Overview of geospatial solutions market in Türkiye

October 2024

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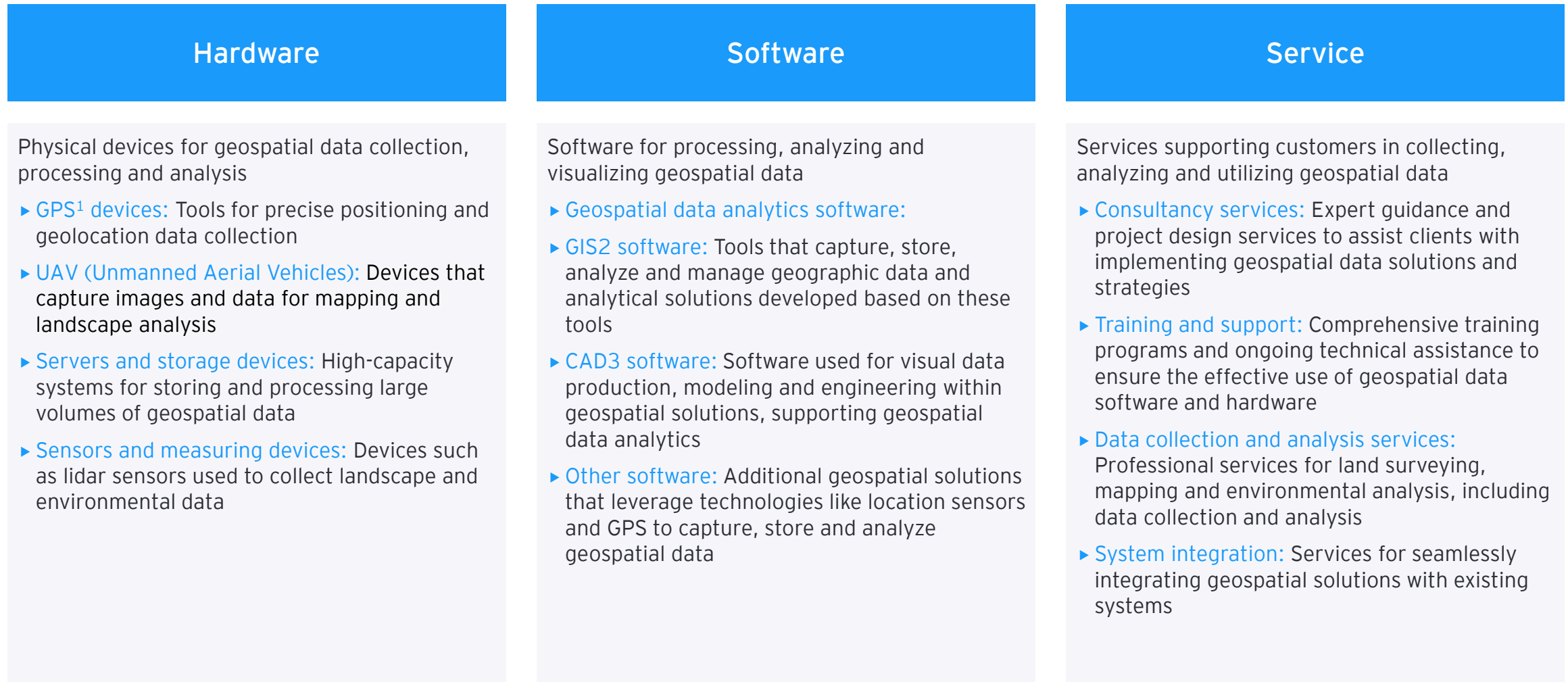
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Content

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01

Geospatial solutions ecosystem

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The geospatial solutions market consists of hardware, software and service segments

Geospatial solutions market structure

Hardware	Software	Service
Physical devices for geospatial data collection, processing and analysis	Software for processing, analyzing and visualizing geospatial data	Services supporting customers in collecting, analyzing and utilizing geospatial data

Hardware

Physical devices for geospatial data collection, processing and analysis

▸ GPS[1] devices: Tools for precise positioning and geolocation data collection

▸ UAV (Unmanned Aerial Vehicles): Devices that capture images and data for mapping and landscape analysis

▸ Servers and storage devices: High-capacity systems for storing and processing large volumes of geospatial data

▸ Sensors and measuring devices: Devices such as lidar sensors used to collect landscape and environmental data

Software

Software for processing, analyzing and visualizing geospatial data

▸ Geospatial data analytics software:

▸ GIS[2] software: Tools that capture, store, analyze and manage geographic data and analytical solutions developed based on these tools

▸ CAD[3] software: Software used for visual data production, modeling and engineering within geospatial solutions, supporting geospatial data analytics

▸ Other software: Additional geospatial solutions that leverage technologies like location sensors and GPS to capture, store and analyze geospatial data

Service

Services supporting customers in collecting, analyzing and utilizing geospatial data

▸ Consultancy services: Expert guidance and project design services to assist clients with implementing geospatial data solutions and strategies

▸ Training and support: Comprehensive training programs and ongoing technical assistance to ensure the effective use of geospatial data software and hardware

▸ Data collection and analysis services: Professional services for land surveying, mapping and environmental analysis, including data collection and analysis

▸ System integration: Services for seamlessly integrating geospatial solutions with existing systems

1. Global Positioning System
2. Geographic Information Systems
3. omputer-aided Design
Source: EY-Parthenon analysis

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Geospatial solutions software offers various solution areas for players across the value chain ranging from data collection to decision support systems

Geospatial solutions software value chain

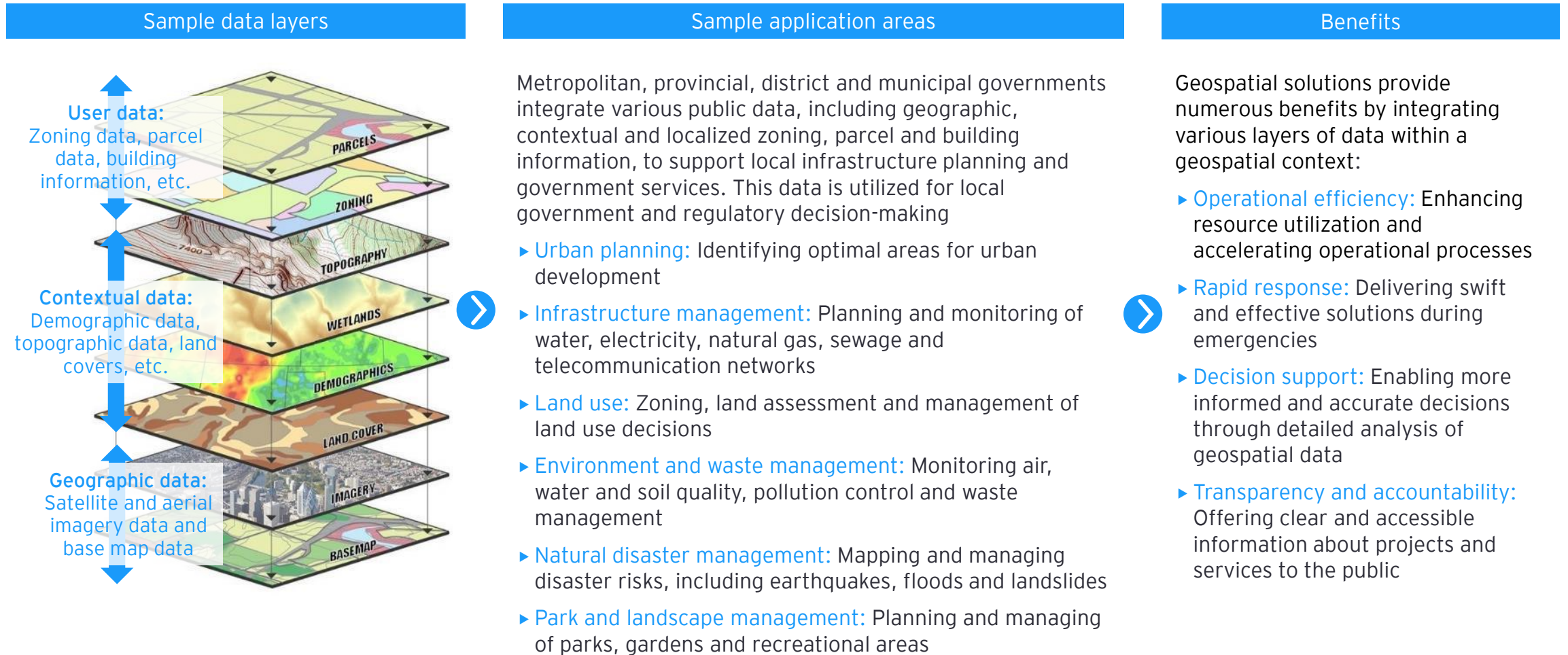| Component	1. Data collection	2. Data management	3. Project production	4. Land and asset management	5. Data analytics	6. Decision support systems
Explanation	Collection of geospatial data and user inputs for the development of maps and models	Integration and visualization of collected data	Creating project drawings and designs based on geographical visualization derived from geospatial data	Utilizing geospatial data and software to monitor land and geographic assets and to optimize maintenance and operations	Developing reporting structures and analytical solutions by analyzing geospatial data sets and addressing optimization challenges	Enabling strategic decision-making based on what is organized, planned and revealed through the analyses
Selected application areas	▶ Geospatial data measurement ▶ Coordination ▶ Field data collection	▶ CAD – GIS data conversion ▶ GIS mapping ▶ Low code platforms and dashboard creation	▶ 3D modeling ▶ Geological and block modeling, mining applications ▶ 3D cadastral project design ▶ Photogrammetric modeling (drone)	▶ Digital twin ▶ Parcel management ▶ Infrastructure network management ▶ Geo-asset tracking	▶ Reporting ▶ Environmental impact analysis ▶ Risk prediction	▶ Smart city applications ▶ Disaster management systems ▶ Transportation planning tools ▶ E-signature applications ▶ E-government system integrations

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Geospatial solutions market offer specialized solutions across various verticals

Vertical breakdown of geospatial solutions ecosystem and application areas

Sector	Local governments	Public administration	Construction & engineering	Energy and natural resources	Telecommunication	Transportation & Logistics	Other
Explanation	Metropolitan, provincial, district and municipal governments utilize geospatial solutions for local infrastructure and municipal services	Ministries, public institutions and public enterprises use geospatial solutions for the management and regulation of public services	The sector uses geospatial solutions for the planning, design and management of construction projects	The sector uses geospatial solutions for energy production, distribution and the management of natural resources	The sector uses geospatial solutions for the planning, installation and management of the networks	The sector uses geospatial solutions for the transportation, distribution and storage of goods and services	Retail, banking and insurance sectors employ geospatial solutions for location-based analysis
Selected application areas	▶Urban planning: Identification and visualization of optimal areas for urban development ▶Infrastructure management: Planning and monitoring of water, electricity, natural gas, sewage and telecommunication networks ▶Land use: Zoning, land assessment and management of land use ▶Environment and waste management: Monitoring air, water and soil quality and managing waste ▶Natural disaster management: Mapping and managing disaster risks ▶Park and landscape management: Management of parks, gardens, recreational areas	▶Transportation and infrastructure planning: Planning and monitoring of road, rail, sea and air transportation networks ▶Agricultural productivity: Monitoring farmland, crop health and managing irrigation systems ▶Forestry and forest management: Mapping forests and managing fire risks ▶Energy resources management: Mapping and managing energy resources ▶Cultural heritage and conservation: Mapping and conserving historical and cultural assets ▶Defence and security: Ensuring border security, developing strategic plans	▶Land assessment: Identification and visualization of suitable land for construction ▶Project planning: Planning of construction and infrastructure projects ▶Construction management: Site, time and material management ▶Engineering analysis: Hydraulic, hydrological and static analysis ▶Regulation and compliance: Ensuring that projects comply with legal regulations	▶Resource exploration and mapping: Mapping and exploration of oil, natural gas and mineral deposits ▶Renewable energy projects: Identifying suitable sites for wind, solar and hydroelectric power plants ▶Infrastructure management and planning: Planning, monitoring energy transmission and distribution networks ▶Environmental impact analysis: Assessing the environmental impacts of projects	▶Infrastructure planning: Planning and visualization of infrastructure such as fiber optic cable networks, base stations ▶Network management: Monitoring the existing network and improving its performance ▶Base station localization: Positioning new base stations in the most appropriate locations	▶Route optimization: Determining transport routes in the most efficient way ▶Fleet management: Monitoring and management of vehicle fleets ▶Logistics operations: Planning, monitoring and management of warehouses and distribution centers	▶Retail: Store layout planning and customer demographic analysis ▶Banking: Bank branch location selection and customer analysis ▶Insurance: Risk assessment and claims management

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For example, various data layers are integrated to create geospatial solutions, offering customized data integration tailored to the specific needs of local governments

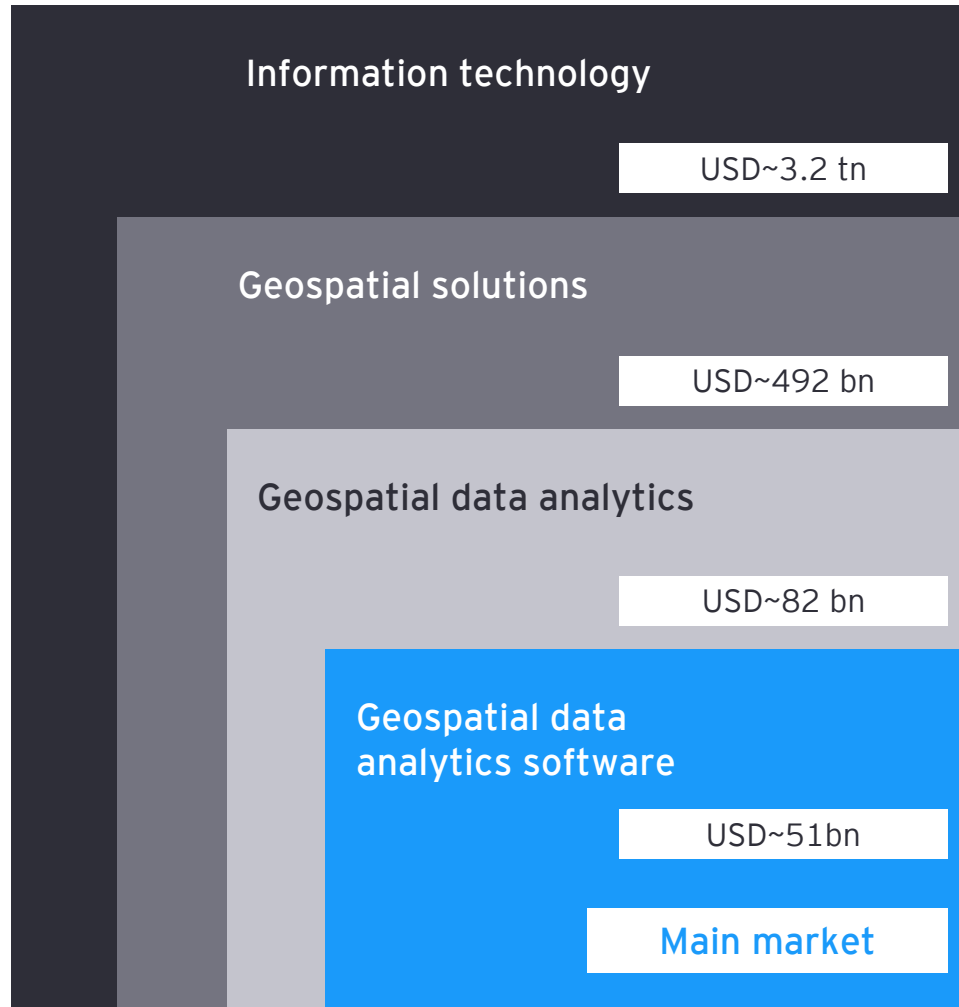Example usage areas of geospatial solutions for local governments

Sample data layers	Sample application areas	Benefits

User data: Zoning data, parcel data, building information, etc.

Contextual data: Demographic data, topographic data, land covers, etc.

