data, current maps, zoning plans, orthophoto maps, proprietary information, identity sharing information), analysis and transformation in accordance with the SARS data model,
- After checking the necessary conformities of the data provided from Competent Authorities and making the data conform to the SARS data, establishment of the

necessary components in the office environment over the orthophotos provided by the General Directorate of Land Registry and Cadastre, General Command of Cartography and the Ministry of Environment and Urbanization,

- Matching the generated spatial data with NAD (district, neighborhood, village, road)
- Controlling the geographical address data generated as the result of the office work with the data from the field, in order to correct the wrong data and to complete the missing data,
- Providing the integration of all address components with NAD (numbering, independent section), and eliminating any mistakes and deficiencies in NAD,
- The shortcomings and faults identified in the NAD should be submitted to the authorized persons during the project process by the interface called Project Management Tool,
- Design of numbering with reference to the "Regulation on Address and Numbering" after the collection of field data, the implementation of office controls and the completion of integration with NAD.

2.1 Spatial Address Registration System Project Process, The Case of IZMIR

The SARS project process is briefly described below with visual annexes and explanations specific to İzmir province.

- In the relational database order, the district boundaries of İzmir province are seen in the system where the Province / District / Neighbourhood / Road Middle Line / Road Middle Line Direction / Structure / Numbering / Independent Chapter components are kept (Figure 1).

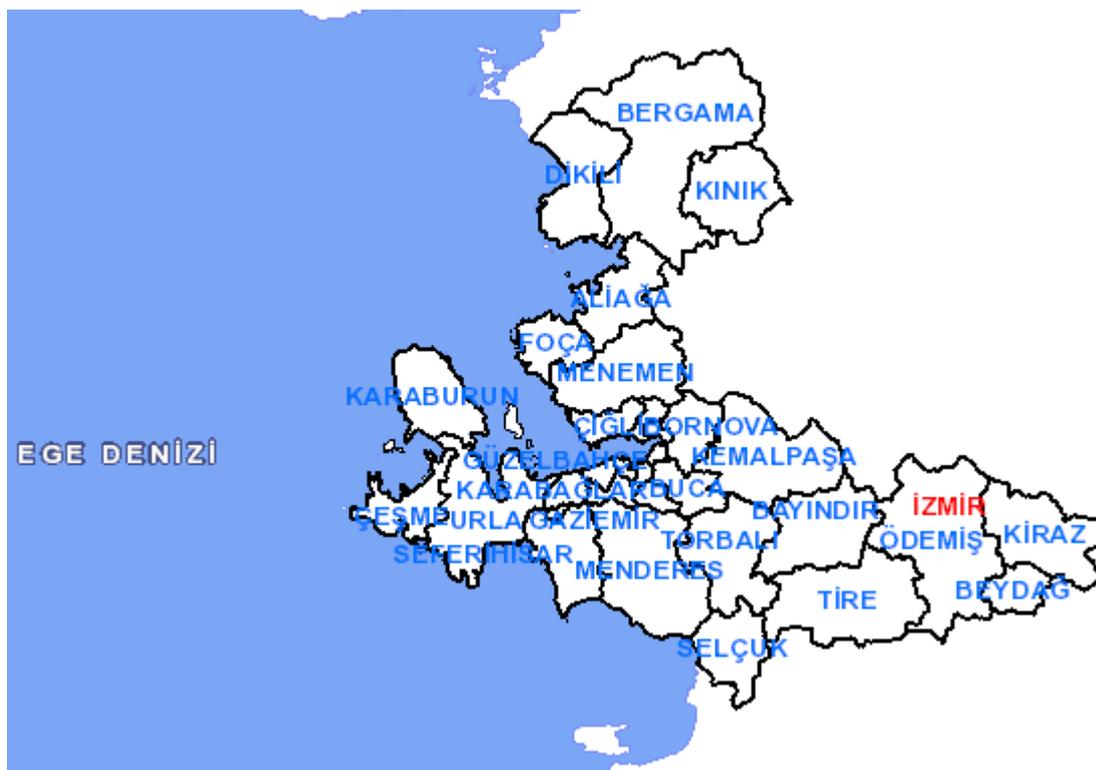
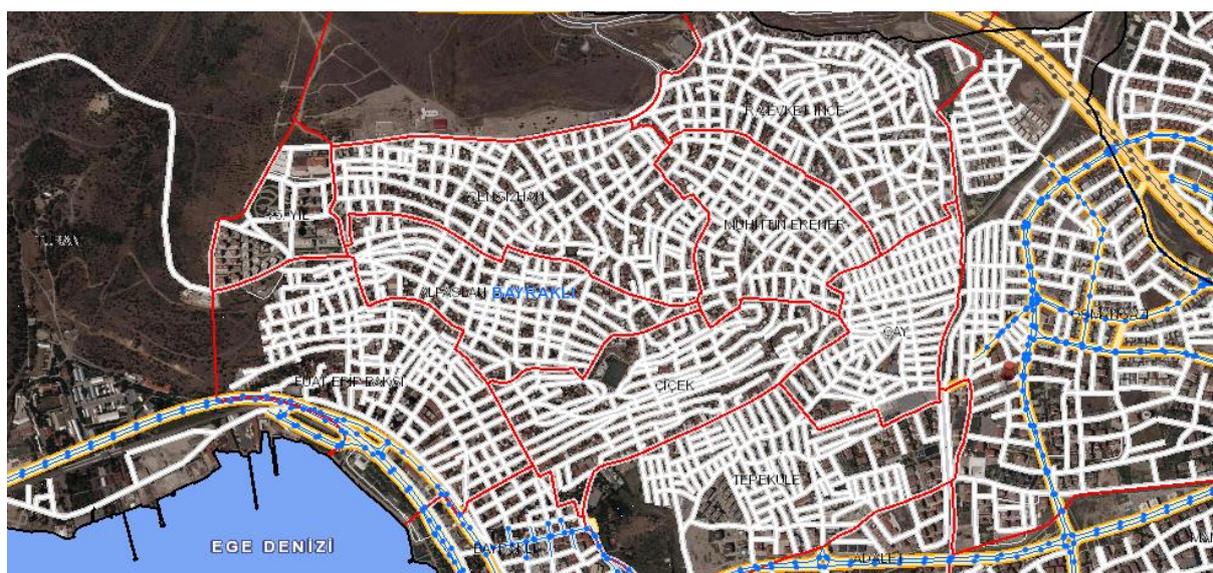