Geographic data: Satellite and aerial imagery data and base map data

PARCELS
ZONING
TOPOGRAPHY
WETLANDS
DEMOGRAPHICS
LAND COVER
IMAGERY
BASEMAP

Metropolitan, provincial, district and municipal governments integrate various public data, including geographic, contextual and localized zoning, parcel and building information, to support local infrastructure planning and government services. This data is utilized for local government and regulatory decision-making

▶ **Urban planning:** Identifying optimal areas for urban development

▶ **Infrastructure management:** Planning and monitoring of water, electricity, natural gas, sewage and telecommunication networks

▶ **Land use:** Zoning, land assessment and management of land use decisions

▶ **Environment and waste management:** Monitoring air, water and soil quality, pollution control and waste management

▶ **Natural disaster management:** Mapping and managing disaster risks, including earthquakes, floods and landslides

▶ **Park and landscape management:** Planning and managing of parks, gardens and recreational areas

Geospatial solutions provide numerous benefits by integrating various layers of data within a geospatial context:

▶ **Operational efficiency:** Enhancing resource utilization and accelerating operational processes

▶ **Rapid response:** Delivering swift and effective solutions during emergencies

▶ **Decision support:** Enabling more informed and accurate decisions through detailed analysis of geospatial data

▶ **Transparency and accountability:** Offering clear and accessible information about projects and services to the public

02

Global market size and trends

Global geospatial data analytics software market, a significant component of the global geospatial solutions market valued at USD3.2 tn, has a market size of USD51 bn

Market breakdown (2023 values)

Information technology

USD~3.2 tn

Geospatial solutions

USD~492 bn

Geospatial data analytics

USD~82 bn

Geospatial data analytics software

USD~51bn

Main market

Information technology market

▶ A large market of products and services that offer digital solutions such as software, hardware, telecommunications, data storage, cloud services and network infrastructures

Geospatial solutions market

▶ The market that includes hardware, software and services offered in various sectors for the collection, processing, visualization and analysis of geospatial data

Geopatial data analytics market

▶ Software and services offered to generate, understand, analyze geospatial data or images, model and predict geographic trends

Geospatial data analytics software market

▶ GIS software that captures, stores, analyzes and manages geographic data and analytical solutions developed based on these software and…

▶ … CAD software for visual data generation, modeling and engineering used in geospatial data analytics solutions

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The global IT[1] market, growing for five years, is expected to expand further through new technologies, data analytics, cybersecurity and government spending

Global IT spending market

Global IT spending market size by product segments[2] (2019-27F, USDtn)

CAGR (%)	'19-'23	'23-'24	'24-'27
Service	7%	10%	8%
Hardware	7%	5%	7%
Software	7%	14%	11%

Legend:
- 🟩 Above market CAGR
- 🟧 Equal to market CAGR
- 🟥 Below market CAGR
- ⬭ X → CAGR (%)
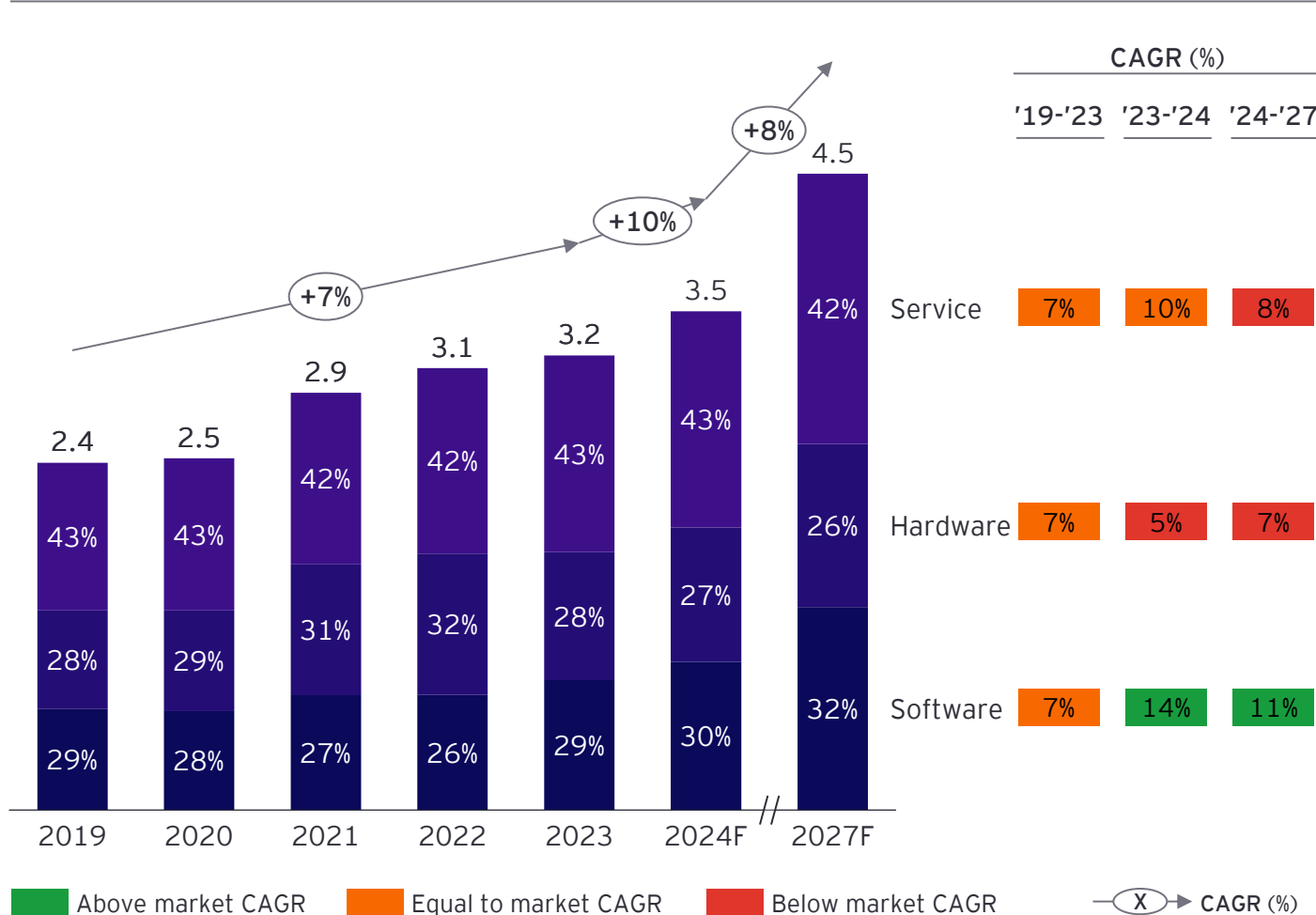
Highlights

- **2023-24:** **The global IT spending** market is expected to reach **USD3.5 trillion** by **2024,** reflecting **a growth** rate of **10% CAGR, surpassing** the 7% CAGR observed over the past four years

- **2024-27:** The market **is projected to continue expanding** at a **CAGR of 8%** between **2024** and **2027.** The main drivers of this growth are:
  - **The widespread adoption of emerging new technologies: Significant advancements** and **widespread adoption** of **cloud computing services** and **Internet of Things (IoT) technologies,** such as **smart city** technologies
  - **Increasing demand for business intelligence (BI) and data analytics:** Increasing demand for **data analytics technologies** in sectors such as **manufacturing, transportation, telecommunication** and **energy,** especially to improve **process optimization** and **efficiency**
  - **Cybersecurity and risk management spending:** Growing emphasis on cybersecurity driven by **emerging cloud computing** services, usage of **generative AI and evolving legislation**
  - **Increased government spending:** Increased government IT investments driven by the need for **new hardware** and **software** to support **digital transformation initiatives**

- **Software market:** The **software segment,** which accounted for **29%** of the **market** in **2023,** is expected to grow at a **CAGR of 11%** and to represent **32%** of the **market** by **2027**

1.Information technology
2.Communication technologies are not included
Source: EY-Parthenon analysis

EY Parthenon

The global geospatial solutions market, which accounts for 15% of the global IT market and covers four main technology groups, reached USD492 billion in 2023

Global geospatial solutions market (2019-27F, USDbn)

CAGR markers: 11% | 13% | 13% | 14% | 15% | 16% | 19%

Chart bars:

2019 — 275
- 42% Earth observation
- 22%
- 20%
- 16%

2020 — 319
- 42%
- 22%
- 20%
- 16%

2021 — 378
- 43%
- 21%
- 20%
- 16%

2022 — 432
- 43%
- 21%
- 19%
- 17%

2023 — 492
- 43%
- 21%
- 19%
- 17%

2024T — 565
- 44%
- 21%
- 18%
- 17%

2027F — 857
- 45% Earth observation
- 20% GNSS[1] and positioning
- 18% Scanning
- 17% Geospatial data analytics

Growth arrows: +16% ... +15% ... +15%

Legend:
- X → CAGR (%)
- X → Share in total IT market (%)
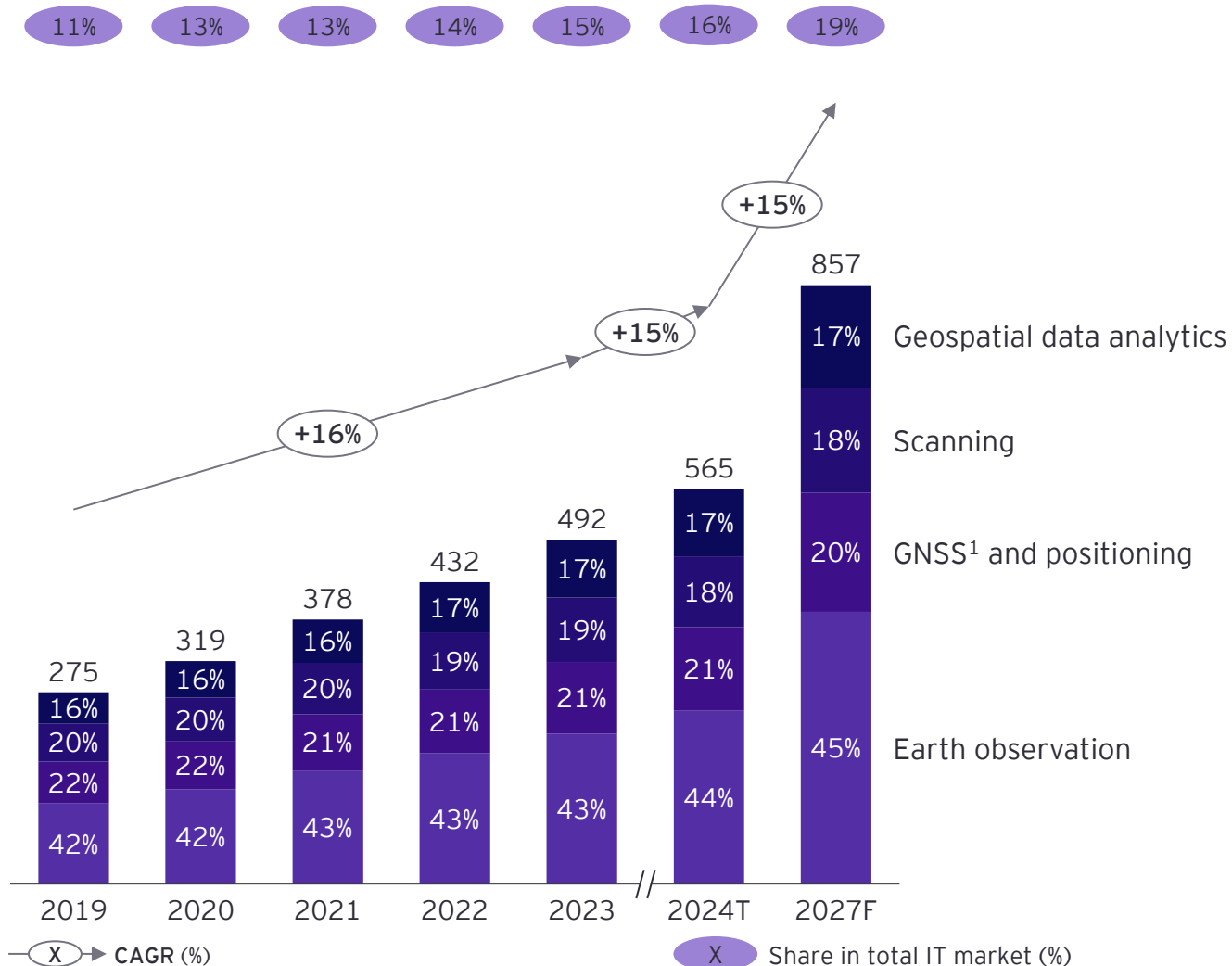
Definitions

Geospatial data analytics
- Solutions for creating, understanding and analyzing geospatial data or images, as well as modeling and predicting geographic trends
- These solutions, which encompass the GIS market, include all geospatial data analytics solutions developed for various sectors, extending beyond the traditional scope of GIS

Scanning
- Capturing detailed, accurate and three-dimensional data of objects, surfaces, or lands using sensors, cameras and other devices
- This technology group also includes scanning for digital twin modeling and 360-degree mobile imaging

GNSS[1] and positioning
- **GNSS:** Satellite systems that deliver positioning, navigation and timing data to receivers through signals
- **Positioning:** Determining the geographical location of an object or person using GNSS and other technologies

Earth observation
- Collection, monitoring and analysis of data and images of the Earth's surface and atmosphere using satellites, weather sensors and other technologies

1.GNSS: Global Navigation Satellite Systems
Source: EY-Parthenon analysis

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The global geospatial data analytics market is expected to grow with the rising demand for IT advancements, geospatial data, 3D visualization, digital twins and smart cities

Global geospatial data analytics market

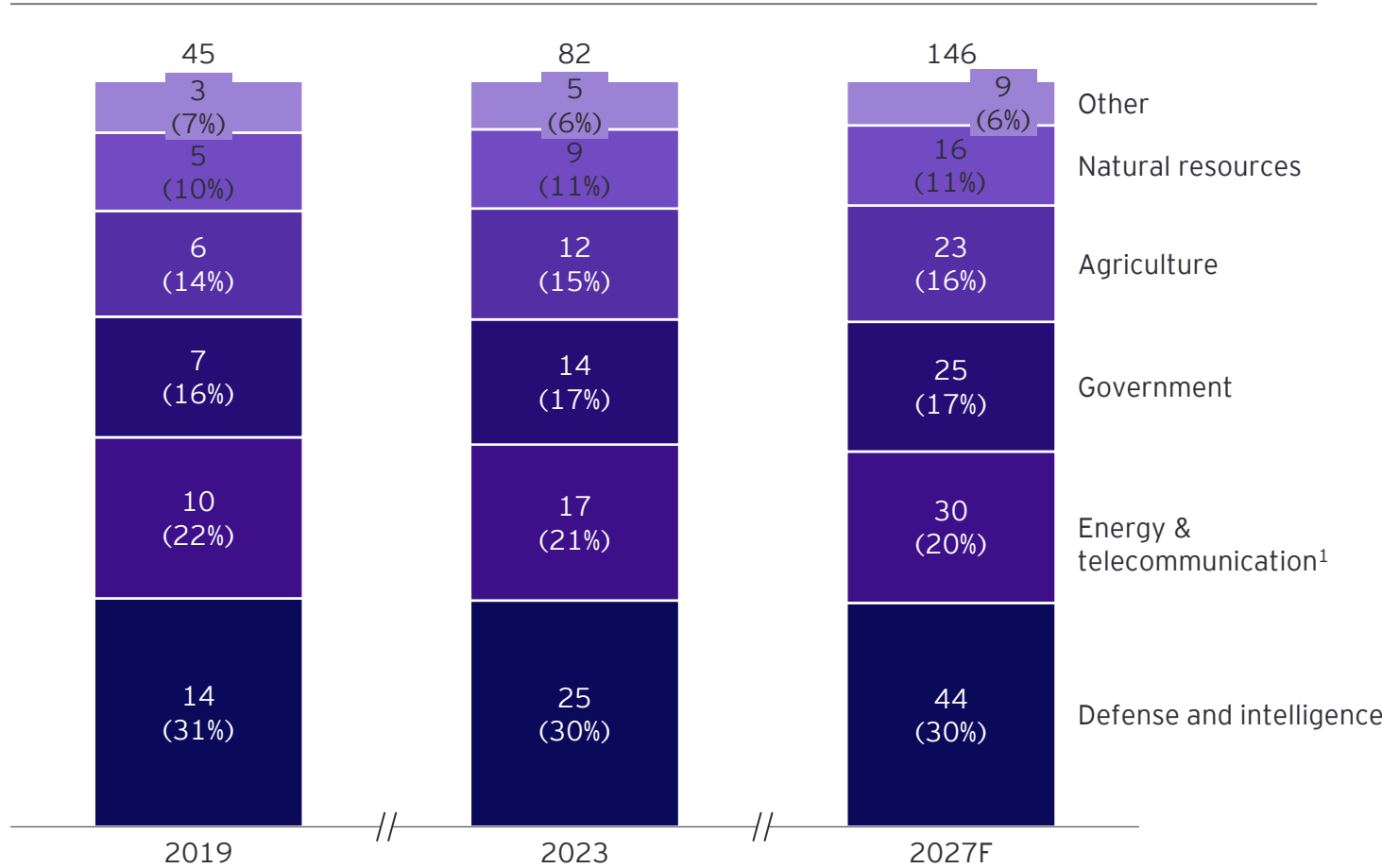**Global geospatial data analytics market size** (2019-27F, USDbn)

1.8%	2.1%	2.1%	2.3%	2.6%	2.7%	3.3%

- 2019: 45
- 2020: 52
- 2021: 62
- 2022: 71
- 2023: 82
- 2024T: 95 (+16%)
- 2027T: 146 (+16%)

+16%

X → CAGR (%)