Figure 1. The district boundaries of İzmir province (URL-2)

The provincial area, district area, neighbourhood area is determined together with competent administrations in accordance with the process functioning and hierarchically. Provincial data, district data, neighbourhood data and building data are kept closed. Road Middle The line is kept as **line**, and the numbering data as **dots**.

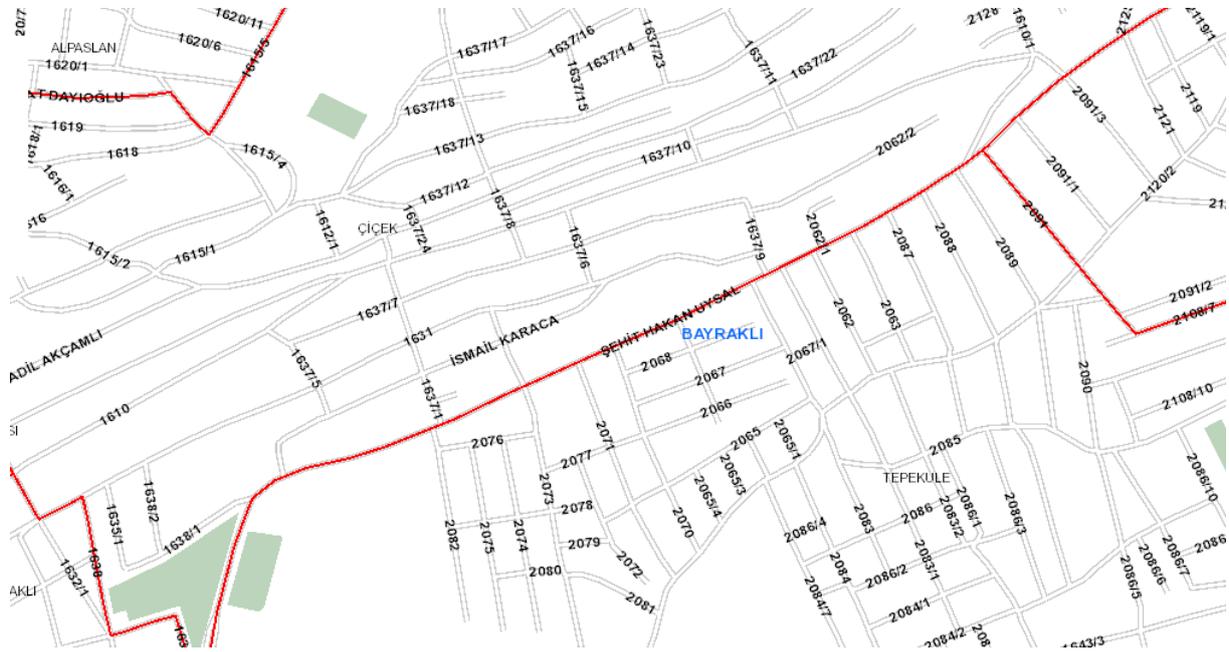


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Figure 2. The neighbourhood borders and roads belonging to the Bayraklı district of İzmir province (URL-2)

- In Figure 2, neighbourhood borders and roads belonging to the Bayraklı district of İzmir province are seen. These paths are matched to their NAD counterparts, topological errors have been corrected and necessary corrections have been made to comply with SARS. Roads not in the NAD but not in the field, and in the field but not



in the NAD are determined and are reported to the competent authority.