X — Share in total IT market (%)
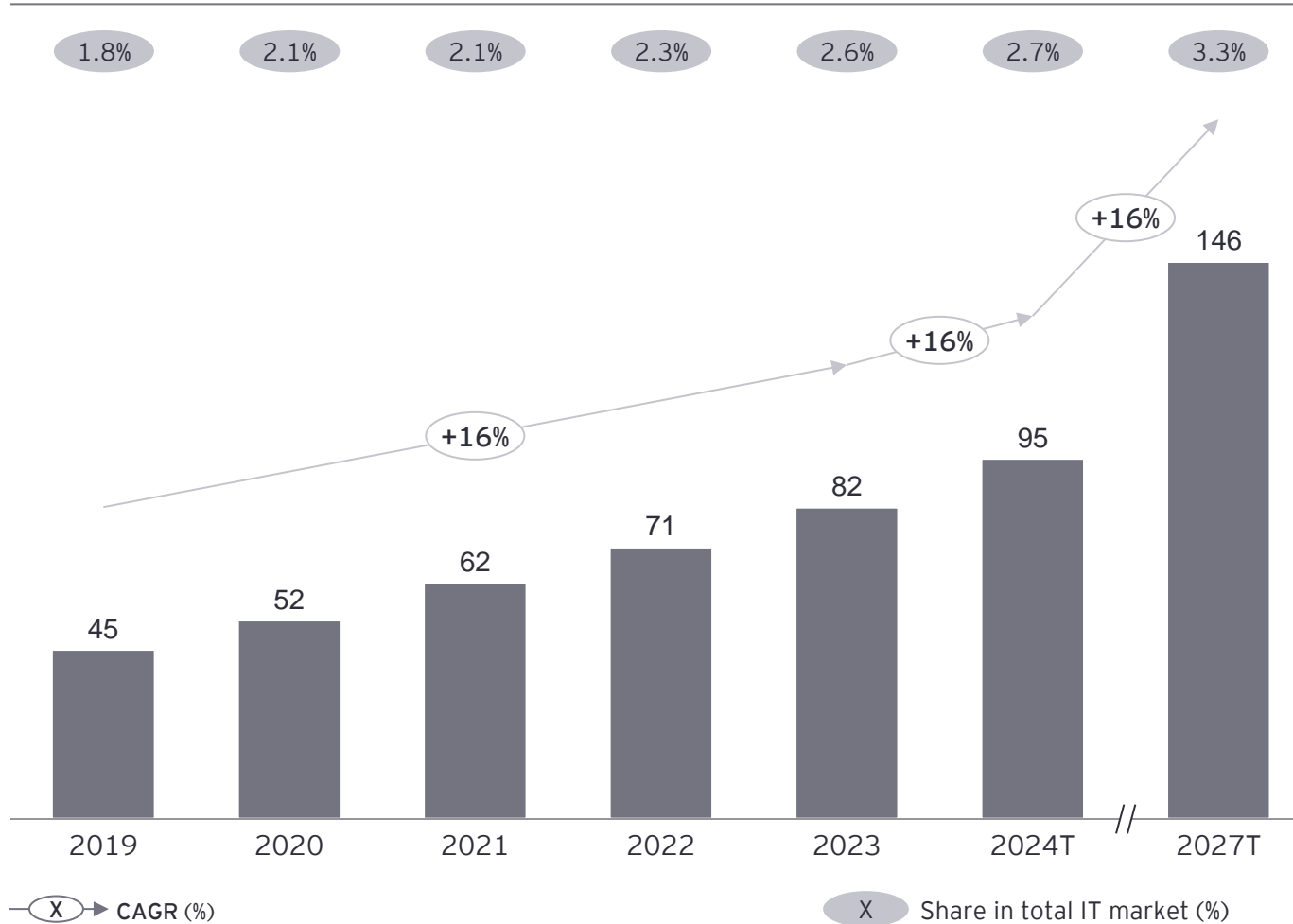
Highlights

- **The global geospatial data analytics market**, which has grown with **a CAGR of 16% in the last four years** is expected to continue its growth at a **CAGR of 16% between 2023-2027 and reach USD146 billion**

- … and **its share of the total IT** market is expected to increase **from 2.7%** in **2023 to 3.3%** in 2027

- The main drivers of this growth expectation are:

- **Big data and Internet of Things (IoT): Increasing volume of data** and **evolving technologies increase** the number of **satellites** and the **demand** for **geospatial data analytics solutions enhanced by information technologies** (cloud computing or edge computing)

- **Artificial intelligence and machine learning integration**: The **integration** of **artificial intelligence** and **machine learning** in geospatial data analytics technologies **enhances automation and predictive models**, thereby **driving up demand for geospatial data analytics solutions**

- **Increasing demand for real-time location data: Advances in smart transportation systems**, increasing **urbanization** and the demand for improving **customer experience** are **driving the need for real-time location data**

- **The trend of 3D visualization and digital twins:** There is a **growing demand** for **advanced visualization solutions** in **data analysis** and **decision-making processes**

- **Smart city projects:** The rise in smart city projects is leading to the **widespread adoption** of **geospatial data analytics solutions** in **urban planning**, **disaster management** and **transportation management**

Defense and intelligence, energy and telecom are the main verticals accounting for 51% of the market, while government and agriculture also hold significant shares

Global geospatial data analytics market size by vertical

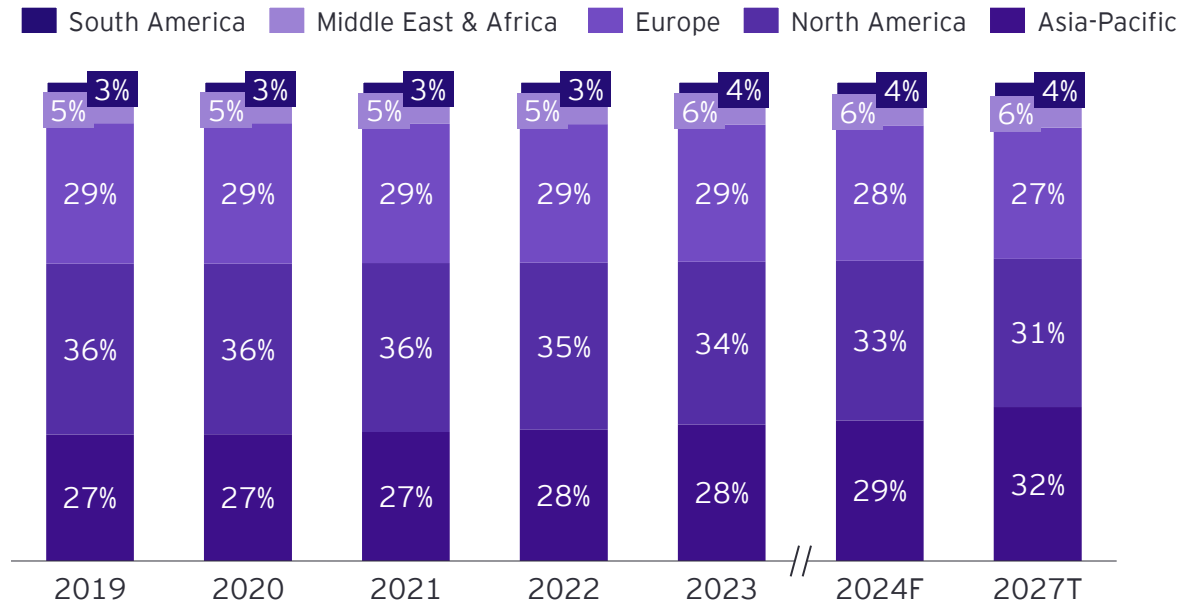## Global geospatial data analytics market size by vertical (2019-27F, USDbn)

	2019	2023	2027F
Total	45	82	146
Other	3 (7%)	5 (6%)	9 (6%)
Natural resources	5 (10%)	9 (11%)	16 (11%)
Agriculture	6 (14%)	12 (15%)	23 (16%)
Government	7 (16%)	14 (17%)	25 (17%)
Energy & telecommunication[1]	10 (22%)	17 (21%)	30 (20%)
Defense and intelligence	14 (31%)	25 (30%)	44 (30%)

Highlights

- **Defense and intelligence:** Geospatial data analytics solutions help to **detect** developments and **movements** of armies, to **prepare strategies** against potential attacks and to **minimize weapon losses**

- **Energy and telecommunication[1]:** **Energy** sector players utilize geospatial data analytics for **managing** and **planning energy resources**, **monitoring** and **optimizing infrastructure networks** and **conducting R&D activities**. With the **rise of 5G technology**, **telecommunication** companies increasingly require **precise geographic data** and **network infrastructure** insights, **driving demand** for geospatial data analytics solutions

- **Government:** Governments use geospatial data analytics to **track** and **plan land** and **construction projects**. The **expansion** of **digitized public services**, such as **evolving e-government services**, is prompting **increased investments** in geospatial data analytics

- **Agriculture:** In the agricultural sector, geospatial data aids in **managing water use**, **fertilizer needs** and **soil nutrients**. The emphasis on **sustainability**, **efficiency** and **decision-making processes** is expected to **boost the demand for geospatial data analytics**

- **Natural resources:** Geospatial data analytics that support the **management** and **biodiversity** of **natural resources** are anticipated to **grow** due to the **increasing need to predict climate changes** and **natural disasters**

1.It includes electricity, water, natural gas, sewage services and telecommunication
Source: EY-Parthenon analysis

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The Middle East and Africa region, which includes Türkiye, is expected to continue growing while maintaining its 6% share of the global geospatial data analytics market

Regional shares in global geospatial data analytics market (2019-28F, %)

■ South America   ■ Middle East & Africa   ■ Europe   ■ North America   ■ Asia-Pacific

Middle East & Africa geospatial data analytics market size (2019-28F, USD)
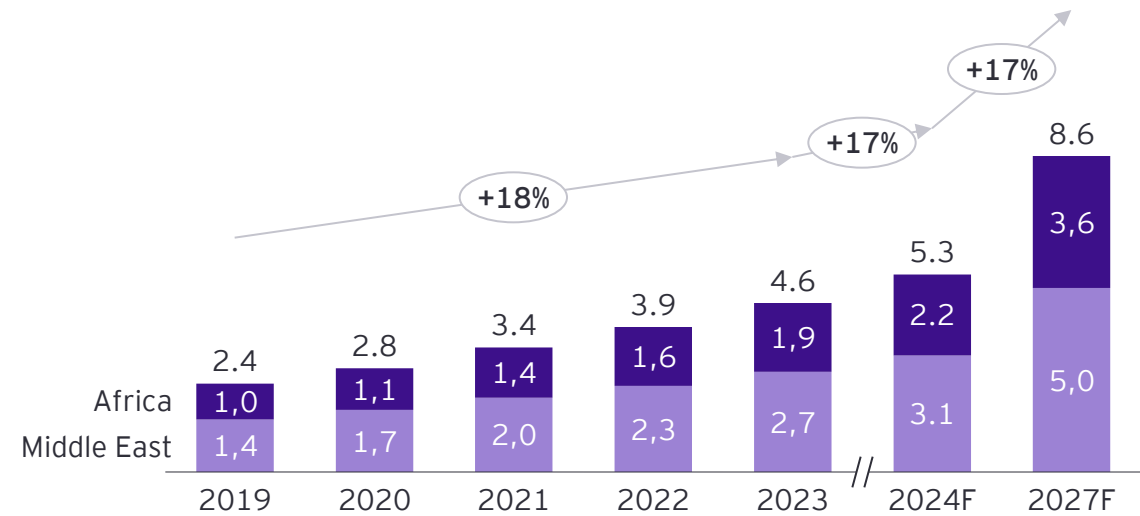
Highlights

► **North America:** Known **for its rapid technology adoption,** North America is a market leader with a presence, particularly in the **healthcare** and **telecommunication**

► **Europe:** Growth is mainly driven by the **transportation, logistics, utilities, telecommunication** and **healthcare** sectors and the increasing **demand for cloud-based solutions**

► **Asia-Pacific:** This emerging market, dominated by China, is expected to be **the fastest growing** regional **market due to increasing industry pressure** and government support

► **South America:** Has great potential with growing **industrial, healthcare and agriculture** sectors, increased use of GIS in the **military and government-sponsored** technology **investments**

► **Middle East and Africa:** **Increasing military spending** on **geospatial data analytics technologies** and increasing demand for **tracking systems for defense budgets** and **fleet management** are expected to contribute to market growth. While the **Middle East**, including Türkiye, is growing mainly with **oil** and **gas industries, Africa** is growing with investments in the mining sector

⟨ X ⟩➤ CAGR (%)

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The global geospatial data analytics market is projected to continue growing, with expansion expected in both the service and software segments

Geospatial data analytics market size by product segments

Global geospatial data analytics market size by segments (2019-27F, USDbn)

	4.0%	4.7%	4.8%	5.5%	5.5%	5.6%	6.3%

2019 — 45
- 16 (36%)
- 28 (64%)

2020 — 52
- 19 (37%)
- 33 (63%)

2021 — 62
- 23 (37%)
- 39 (63%)

2022 — 71
- 27 (37%)
- 45 (63%)

2023 — 82
- 31 (38%)
- 51 (62%)

2024T — 95
- 36 (38%)
- 59 (62%)

2027T — 146
- 57 (39%)
- 89 (61%)

+16% (2019–2023)
+16% (2023–2024)
+16% (2024–2027)

CAGR (%)

'19-'23	'23-'24	'24-'27
17%	17%	17%
16%	15%	15%

X → CAGR (%)

X Share of geospatial data analytics software market in total software market (%)
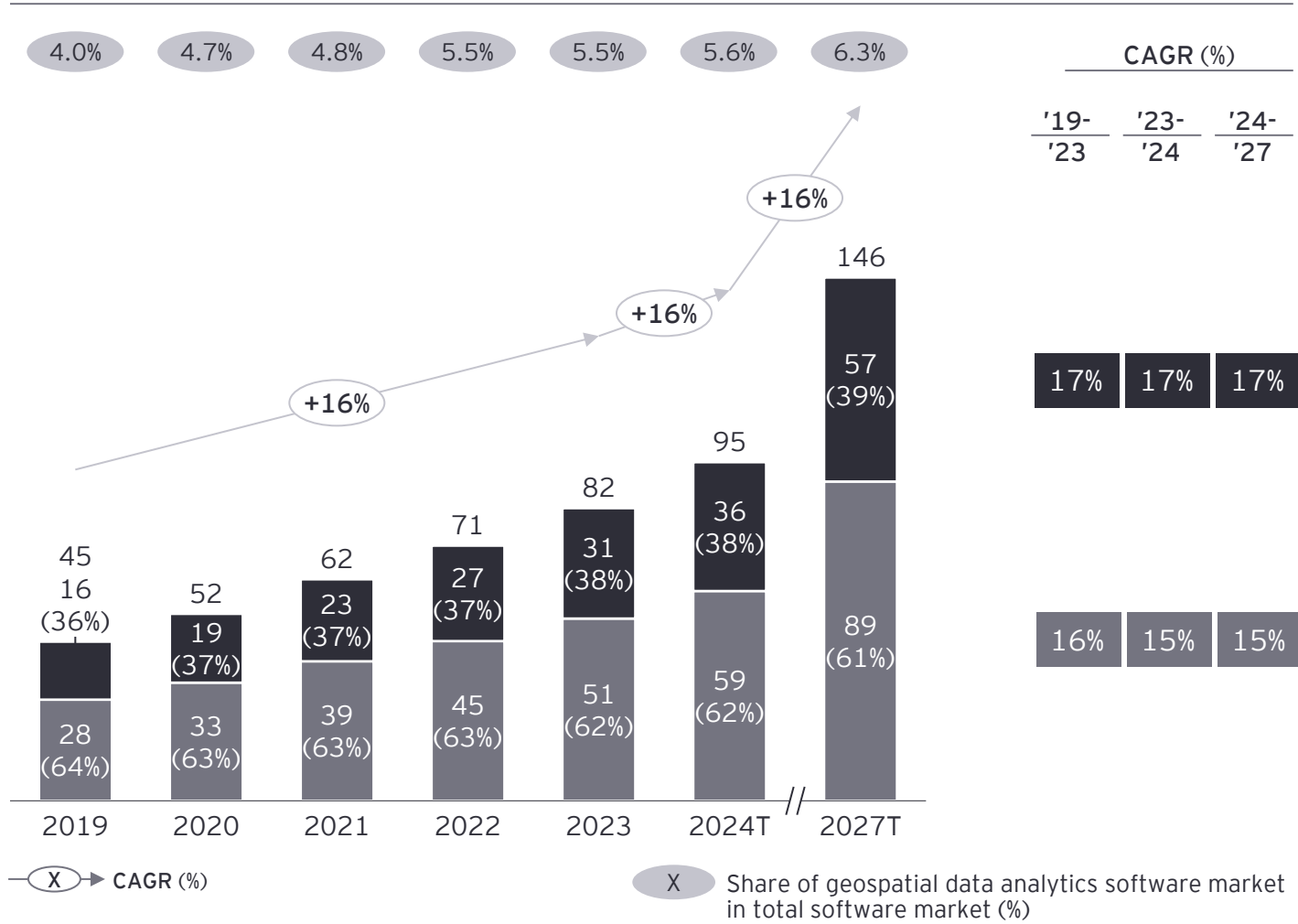
Highlights

- **Software:** Although the software segment grew at a **CAGR of 16%** and lost market share in the geospatial data analytics market, it continued expanding, reaching **USD51 billion in 2023**. Segment is expected to continue growing, reaching **USD89 billion** in **2027** and **representing 6.3% of the global software market**

- **The main drivers** of the growth expectation are:

- Advantages provided by the software, such as **cloud-based resource provisioning** and **real-time global geographic visibility**

- **Increasing demand for geospatial data analytics software** in the **telecommunication, retail and transportation sectors** in emerging economies

- **Service:** With **advancements** in geospatial data analytics **software**, the **services needed** to **produce, examine, maintain** and **share geospatial data** and **information** (e.g., data access and control, training and guidance services) are expected to **grow** at a **CAGR of 17%**

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The global geospatial data analytics market is expected to continue growing, driven by various trends ranging from big data analytics to artificial intelligence