Figure 3. The streets, roads, boulevards and the square of the city (URL-2)

In Figure 3, we see the streets, roads, boulevards and the square of the city. These data are stored separately in their own codes, such as: 1-Road, 2-Street, 3-Boulevard, 4-Square, 5-Cluster Houses, 6-Highway, 7-Motorway, 8-Village Connection Road.

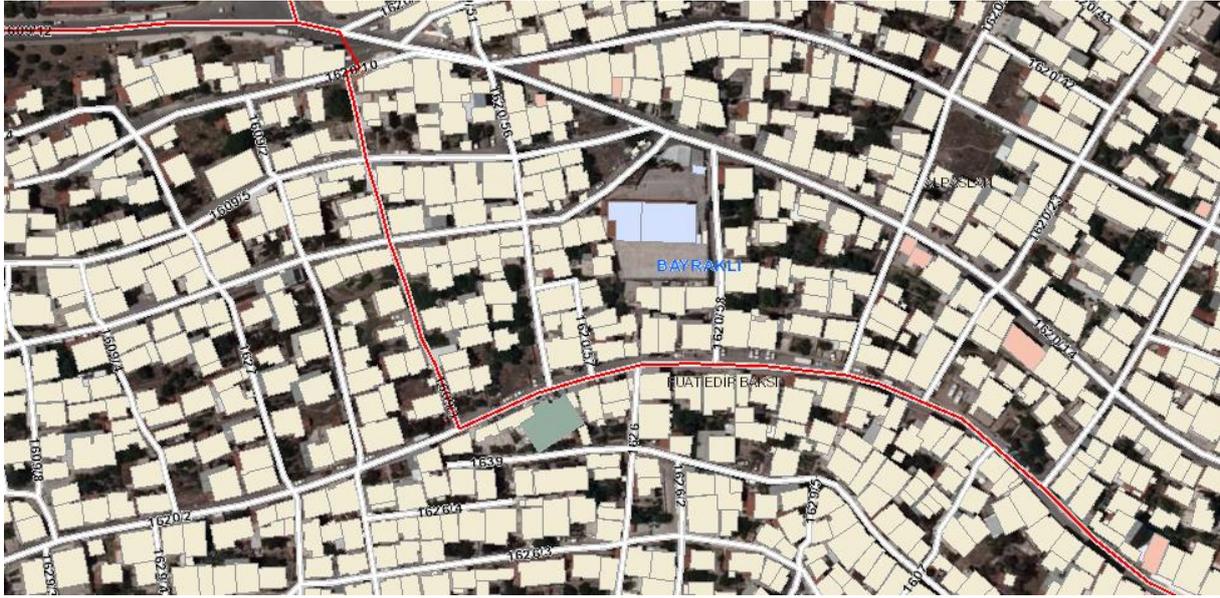


Figure 4. The structures are produced from orthophoto (URL-2)

In Figure 4, there are structures that have been obtained from competent authorities or produced from orthophoto bases. For the whole of the constructions, the present / not present in the field information is collected and necessary corrections are made.