Global market trends

Trend	Description and examples
Real-time and big data analytics	▸ **Increasing data volume** and **production speed**, along with **the advancement of the IoT,** are improving **data availability** and **accessibility** ▸ Data points from numerous connected devices are **increasing** the **need** for **integrating, analyzing** and **visualizing geospatial data** ▸ **With the rise of IoT devices** and **sensors** in fields such as traffic management and land monitoring the **demand for real-time data** is rising
Cloud-based GIS solutions	▸ **Gowing data volume** and **increasing mobility** are driving the **need** for **personalization, scalability** and **agility** in digital products and processes ▸ To meet these needs, **businesses** and **governments** are opting for **cloud-based GIS solutions** that provide **cost-effectiveness** and **flexibility**
3D modeling and digital twin	▸ **Increasing** demand for **visualization solutions in data analysis** and **decision-making** processes is expanding the market. In this context, **3D visualization** techniques, as well as **3D data analysis solutions**, are **rapidly advancing** ▸ **Digital twin model**, which has relatively **low maturity** but significant **growth potential**, is becoming more widespread. For example, in **construction sector**, organizations **create digital replicas** of their assets in **GIS** to **manage** their **operations more efficiently**
Building information modeling and GIS integration	▸ **Integration of building information modeling[1] (BIM)** with GIS **enhances** the **visualization** and **analysis** of integrated building data. **Its adoption** is increasingly **widespread,** particularly in the **construction sector** and **public services (e.g., urban planning, land management, infrastructure management)**
Artificial intelligence integration	▸ Increasing integration of **artificial intelligence in geospatial data analytics software** enhances **efficiency by automating design** and **data analysis processes,** thereby encouraging **end-user** to **prefer geospatial data analytics solutions**
Public digital transformation and sustainability	▸ With the increasing importance of **digitalization** and **sustainability,** the number of **smart city projects is increasing**. This **increases** the use of **geospatial data analytics** solutions in areas such as **transportation systems, energy resources** and **infrastructure management** ▸ In line with **digital transformation** goals, **governments** are **investing** in projects like **e-government** and **e-planning**, which **support** the **growth** of the **geospatial data analytics market**

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03

Türkiye market landscape

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With a size of TRY5.4 billion in 2023, Türkiye geospatial data analytics software market accounts for 3.5% of the Turkish software industry

Market breakdown (2023 values)

Information technology[1]

TRY ~344.6 bn

Software market[1]

TRY ~152.3 bn

Geospatial data analytics software market

TRY ~5.4 bn

Main market
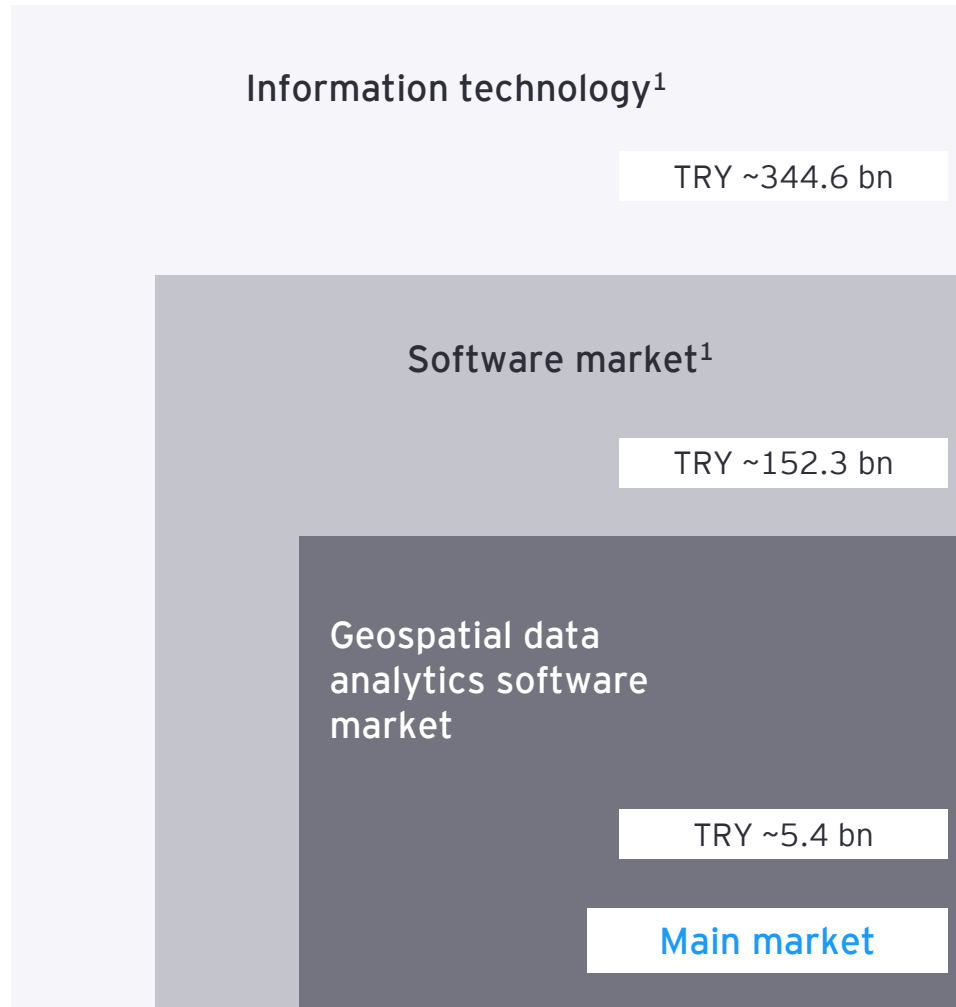
Information technology market

▶ Information technology market in Türkiye, which includes products and services that provide digital solutions like software, hardware, telecommunications, data storage, cloud services and network infrastructures, is valued at TRY344.6 billion

Software market

▶ Software market in Türkiye, which includes various types of software such as operating systems, application software, cloud solutions, data analytics and cybersecurity software, accounts for 44% of the information technology market, with a value of TRY152.3 billion

Geospatial data analytics software market

▶ Geospatial data analytics market in Türkiye, which includes software solutions based on geospatial technologies such as GIS and CAD used to create, understand, analyze, model and predict geospatial data and images, was estimated to be TRY5.4 billion (3.5% of the software market) in 2023
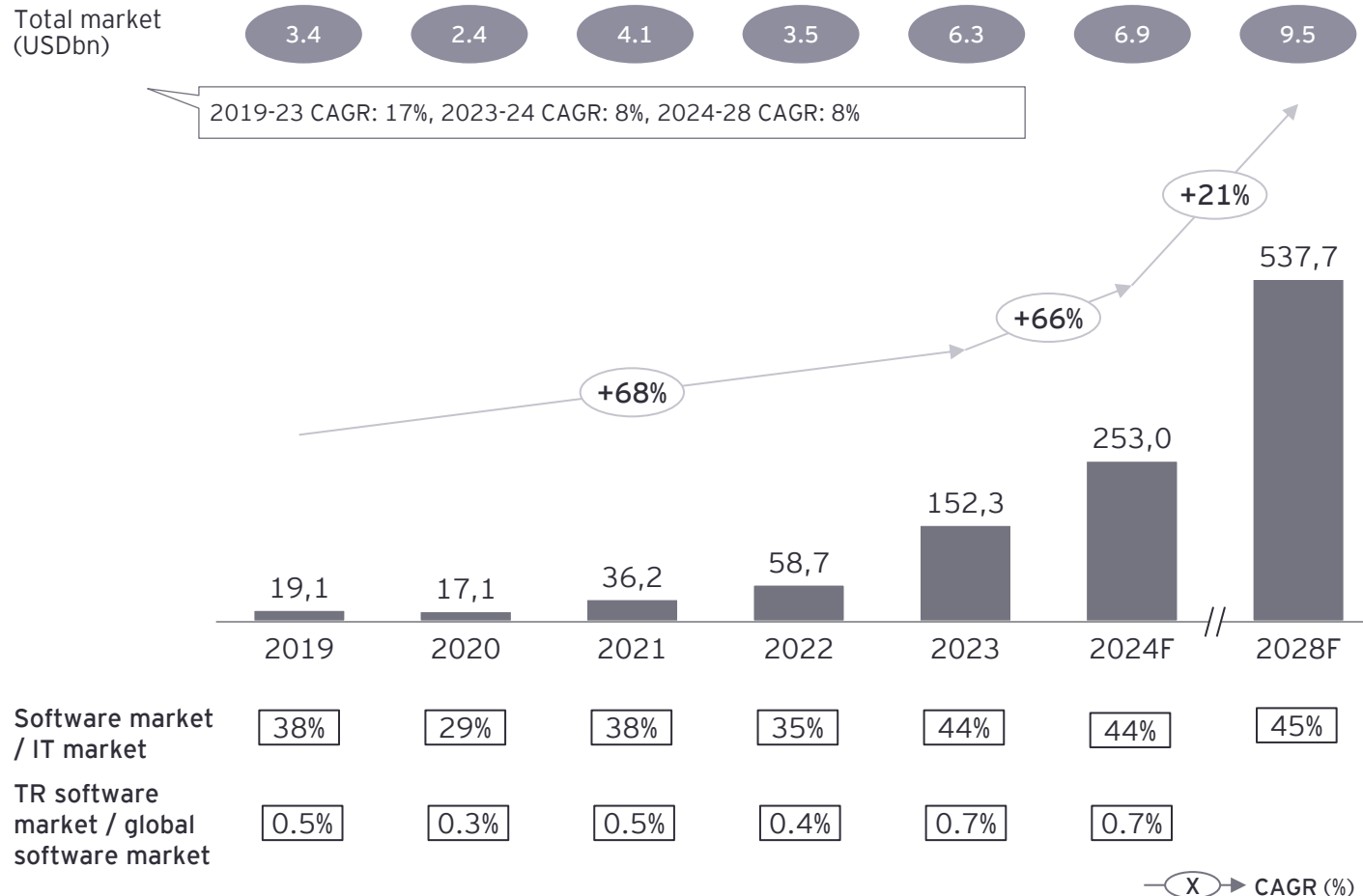
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Türkiye software market grew from TRY19.1 billion in 2019 to TRY152.3 billion in 2023 with a CAGR of 68%, increasing its share in the IT market to 44%

The size of the software market in Türkiye, its share in the Türkiye IT market and its share in the global software market
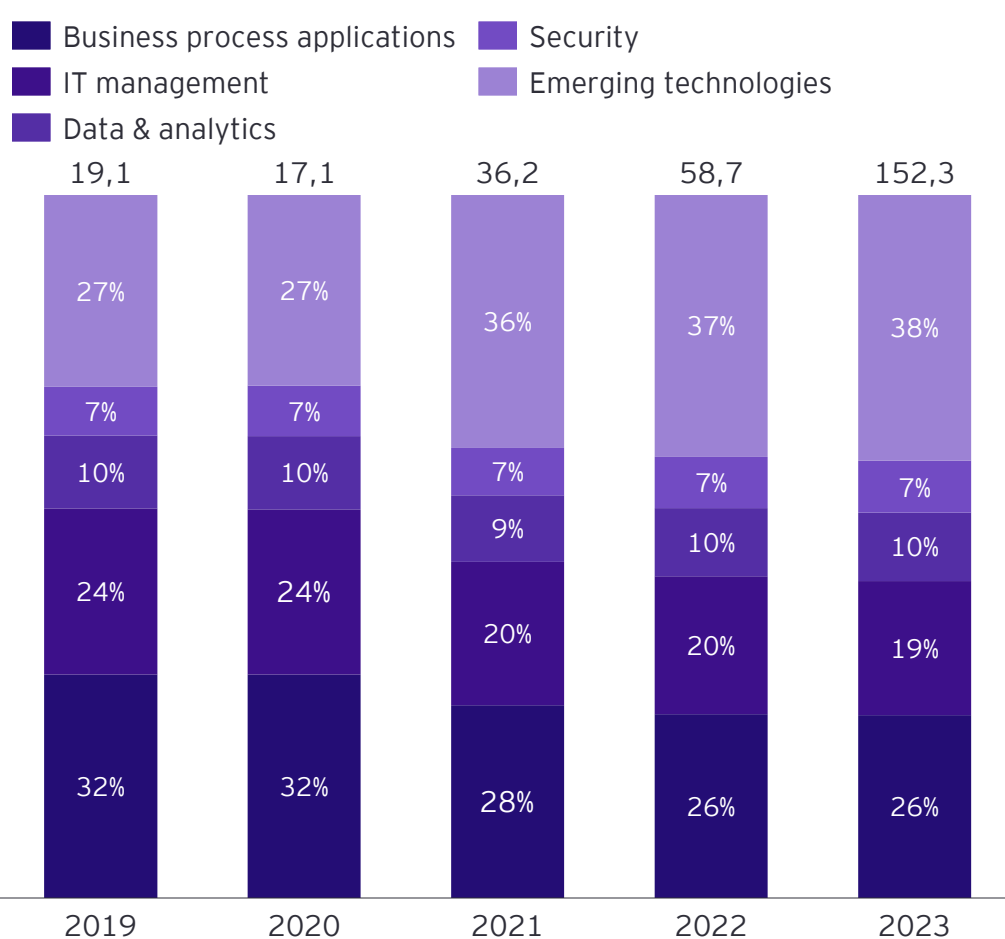
Türkiye software market[1] (2019-2928F, TRYbn)

Total market (USDbn): 3.4, 2.4, 4.1, 3.5, 6.3, 6.9, 9.5

2019-23 CAGR: 17%, 2023-24 CAGR: 8%, 2024-28 CAGR: 8%

+68%, +66%, +21%

Software market values: 19,1 (2019), 17,1 (2020), 36,2 (2021), 58,7 (2022), 152,3 (2023), 253,0 (2024F), 537,7 (2028F)

	2019	2020	2021	2022	2023	2024F	2028F
Software market / IT market	38%	29%	38%	35%	44%	44%	45%
TR software market / global software market	0.5%	0.3%	0.5%	0.4%	0.7%	0.7%	

X → CAGR (%)

Highlights

▸ **2019-23:** During the pandemic, the **surge in global hardware demand** significantly **impacted** the software-to-hardware market ratio in 2020**. Despite fluctuations in dollar** terms due to changing exchange rates in post-pandemic period, **the software market has maintained its growth trend in the long term**

▸ **2024-28:** The market is expected to sustain its steady growth, reaching TRY**537.7 billion** by 2028, with a **CAGR** of **21%.** This growth would be driven by advancements in technologies such as **artificial intelligence, the Internet of Things (IoT), 5G and cloud computing,** as well as **the increasing adoption of third-party software services** by companies to optimize their IT budgets

▸ **Share of software in the total IT market:** In 2023, the **share** of **software** market in **Türkiye's IT market reached 44%** and it is expected to **maintain this ratio** by growing in line with the overall IT market

▸ **Türkiye's share in the global software market:** In 2023, Türkiye's share in the global software market **increased to 0.7%**

EY Parthenon

Emerging technologies such as AI, cloud computing and IoT stand out as the main reasons for the growth of Türkiye software industry in the last four years

Türkiye software market by product type

Breakdown of Türkiye software market by product types (2019-23, USDbn)

Legend:
- Business process applications
- IT management
- Data & analytics
- Security
- Emerging technologies

	2019	2020	2021	2022	2023	CAGR ('19-'23)
Total	19,1	17,1	36,2	58,7	152,3	
Emerging technologies	27%	27%	36%	37%	38%	82% ↗
Security	7%	7%	7%	7%	7%	71% ↗
Data & analytics	10%	10%	9%	10%	10%	65%
IT management	24%	24%	20%	20%	19%	59%
Business process applications	32%	32%	28%	26%	26%	60%

Highlights[1]

▶ **Business process applications:** This category, encompassing **applications related** to **ERP, CRM and other processes (payroll, productivity, etc.) grew below the overall market**, at a **CAGR of 60%**, reducing its market share from 32% to 26%

▶ **IT management:** The IT management category, which includes middleware (for organizations' internal services and processes), operating systems and products related to IT infrastructure (database, network, etc.), **grew at a CAGR of 59%, below the total market growth**

▶ **Data & analytics:** The data & analytics category, which includes products such as **big data platforms, business intelligence** and **data engineering, grew at a CAGR of 65%** and **maintained a market share of 10%**

▶ **Security:** The security category, encompassing products related to endpoint security, data security, inter-process security, identity and access management, server and communication security etc., **outpaced the average market growth**, with a **CAGR of 71%**

▶ **Emerging technologies:** Covering products such as **artificial intelligence (AI), cloud computing, edge computing**[2] and **IoT**, this category **grew at a CAGR of 82%, increasing its market share to 38%** due to the widespread application across various global fields
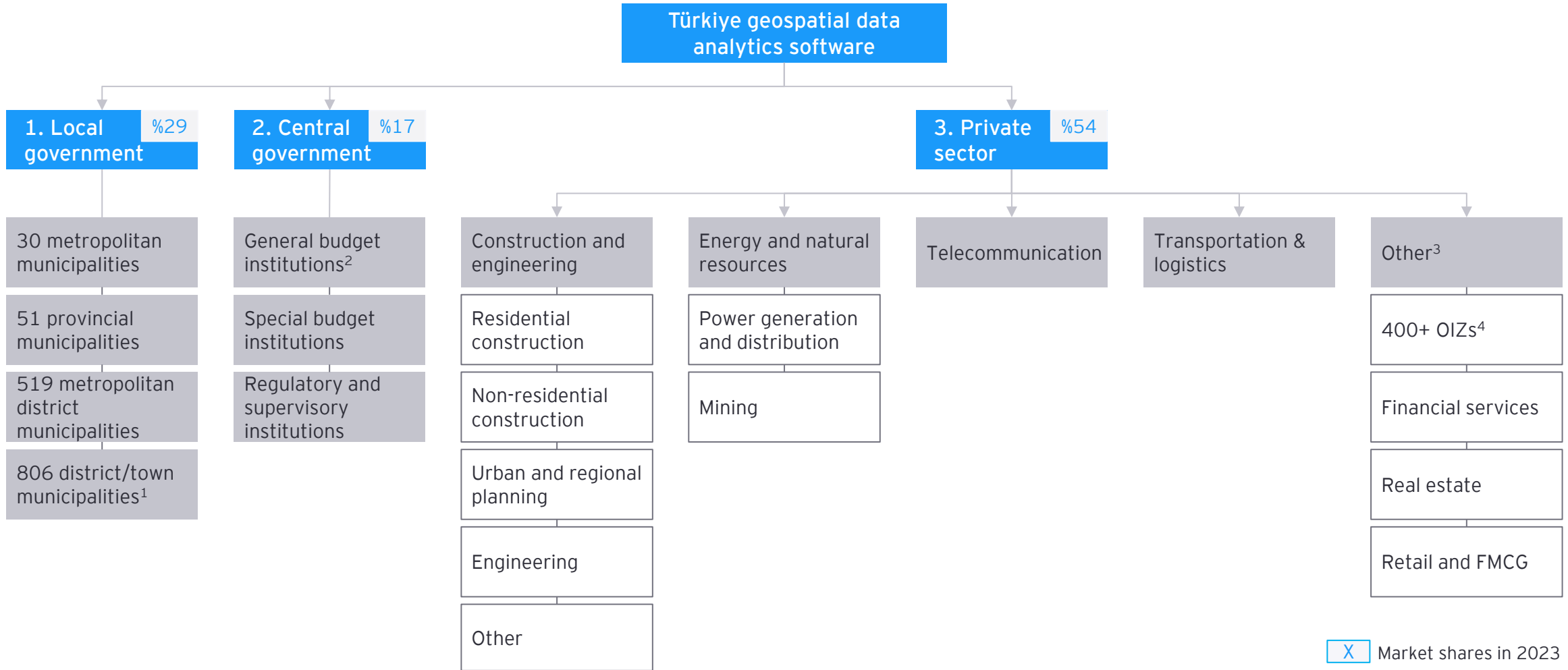
↗ Category that grows the market

EY Parthenon

The geospatial data analytics software market in Türkiye consists of local government, central government and the private sector

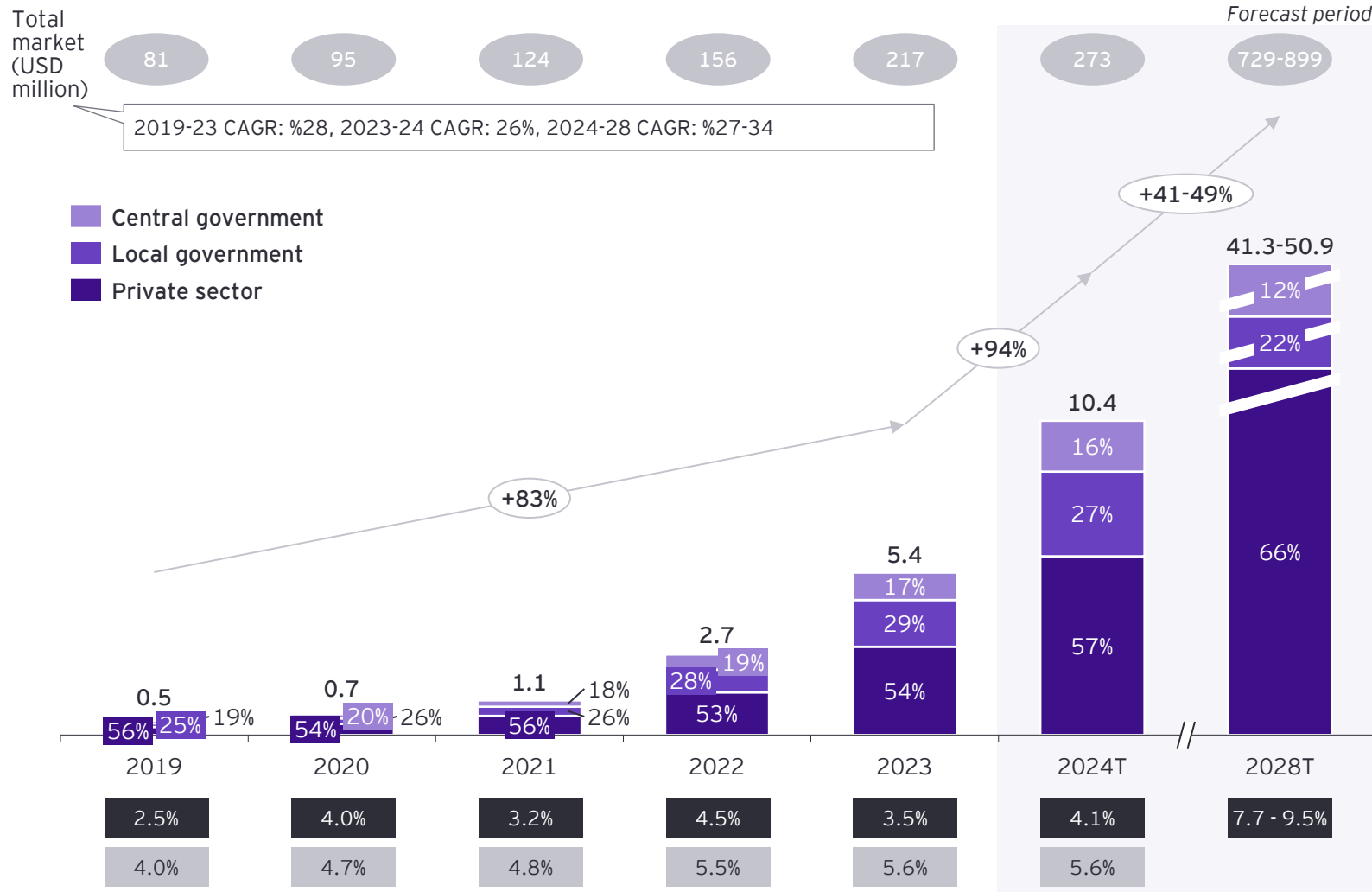Vertical breakdowns of the geospatial data analytics software market

Türkiye geospatial data analytics software

| 1. Local government | %29 | 2. Central government | %17 | | 3. Private sector | %54 |

1. Local government

- 30 metropolitan municipalities
- 51 provincial municipalities
- 519 metropolitan district municipalities
- 806 district/town municipalities[1]

2. Central government

- General budget institutions[2]
- Special budget institutions
- Regulatory and supervisory institutions

3. Private sector

Construction and engineering
- Residential construction
- Non-residential construction
- Urban and regional planning
- Engineering
- Other

Energy and natural resources
- Power generation and distribution
- Mining

Telecommunication

Transportation & logistics

Other[3]
- 400+ OIZs[4]
- Financial services
- Real estate
- Retail and FMCG

| X | Market shares in 2023

1. The budgets of special provincial administrations were evaluated under provincial/district municipalities 2. The general budget administrations consist of a total of 41 administrations, including 17 ministries and other general budget institutions such as the Grand National Assembly of Türkiye, the Disaster and Emergency Management Presidency and the General Directorate of Land Registry and Cadastre 3. Sectors other than those mentioned under the heading of Other were not included in the market assessment due to their low volumes 4. Organizational industrial zone
Source: EY-Parthenon analysis

EY Parthenon

Türkiye geospatial data analytics software market, which was TRY5.4 billion in 2023, is expected to reach over TRY40 billion in 2028

Türkiye geospatial data analytics software market size (2019-2028T, TRYbn)
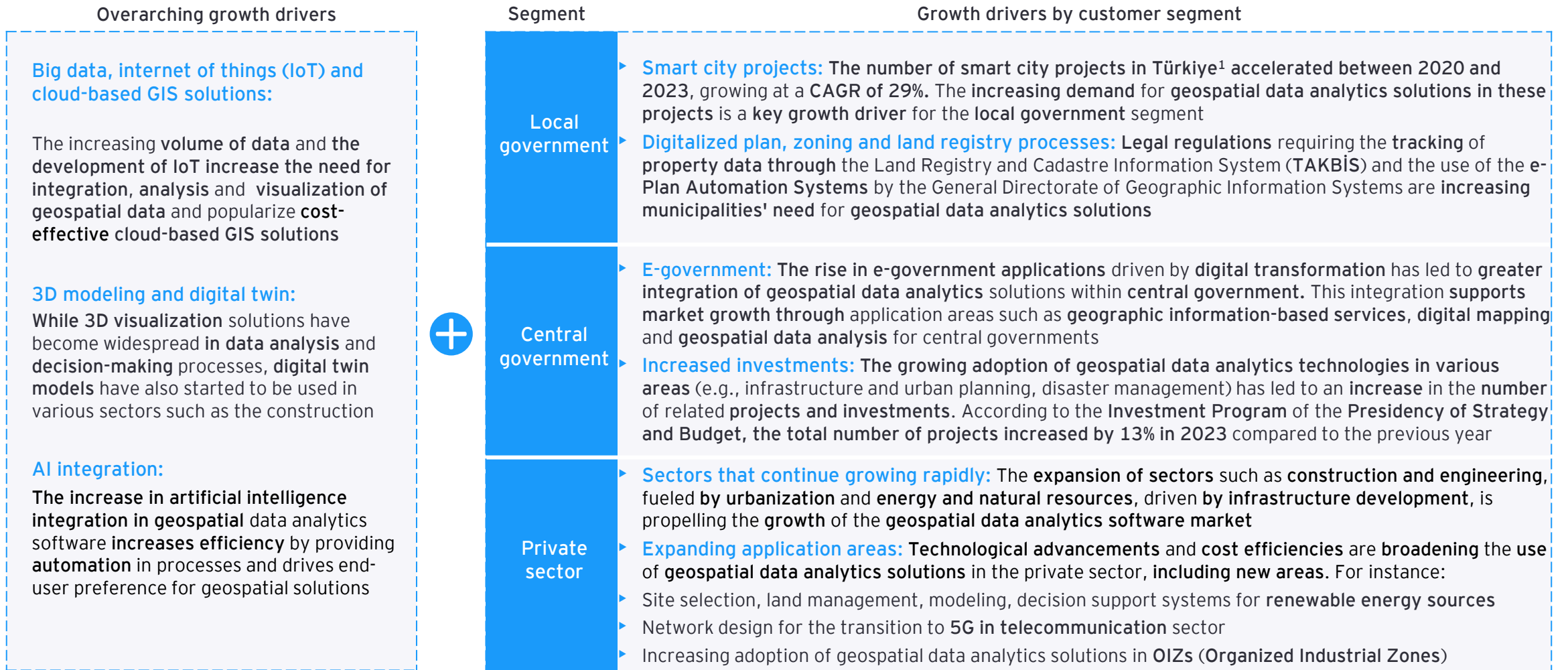
Total market (USD million)

81	95	124	156	217	273	729-899

Forecast period

2019-23 CAGR: %28, 2023-24 CAGR: 26%, 2024-28 CAGR: %27-34

+41-49%

- Central government
- Local government
- Private sector

+94%

+83%

Year	2019	2020	2021	2022	2023	2024T	2028T
Total (TRYbn)	0.5	0.7	1.1	2.7	5.4	10.4	41.3-50.9
Central government	25%	20%	18%	19%	17%	16%	12%
Local government	56%*	54%*	—	28%	29%	27%	22%
Private sector	*19%	*26%	56% / 26%	53%	54%	57%	66%

	2019	2020	2021	2022	2023	2024T	2028T
Share in total Türkiye software market (%)	2.5%	4.0%	3.2%	4.5%	3.5%	4.1%	7.7 - 9.5%
Share of global geospatial market (%)	4.0%	4.7%	4.8%	5.5%	5.6%	5.6%	

Highlights

- In 2023, the geospatial data analytics software market size was estimated at TRY**5.4 billion**
- **Largest segment** in this market is **private sector** with **a share of 54%**, followed by **local government** with a share **of 29%** and **central government** with **a share of 17%**
  - Local government, which experienced significant **growth** due to the **Smart Cities Strategy Action Plan** between **2020 and 2023**, increased its market share from **25% in 2019 to 29% in 2023,** causing fluctuations across segment shares
- **The market** is expected to grow at **a CAGR of 41%-49%** over the next 4 years, reaching a size of TRY**41.3 billion** to TRY**50.9 billion** by **2028,** with **its share in the software market rising to 7.7%-9.5%**
  - **The private sector,** which is **expected to grow the fastest** in this period, is projected to grow at **a CAGR of 46%-54%** and increase **its share to 66%** due to the expanding sectoral application areas
  - **The rise in smart city projects** and **urban planning regulations** is expected to boost the use of geospatial data analytics solutions, leading **local government** to grow at a **CAGR of 36%-43%** and achieve a **market share** of **22%**
  - **Central government** is projected to grow at a **CAGR** of **30%-38%,** driven by **digital transformation** in **public services** and **restructuring** of **earthquake zones** and is expected to achieve a **market share** of **12%**

X → CAGR (%)   X Share of Türkiye geospatial data analytics software market in total Türkiye software market (%)   X Share of the global geospatial data analytics market in global software market (%)

Source: Republic of Türkiye Ministry of Treasury and Finance, Republic of Türkiye Presidency of Strategy and Budget, Republic of Türkiye Ministry of Interior, EY-Parthenon analysis   Page 23

EY Parthenon

The growth of Türkiye geospatial data analytics software market is supported by various growth drivers, both overarching and on a customer segment basis

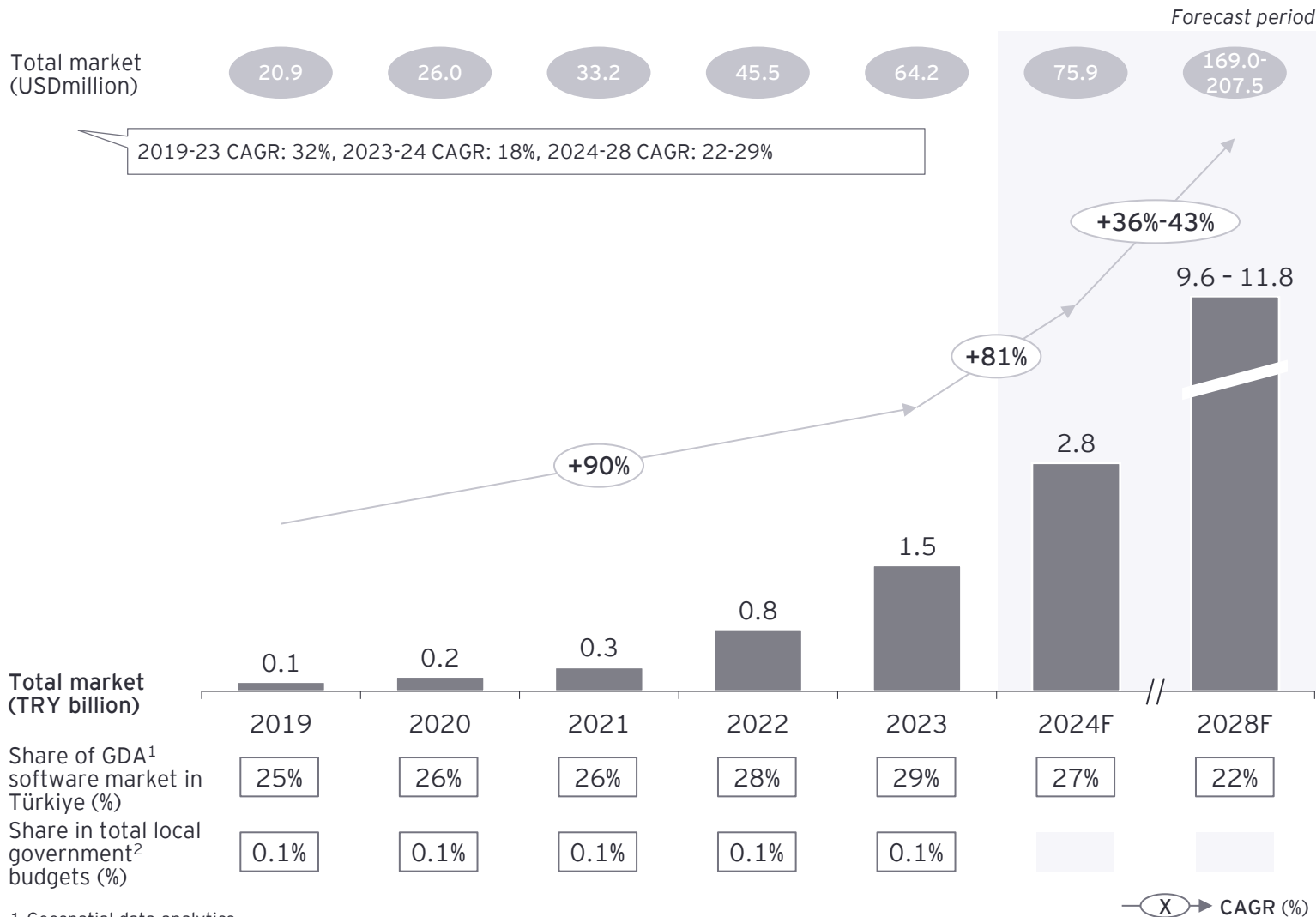Türkiye geospatial data analytics software market – Growth drivers

Overarching growth drivers

Big data, internet of things (IoT) and cloud-based GIS solutions:

The increasing **volume of data** and **the development of IoT increase the need for integration, analysis** and **visualization of geospatial data** and popularize **cost-effective cloud-based GIS solutions**