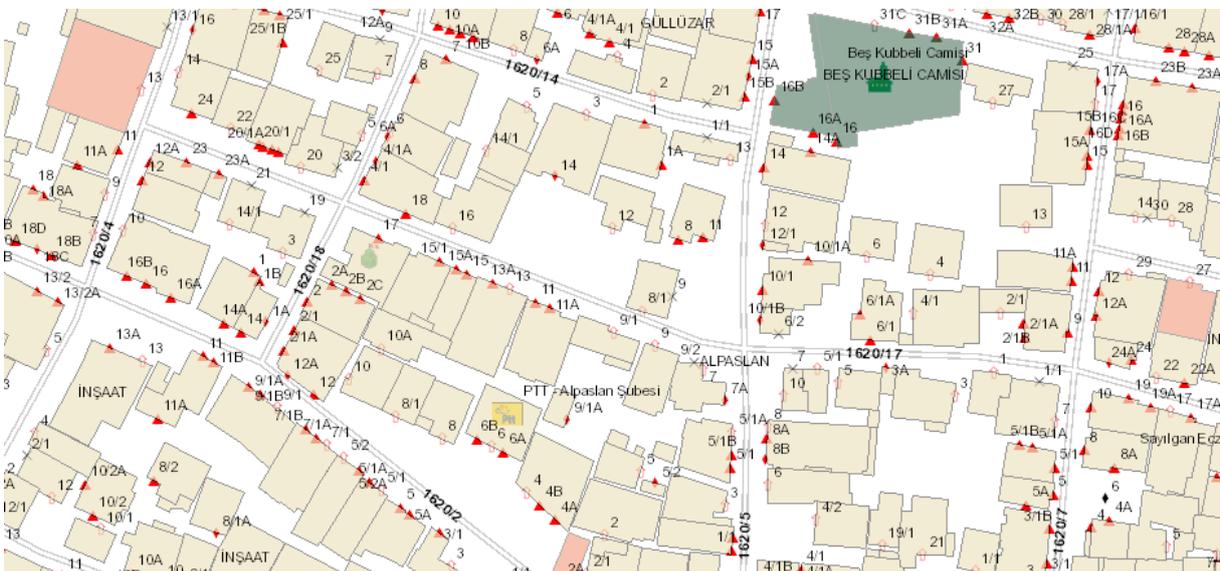


Figure 5. The numberings of the constructions (URL-2)

3. SARS IMPORTANCE IN URBAN INFORMATION SYSTEM

The Urban Information System (UIS) is an information system that supports the decision making and decision making of the management and planning of cities in order to provide fast, necessary and accurate studies for many cities such as health, education, transportation, security and tourism. For the successful and quality management of the city, the presence of a spatial system is the key. The contribution of the SARS to the UIS is indicated below.

- In the SARS project, data are collected and processed in the system to the same standards throughout the country. The problem of non-availability of standard data generation in UIS will thus be overcome.
- Large volumes of data collection for the UIS will soon provide great benefits for the management and administration of cities.
- With SARS, the competent authority staff will not have to enter both their UIS and ARS, the duplication will be removed and the data will be updated through a single system.
- The verbal components (neighbourhood, road, structure, independent part) existing in the NAD are integrated with the spatial counterpart and the information of the residents are kept in the system thanks to the matchings. Keeping information for individual departments in each structure, how many individuals live, how to analyse them, and asking questions will be useful data for the urban information system.
- Competent management staff are trained on the use of the SARS interface. The Project Management Tool (PMT) interface training is provided for the personnel to follow all the steps within the project and it is provided for them to benefit by being included in the process.
- For the competent authorities which are not able to perform the necessary updates in the NAD system and the UIS, all the components detected in the field are presented to the authorized persons as a report and are processed in the system.
- The SARS project constitutes the necessary infrastructure for transportation studies, safety studies, tourism, health, education, planning, cartography, infrastructure/superstructure, design studies and administrative studies which are among the usage purposes of UIS.
- The analysis of the SARS project is based on the analysis of intensity in all countries, classification according to age groups, direction of growth of the city, instant detection of changes in the city, education, health, transportation, and the advantages such as quick and accurate decisions in this direction will make the cities more liveable.

4. CONCLUSION

When the SARS project will be activated in the overall of Turkey, it will clearly give useful results for the cities. To collect the standard data, to train the authorized administrative staff, to include these administrations in the project process, to solve the mistakes and deficiencies in NAD, to present the field to the authorized persons with the most accurate and current status, to make the address data spatial, to share the obtained data with other institutions and

organizations and providing inquiries and analysis, are just some of these useful results as well as being an infrastructure in urban studies, such as on education, health, transportation, security, planning and mappings. The possibilities of preventing data duplication by processing data in a single system are crucial for making the right decisions for today and tomorrow for our country and for the creation of liveable cities.

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CONTACTS

Fanise USLU

Institution: Aselsan A.Ş

Address: Göktepe Mah. Konya Cad. NO:152

City: Konya

COUNTRY: Turkey

Email: uslu.fanise@gmail.com

Prof. Dr. S. Savas DURDURAN

Institution: Necmettin Erbakan University

Address: Necmettin Erbakan University, Faculty of Engineering and Architecture,
Department of Geomatics Engineering, Yaka Neighborhood, Demec Street, No:42, Meram,
Konya

City: Konya

COUNTRY: Turkey

Tel: 90 332 325 20 24

Fax: 90 332 237 69 91

Email: durduran2001@gmail.com

Web site: <https://konya.edu.tr/personel/ssdurduran>

Dr. Asli BOZDAG

Institution: Nigde Omer Halisdemir University

Address: Nigde Omer Halisdemir University, Faculty of Engineering, Department of
Geomatics Engineering, Centre Campus, Nigde

City: Nigde

COUNTRY: Turkey

Tel: 90 388 225 40 23

Email: aslibozdag@ohu.edu.tr

Web site: <http://ohu.edu.tr/akademik/aslibozdag>

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