3D modeling and digital twin:
While **3D visualization** solutions have become widespread **in data analysis** and **decision-making** processes, **digital twin models** have also started to be used in various sectors such as the construction

AI integration:
The increase in artificial intelligence integration in geospatial data analytics software **increases efficiency** by providing **automation** in processes and drives end-user preference for geospatial solutions

+

Segment

Local government

Central government

Private sector

Growth drivers by customer segment

▸ **Smart city projects:** The number of smart city projects in Türkiye[1] accelerated between 2020 and 2023, growing at a **CAGR of 29%**. The **increasing demand** for **geospatial data analytics solutions in these projects** is a **key growth driver** for the **local government** segment

▸ **Digitalized plan, zoning and land registry processes:** **Legal regulations** requiring the **tracking** of **property data through** the Land Registry and Cadastre Information System (**TAKBİS**) and the use of the **e-Plan Automation Systems** by the General Directorate of Geographic Information Systems are **increasing municipalities' need** for **geospatial data analytics solutions**

▸ **E-government:** The rise in e-government applications driven by **digital transformation** has led to **greater integration of geospatial data analytics** solutions within **central government.** This integration **supports market growth through** application areas such as **geographic information-based services**, **digital mapping** and **geospatial data analysis** for central governments

▸ **Increased investments:** The growing adoption of geospatial data analytics technologies in various areas (e.g., infrastructure and urban planning, disaster management) has led to an **increase** in the **number** of related **projects and investments**. According to the **Investment Program** of the **Presidency of Strategy and Budget, the total number of projects increased by 13% in 2023** compared to the previous year

▸ **Sectors that continue growing rapidly:** The **expansion of sectors** such as **construction and engineering,** fueled **by urbanization** and **energy and natural resources**, driven **by infrastructure development**, is propelling the **growth** of the **geospatial data analytics software market**

▸ **Expanding application areas:** **Technological advancements** and **cost efficiencies** are **broadening** the **use** of **geospatial data analytics solutions** in the private sector, **including new areas.** For instance:

▸ Site selection, land management, modeling, decision support systems for **renewable energy sources**

▸ Network design for the transition to **5G in telecommunication** sector

▸ Increasing adoption of geospatial data analytics solutions in **OIZs** (**Organized Industrial Zones**)

EY Parthenon

Türkiye market landscape:
Local and central government

EY Parthenon

Local government geospatial data analytics software market in Türkiye, which was TRY1.5 billion in 2023, is expected to reach over TRY9.6 billion in 2028

Local government geospatial data analytics software market size in Türkiye (2019-28F, TRYbn)

Forecast period

Total market (USDmillion)

| 20.9 | 26.0 | 33.2 | 45.5 | 64.2 | 75.9 | 169.0-207.5 |

2019-23 CAGR: 32%, 2023-24 CAGR: 18%, 2024-28 CAGR: 22-29%

+36%-43%

9.6 – 11.8

+81%

2.8

1.5

+90%

0.8

0.1   0.2   0.3

Total market (TRY billion)

	2019	2020	2021	2022	2023	2024F	2028F
Share of GDA[1] software market in Türkiye (%)	25%	26%	26%	28%	29%	27%	22%
Share in total local government[2] budgets (%)	0.1%	0.1%	0.1%	0.1%	0.1%		

X ▶ CAGR (%)

Highlights

▶ Between **2019 and 2023**, local government geospatial data analytics software market in Türkiye **grew at a CAGR of 90%,** reaching a size of **TRY1.5 billion in 2023**

▶ The market is expected to grow at **a CAGR of 36%-43%** between **2024 and 2028** and reach a size of between **TRY9.6 billion and TRY11.8 billion** in **2028**

▶ **The main drivers of this growth expectation** in local government expenditures are:

① Increasing need for **geospatial data analytics solutions** within the scope of **increasing smart city projects** in recent years

② Increasing demand **for GIS-based systems** used to **collect, integrate** and **analyze large volume of data** from **different businesss units** and **projects**

③ **Increasing legal regulations** and **standards for** the **use of geospatial data analytics** in **urban planning** and **infrastructure projects** in Türkiye, **driving** the **need** for **geospatial data analytics solutions** due to the **rising use of e-plan, e-zoning and TAKBİS[3]**

④ **Utilizing** geospatial data analytics technologies to **collect feedback, map local issues** and **involve the public in solution processes** in order to establish more **transparent** and **interactive communication with citizens**

1.Geospatial data analytics
2.The budgets of the special provincial administrations were evaluated under provincial/district municipalities. 3. Land Registry and Cadastre Information System
Source: Turkish Ministry of Interior, EY-Parthenon analysis

EY Parthenon

Central government geospatial data analytics software market in Türkiye, which was TRY0.9 billion in 2023, is expected to reach over TRY4.9 billion in 2028

Turkish central government geospatial data analytics software market size (2019-28F, TRYbillion)

Forecast period

Highlights

Total market (USDmillion)

| 15.8 | 19.1 | 23.7 | 30.4 | 37.7 | 45.9 | 86.1-107.6 |

2019-23 CAGR: 24%, 2023-24 CAGR: 22%, 2024-28 CAGR: 17-24%

+30%-38%

+86%

+78%

4.9 – 6.1

1.7

0.9

0.5

0.2

0.1

0.1

Total market (TRY billion)

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024F | 2028F |

Share of GDA[1] software market in Türkiye (%)

| 19% | 20% | 18% | 19% | 17% | 16% | 12% |

Share in total central government budgets (%)

| 0.01% | 0.01% | 0.01% | 0.02% | 0.02% | | |

X → CAGR (%)
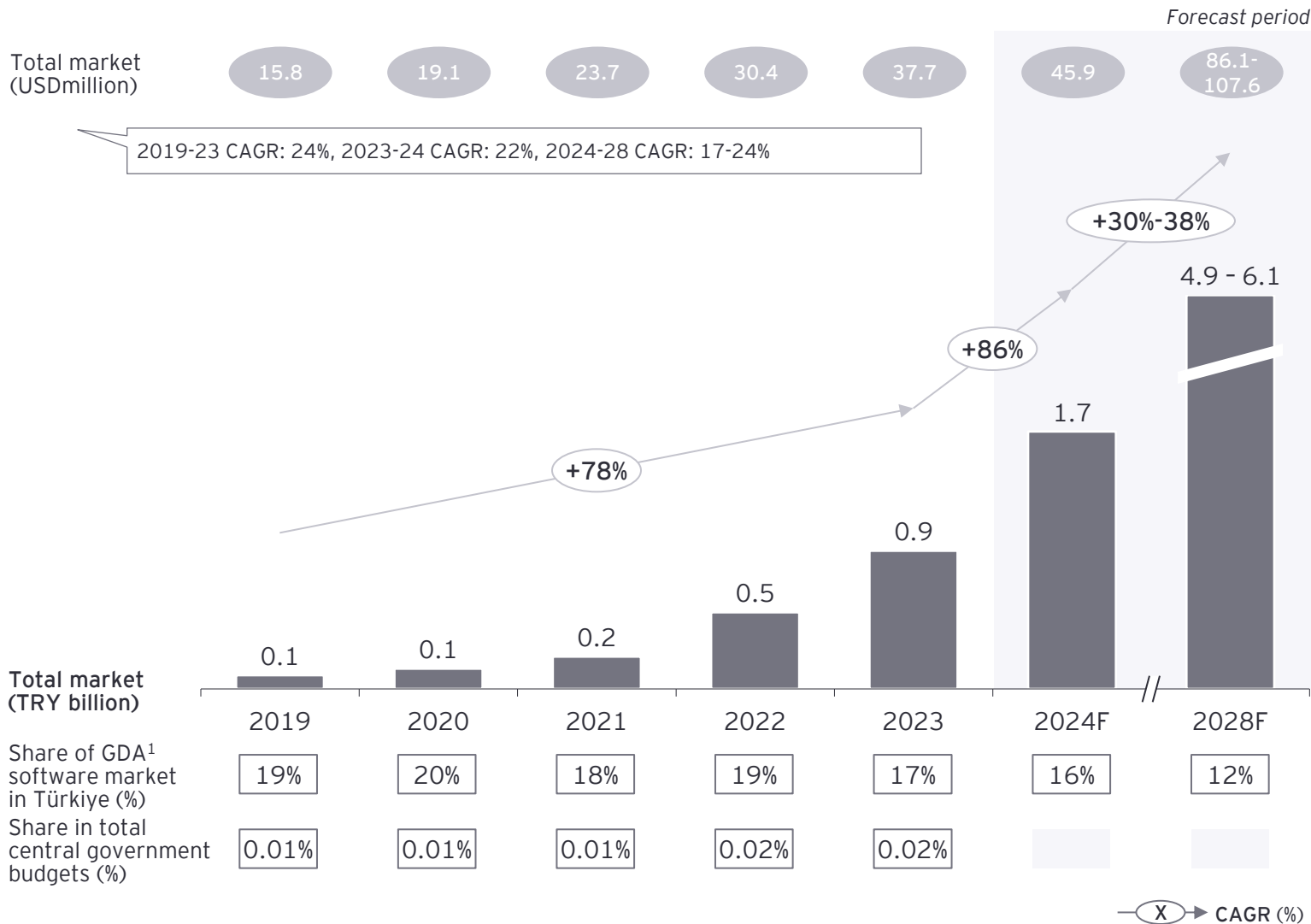
▶ Between **2019 and 2023**, central government geospatial data analytics software market in Türkiye **grew at a CAGR of 78%,** reaching a size of TRY**0.9 billion in 2023**

▶ The market is expected to grow at **a CAGR of 30%-38%** between **2024 and 2028** and reach a size of between **TRY4.9 billion and TRY6.1 billion in 2028**

▶ **The main drivers of this growth expectation** in central government expenditures are:

① Increasing use of geospatial data analytics technologies (e.g., mapping, decision support systems solutions**) for new road and dam construction, infrastructure, earthquake zone reconstruction and urban planning**

② **Growing demand** for geospatial data analytics solutions for **optimization of natural resources, disaster management** and **risk analysis**

③ **Expanding e-government applications** driven by **digital transformation,** leading to **increased use of geographic information-based services, digital mapping and geospatial data analysis**

④ **Rising investments** by **the Presidency of Strategy and Budget in projects** involving geospatial data technologies, including **smart city projects**

1.Geospatial data analytics
Source: Republic of Türkiye Ministry of Treasury and Finance, Republic of Türkiye Presidency of Strategy and Budget, EY-Parthenon analysis

Page 27

EY Parthenon

Türkiye market landscape:
Private sector

Türkiye private sector geospatial data analytics software market is projected to expand its market share to 66% by 2028, with its volume expected to surpass TRY25 billion

Turkish private sector geospatial data analytics software market size (2019-28F, TRYbillion)

Forecast period

Total market (USDbillion)

| 47.5 | 52.7 | 71.4 | 84.9 | 121.5 | 160.6 | 474.3-583.7 |

2019-23 CAGR: 26%, 2023-24 CAGR: 32%, 2024-28 CAGR: 31-38%

+46%-54%

+103%

26.9 – 33.1

5.9

+81%

2.9

Total market (TRY billion)

| 0.3 | 0.4 | 0.6 | 1.4 |

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024F | 2028F |

Share of GDA[1] software market in Türkiye (%)

| 56% | 54% | 56% | 53% | 54% | 57% | 66% |
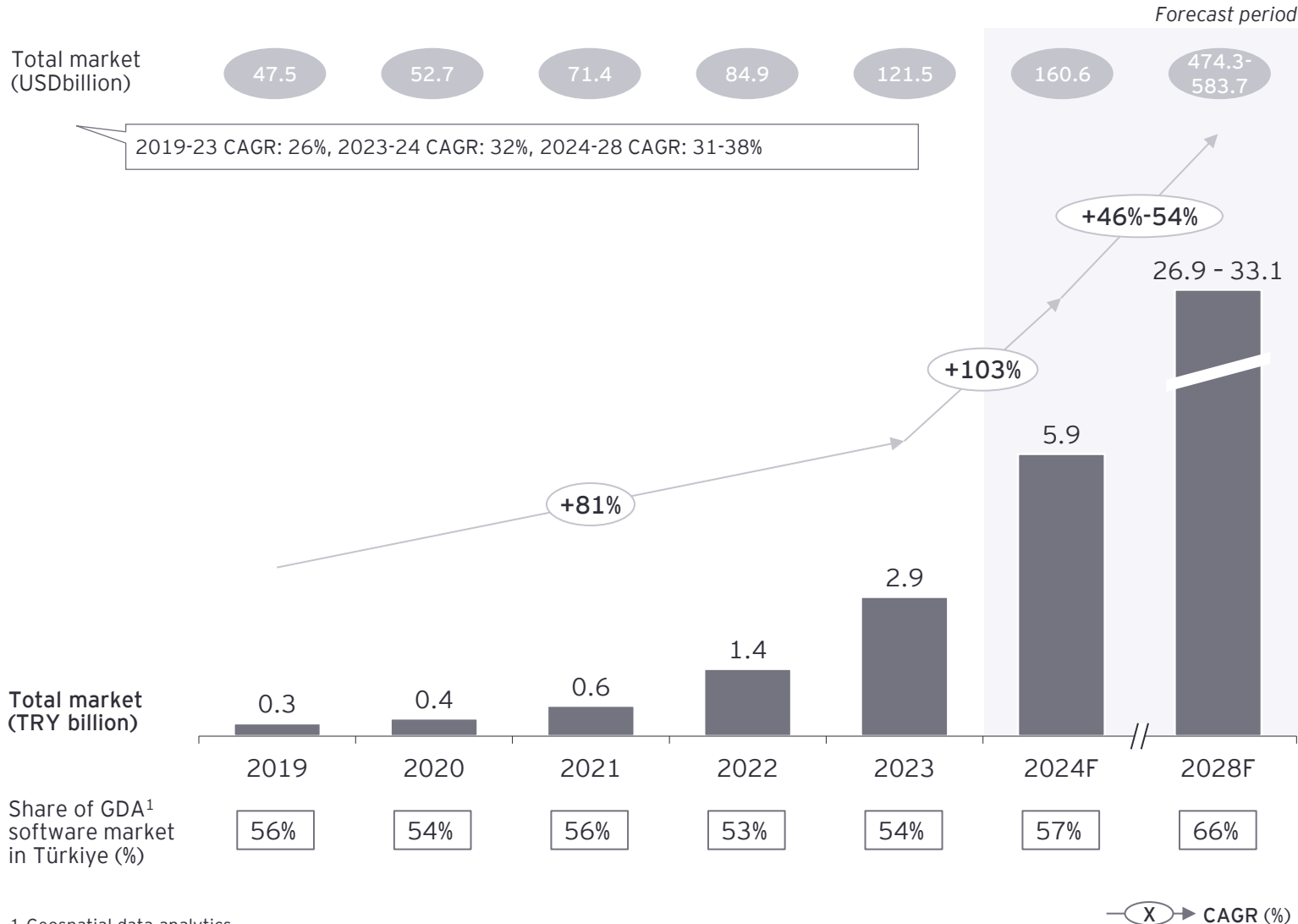
Highlights

- **Between 2019 and 2023**, private sector geospatial data analytics software market in Türkiye grew at a **CAGR of 81%,** reaching a size of **TRY2.9 bn in 2023**

- The market is expected to grow at a **CAGR of 46%-54%** The market is expected to grow at a **CAGR of 46%-54% between 2024 and 2028** and reach a size of between **TRY26.9 billion and TRY33.1 billion in 2028**

- **The main drivers of this growth expectation** in private sector spending are:
  - **Increasing accessibility** of the **market through cloud-based solutions** and the **rising demand** for **cost optimization** are **driving the expansion of geospatial data analytics application areas** across industries
  - In the **construction** sector, which **continues** growing with **urban transformation**, the **adoption** of **geospatial data analytics solutions** is **expanding**, driven by trends like **digital zoning** and **digital twins**
  - **The growing interest in sustainable energy** is fuelling **demand for geospatial data analytics solutions** in processes such as **site selection, land management, modeling** and **decision support systems** within the sector
  - The **number** of **OIZs** in Türkiye is expected to **increase**, along with **their demand** for geospatial data analytics solutions
  - There is also a **rising demand** for these solutions in sectors with **currently limited availability,** such as **financial services, real estate, retail** and **FMCG**

X → CAGR (%)

The market size and potential of the geospatial data analytics software vary by sector, depending on sector size, connection to geospatial data analytics and demand growth

Highlights for private sector sub-sectors

Sector	Sub-sector	Market[1] volume	Market[1] availability[2]	Growth expectation[3]	Main areas of use
Construction and engineering	Residential construction	Very high		Rapid	▶ Land analysis, mapping construction sites, environmental impact analysis, 3D modeling
	Non-residential construction	Middle		Balanced	▶ Project planning, land modeling, site monitoring and management, environmental impact analysis
	Urban and regional planning	Low		Stable	▶ Land analysis, 3D modeling, route determination, environmental impact assessment, e-cadastral solutions
	Engineering	Low		Stable	▶ Project planning, mapping and modeling, risk management and emergency planning, analysis and testing processes
	Other architectural services	Low		Stable	▶ Building design, layouts, 3D modeling and simulation
Energy and natural resources	Power generation and distribution	Very high		Balanced	▶ Land modeling, land management system solutions, expropriation solutions, infrastructure modeling and analysis processes
	Mining	Middle		Balanced	▶ Geological modeling, geostatistics, land and mineral reserve analysis, mine planning and design
Telecommunication	Telecommunication	Middle		Balanced	▶ Network planning and design, coverage analysis, infrastructure and information system applications, line investment
Transportation	Transportation	Middle		Balanced	▶ Route determination, route planning and optimization, modeling and data analysis
Other	OIZs	Middle		Rapid	▶ Land use planning, infrastructure management and maintenance, environmental monitoring, energy consumption analysis
	Financial services	High		Rapid	▶ Location management, geospatial data processing and area valuation, customer segmentation
	Real estate	Middle		Rapid	▶ Real estate valuation and analysis, land modeling, market research and regional analysis, risk analysis and management
	Retail and FMCG	Very high		Balanced	▶ Location management, data management in process optimization, modeling, inventory management

1. Türkiye geospatial data analytics software market
2. Availability of geospatial data analytics solutions in companies operating in the relevant sector
3. Expected growth in demand for geospatial data analytics solutions
Source: EY-Parthenon analysis

Declining market volume   Low ··· High   Decreasing growth rate
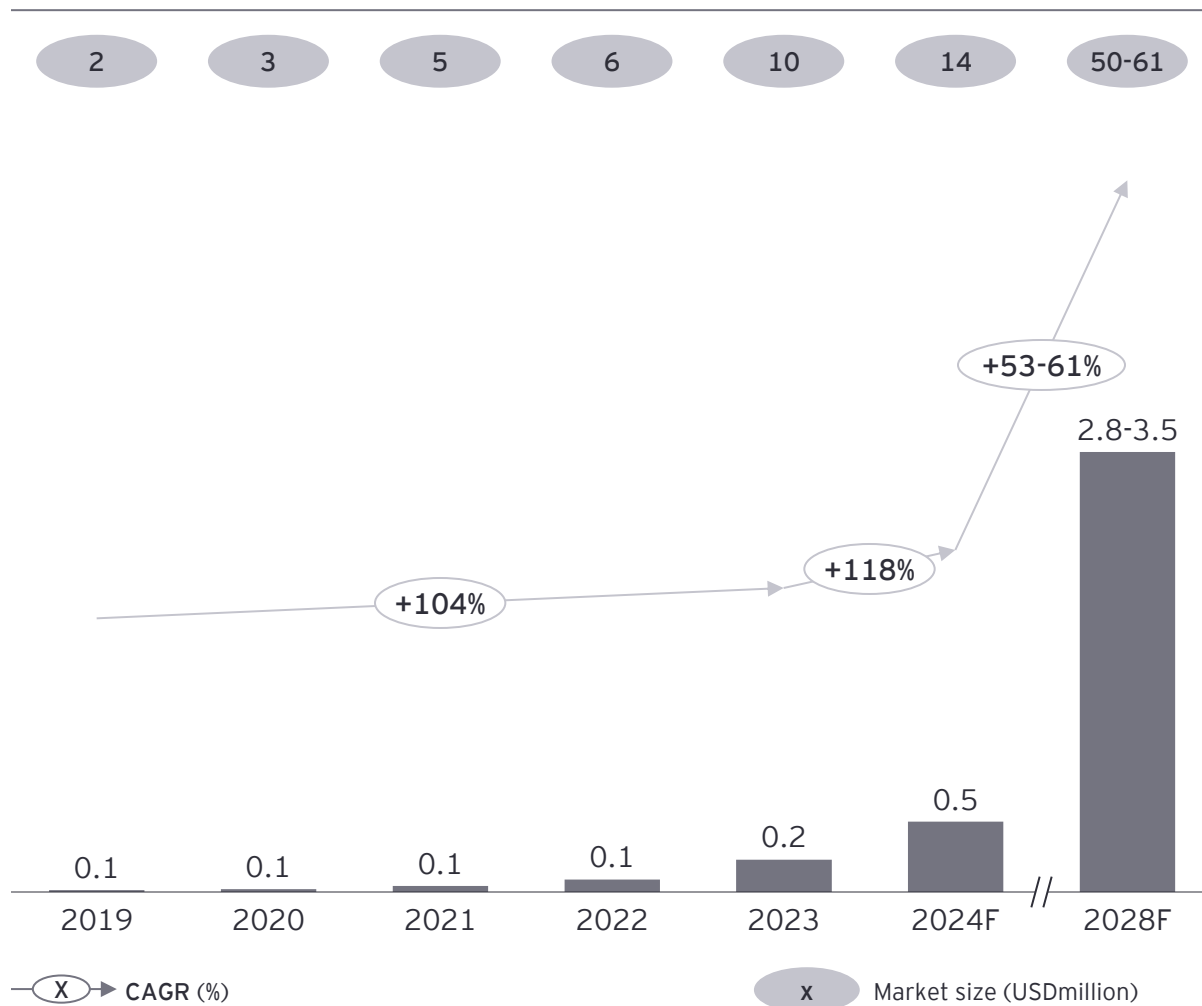
EY Parthenon
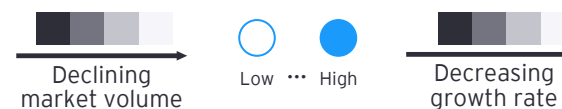
The energy and natural resources and construction and engineering sectors account for 78% of Türkiye private sector geospatial data analytics software market

Private sector geospatial data analytics software market size in Türkiye by sectors (2023-2028F, TRYbillion, %)

Legend:
- Energy and natural resources
- Construction and engineering
- Telecommunication
- Transportation and logistics
- Other
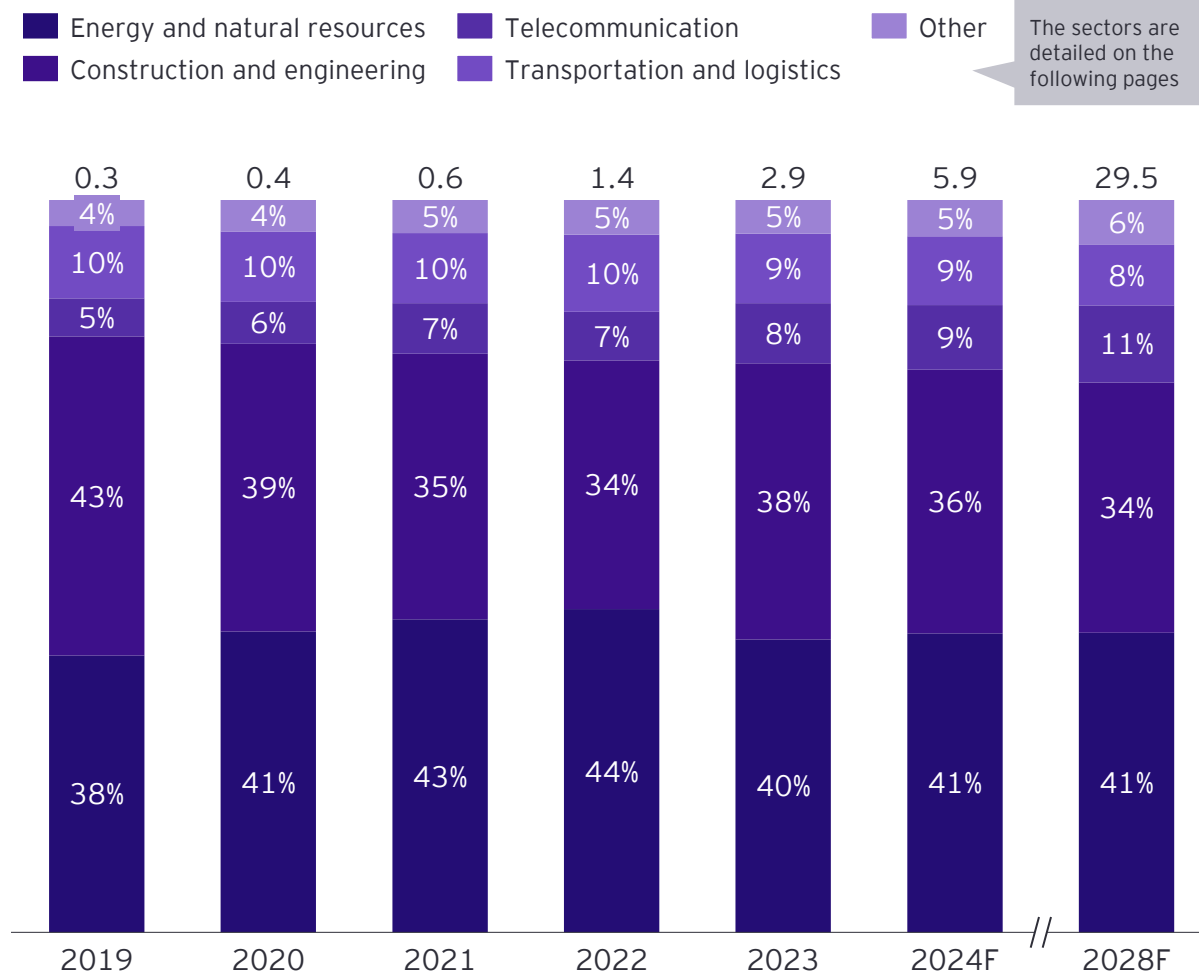
The sectors are detailed on the following pages

	2019	2020	2021	2022	2023	2024F	2028F
Total	0.3	0.4	0.6	1.4	2.9	5.9	29.5
Other	4%	4%	5%	5%	5%	5%	6%
Transportation and logistics	10%	10%	10%	10%	9%	9%	8%
Telecommunication	5%	6%	7%	7%	8%	9%	11%
Construction and engineering	43%	39%	35%	34%	38%	36%	34%
Energy and natural resources	38%	41%	43%	44%	40%	41%	41%

Highlights

▸ **In Türkiye private sector geospatial data analytics** software market which grew at **a CAGR of 81%** between **2019 and 2023** and reached a size of **TRY2.9 bn,…**

▸ **… energy and natural resources** is the largest sector with **a share of 40%,** followed by the **construction and engineering** with **a share of 38%** as of 2023

▸ **While the energy and natural resources** sector has **increased** its **market share by 2%** and **telecommunication by 3%** in the last four years, the market share of the **construction and engineering** sector has **decreased by 5%**

▸ **Similar trends are expected to continue,** with the **energy and natural resources** and **transportation and logistics** sectors approximately **maintaining their market share**, while the **telecommunication** sector is expected to **gain** a **share** of **3%** between **2023** and **2028**

  ▸ The **growth** of the **energy and natural resources** and **construction and engineering sectors**, **coupled with** the **expanding use** of geospatial data analytics solutions in these areas (e.g., **electricity generation** processes, **renewable energy** projects, **digitalized zoning**, title deed and **cadastre** transactions), is **contributing** to **market growth**

  ▸ **Geospatial data analytics solutions** in the **telecommunication** sector are **currently more limited** compared to other sectors. **However**, the **expansion** potential – especially with the **transition to 5G** and the adoption of **new technologies** – is expected to **support market growth** and **increase its share in the overall market**

  ▸ **While the transportation and logistics** sector **continues growing** due to the factors such as **increasing e-commerce** volume, **other private sectors** – including **OIZs**[1], **financial services, real estate, retail** and **FMCG** – are **expected** to **increase** their **market share due to potential application areas**

EY Parthenon

Geospatial data analytics usage in energy and natural resources would increase with the sector's growth and new opportunities in areas such as energy production and mining

Energy and natural resources geospatial data analytics software market size — Example

Energy and natural resources market size (2019-28F, TRYbillion)

| 18 | 22 | 31 | 37 | 49 | 66 | 194-239 |

+46%-54%

11.0-13.5

+107%

+84%

2.4

1.2

0.6

0.1   0.2   0.3

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024F | 2028F |

X → CAGR (%)

x → Market size (USDmillion)
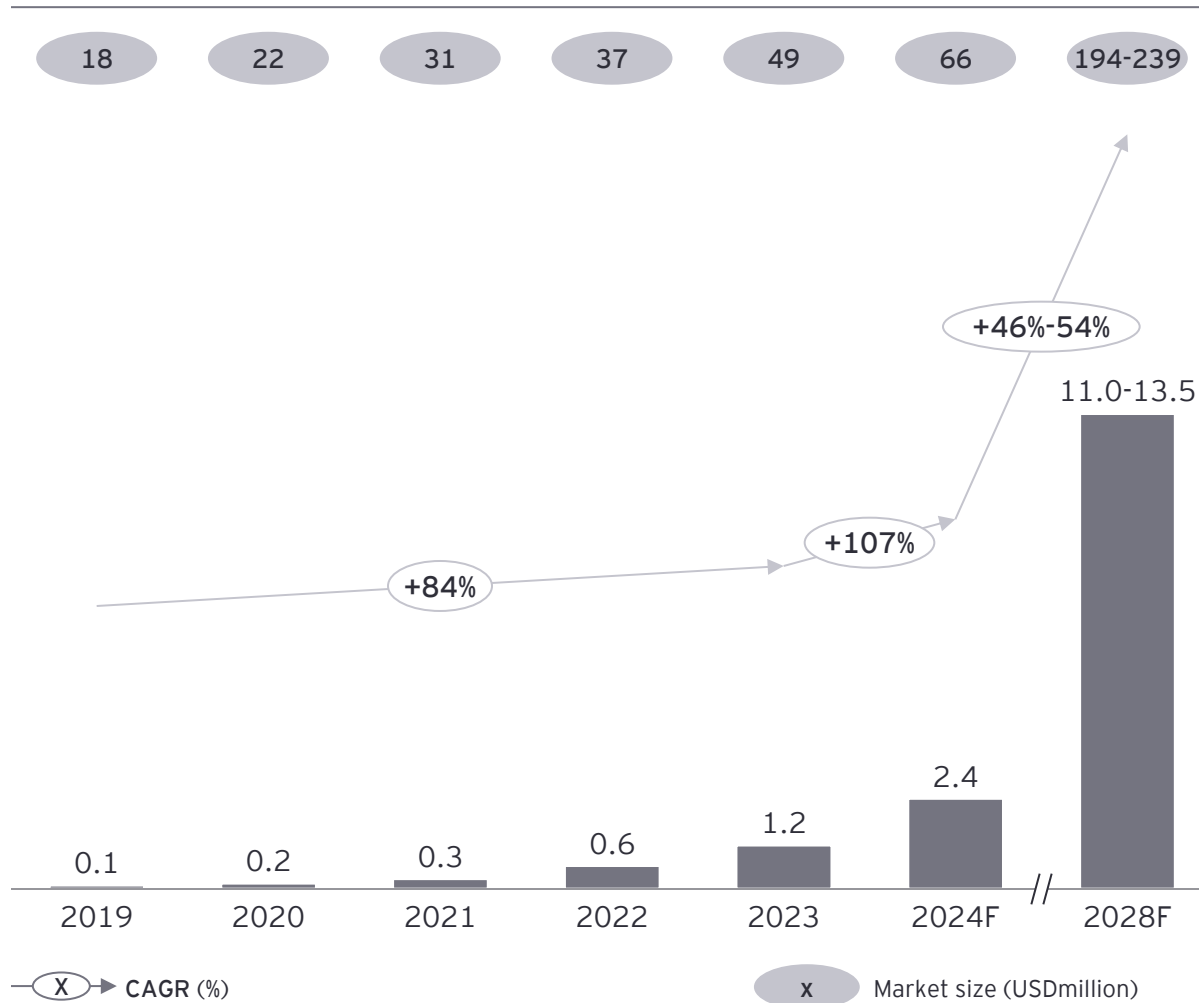
Highlights

▸ **The energy and natural resources** sector, which constitutes **40% of Türkiye private sector geospatial data analytics** software market in **2023, is expected to grow at a CAGR of 46% to 54%** in the next four years, reaching TRY11.0 billion and TRY13.5 billion by **2028** and increasing **its market share to 41%**

▸ The **main drivers of this growth** expectation are:

  ▸ Growth in electricity, natural gas and water distribution market: The energy distribution market is **expanding** due to the presence of **privatized distribution companies** and **rising urbanization**. The need for **GIS-based solutions for real-time intervention** for problem resolution and **associated investments** in **distribution processes** are the key factors driving the growth of geospatial data analytics software in the energy sector

  ▸ Increase in penetration in the power generation market with technological developments: Geospatial data analytics solutions, widely used in energy distribution processes, are **increasingly** being **applied** in power generation for areas such as **infrastructure planning**, **production facility positioning** and **optimization** of **maintenance processes**, driven by **technological advancements**

  ▸ Expanding use of geospatial data analytics solutions in natural resource exploration and management: The **increasing adoption** of geospatial data analytics solutions, which provide **efficiency advantages,** in **mineral exploration** and **related studies,** is expected to drive growth in the natural resources sector through **application areas** such as **mapping** and **analyzing potential areas**

  ▸ Increasing demand for renewable energy sources: The **expansion** of **renewable energy projects** in the exploration and management of energy resources is boosting the geospatial data analytics software market, with **application areas** including **site selection** and **potential yield analysis**

EY Parthenon

In addition to the growing construction and engineering sector, various trends such as digital twin, risk management and digitized public processes are expanding the market

Construction and engineering geospatial data analytics software market size   Example

Construction and engineering market size (2019-28F, TRYbillion)

Market size bubbles (USDmillion): 21, 21, 26, 29, 46, 58, 162-200

Bar values (TRYbillion): 2019: 0.1, 2020: 0.1, 2021: 0.2, 2022: 0.5, 2023: 1.1, 2024F: 2.1, 2028F: 9.2-11.3

CAGR callouts: +75%, +93%, +44-52%

X → CAGR (%)
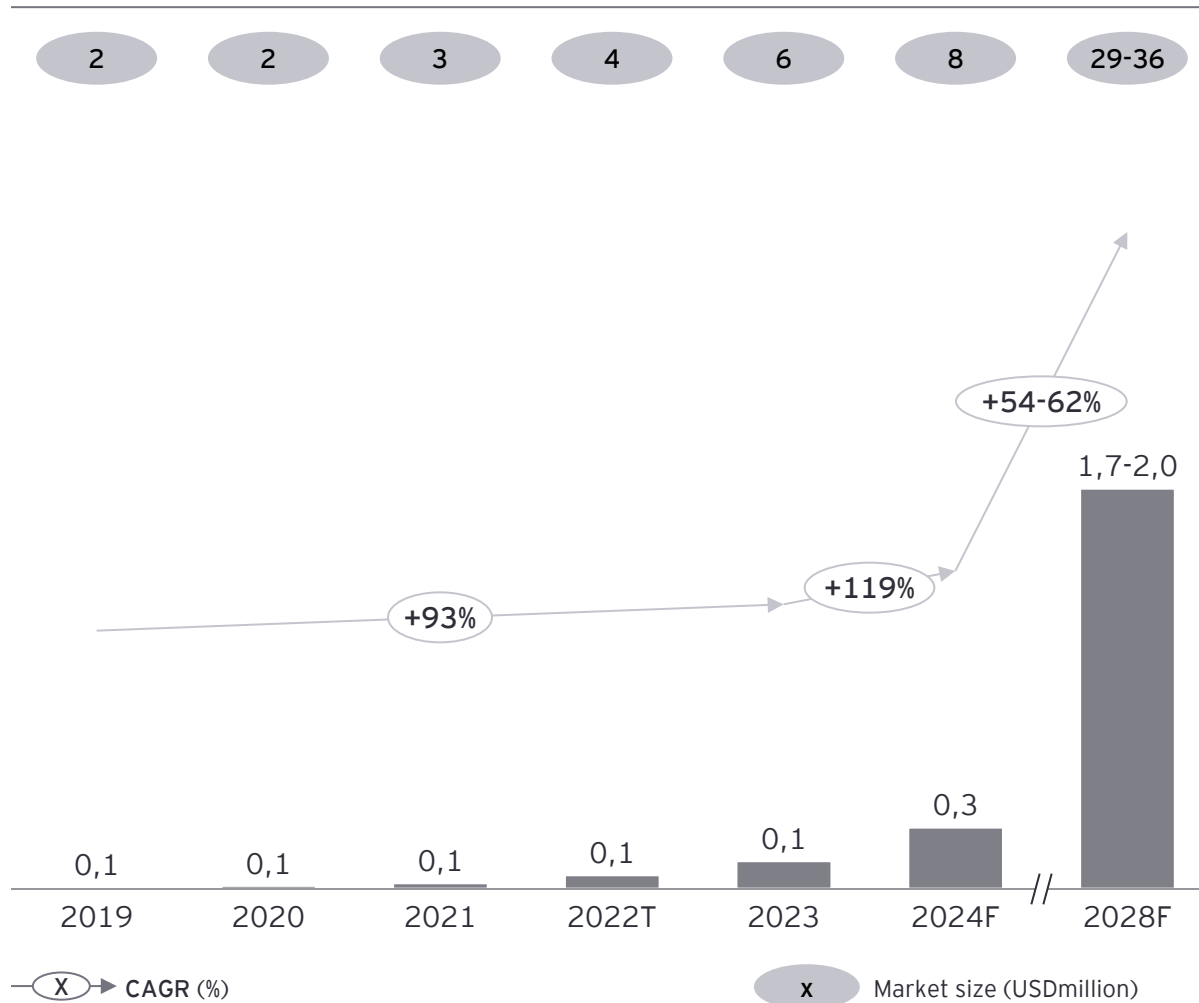
x Market size (USDmillion)
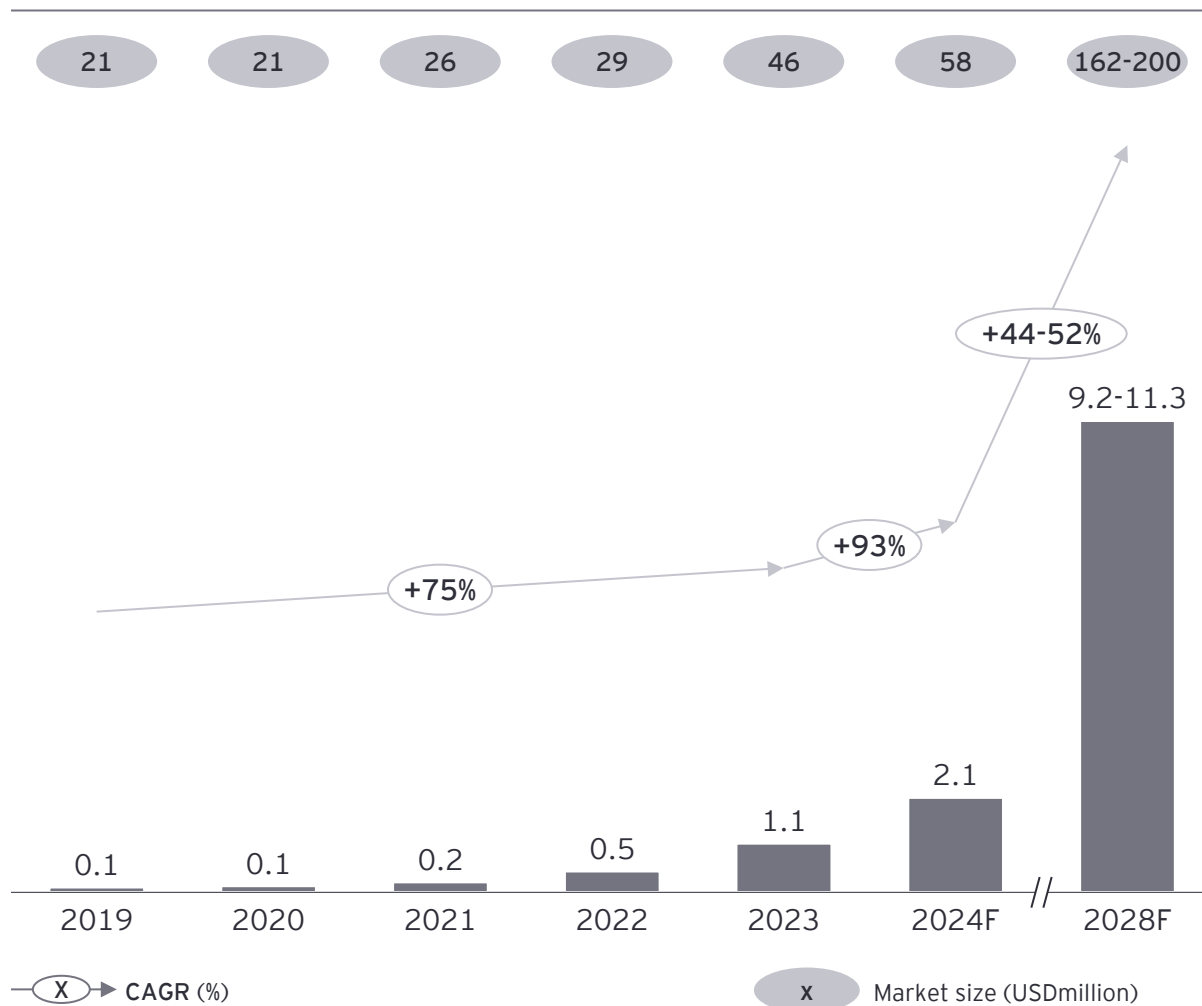
Highlights

▸ **The construction and engineering** sector, which accounts **for 38% of Türkiye private sector geospatial data analytics** software market in **2023, is expected to grow at a CAGR of 44% to 52%** in the next four years. By 2028, it is projected to reach a size of TRY9.2 billion and TRY11.3 billion and a **market share** of **34%.** The **anticipated decline** in the **market share** is mainly attributed to the **higher current availability** of **geospatial data analytics solutions** in the construction and engineering **compared to other sectors**

▸ **The main drivers of the growth** in the construction and engineering market are:

  ▸ **Growing construction and engineering sector with urban transformation and technological developments:** Urban transformation projects continue **increasing, expanding** both **residential** and **non-residential construction** (e.g., infrastructure, hotel and industry) and **engineering sectors** essential for **city and regional planning.** Consequently, the **geospatial data analytics software market, which offers solutions** ranging from **land analysis** to **environmental impact assessment**, is expanding in **parallel.** Additionally, the use of geospatial data analytics solutions in decision support systems, as well as basic GIS solutions, **are increasing** in the **growing number of geology** and **engineering bureaus**

  ▸ **Diversifying solutions with the trend of 3D visualization and digital twin:** Increasing use of **3D modeling** in construction projects is **enhancing the market growth** especially **by diversifying the product offerings for existing customers.** The **digital twin trend,** which involves creating digital replicas of physical structures in GIS, further **supports market expansion** and allows construction industry players to **manage their activities more efficiently**

  ▸ **Increasing importance of risk management and emergency planning:** The increasing importance of **risk management** and **emergency planning** in the construction and engineering sector, due to recent disasters such as **Covid-19** and **earthquake,** has led to **vertical market growth** in the sector

  ▸ **Digitalized plan, zoning and land registry processes:** The digitization of zoning, **land registry and cadastre transactions** by **public institutions** and organizations is increasing the demand for geospatial data analytics solutions among private sector players

EY Parthenon

With transition to 5G and the demand for decision support systems, telecommunication sector is expected to increase its share in the geospatial data analytics software market

Telecommunication geospatial data analytics software market size

Example

Telecommunication market size (2019-28F, TRYbillion)

2   3   5   6   10   14   50-61

+53-61%

2.8-3.5

+118%

+104%

0.5

0.1   0.1   0.1   0.1   0.2

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024F | 2028F |

X → CAGR (%)

x   Market size (USDmillion)

Highlights

- **The telecommunication** sector, which accounts **for 8% of Türkiye private sector geospatial data analytics** software market in **2023**, is expected to grow at **a CAGR of 53% to 61%** in the next four years, reaching **a size of TRY2.8 billion and TRY3.5 billion and a market share of 11%** in 2028

- Geospatial data analytics solutions are **currently more limited** in the **telecommunication** sector **compared to other sectors** such as construction. **However,** the **expansion potential** in telecommunication is contributing to the sector's **growth** and **increasing market share**

- The **main drivers of this growth** expectation are:
  - **Transition to 5G and new technologies: As 5G wireless communication expands,** new **5G network licenses require** telecommunication operators **to redesign their networks.** GIS systems are **expected** to be **extensively used** to **identify potential locations** using data such as customer information, field details and land ownership and to **conduct wireless coverage simulations** and tests**, reducing the need for costly field tests**
  - **Increasing demand for geospatial decision support systems:** Telecommunication companies are increasingly adopting GIS solutions to **manage data transfer within integrated systems** and **merge networks from different operators,** in addition to using their own software or non-integrated external systems. The **growing availability** of **basic GIS solutions** is **driving** the **development** of **specialized geospatial data analytics solutions** for **telecommunication infrastructure**, which **offer integration, cost advantages** and **enhanced decision support capabilities**

EY Parthenon

Geospatial data analytics software in transportation and logistics is expected to grow with rising infrastructure projects, fleet management and e-commerce

Transportation and logistics geospatial data analytics software market size

Example

Transportation and logistics market size (2019-28F, TRYbillion)

| 5 | 5 | 7 | 9 | 12 | 15 | 39-48 |

+41-49%

2.2-2.7

+100%

+80%

0.6

0.3

0.1   0.1   0.1   .

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024F | 2028F |

X → CAGR (%)

x Market size (USDmillion)
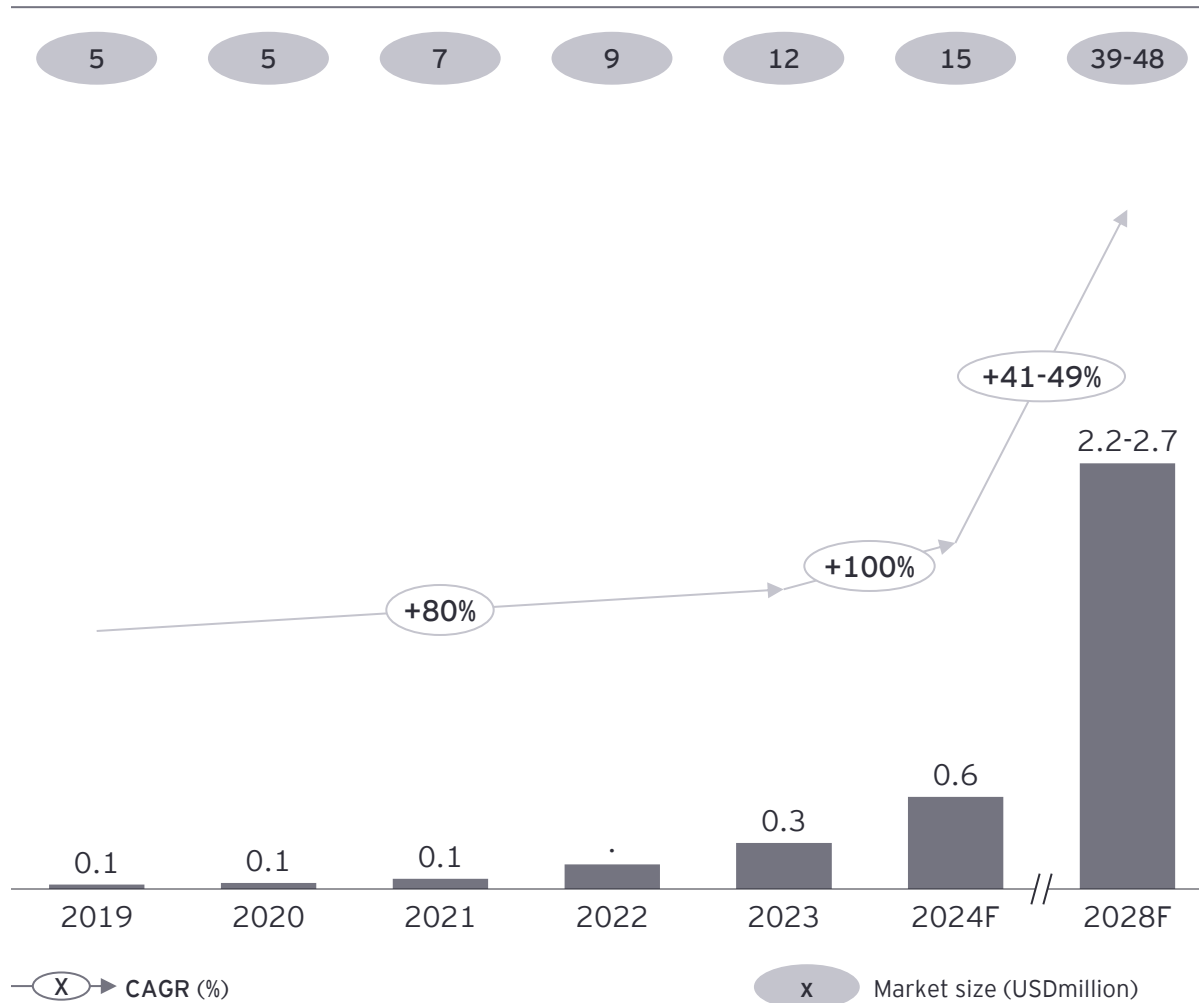
Highlights

▸ The **transportation and logistics** sector, which accounts for **9% of Türkiye private sector geospatial data analytics** software market in 2023, is expected to grow at **a CAGR of 41% to 49%** in the next four years, reaching a **size of TRY2.2 billion and TRY2.7 billion** and **a market share of 8%** in 2028

▸ The **main drivers of this growth** expectation are:
  ▸ **Support for construction and infrastructure projects:** Geospatial data analytics solutions are increasingly used **in transportation planning**, **routing** and **inventory management** processes to support the **ongoing growth of large construction and infrastructure projects in Türkiye**
  ▸ **Increasing demand for fleet management and real-time tracking:** There is a **rising demand for GIS solutions** that enable **logistics companies** to **monitor their vehicle fleets** in **real time** and **optimize routes** and **maintenance management**
  ▸ **Increasing e-commerce volume:** The rapid growth in the **e-commerce** sector has increased the **demand for logistics companies**. To meet this growing demand, there is a growing need for **GIS solutions that optimize logistics processes** and manage **delivery routes** and **timings** more **effectively** through **data analytics** and **geographic modeling**. In addition, GIS solutions are used for **planning**, **mapping** and **optimizing customer deliveries** to address **diverse customer demands**

EY Parthenon

OIZs[1], financial services, real estate, retail and FMCG, which have expansion potential, are also expected to experience market growth in line with local and global trends

Other private sectors geospatial data analytics software market size

Example

Other private sectors market size (2019-28F, TRYbillion)

| 2 | 2 | 3 | 4 | 6 | 8 | 29-36 |

+54-62%

1,7-2,0

+119%

+93%

| 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,3 | 1,7-2,0 |
| 2019 | 2020 | 2021 | 2022T | 2023 | 2024F | 2028F |

X ➤ CAGR (%)

x Market size (USDmillion)

Highlights

▸ **Other private sectors,** which account **for 5% of Türkiye private sector geospatial data analytics** software market in **2023, are expected to grow at a CAGR of 54% to 62%** in the next four years, **reaching a size of TRY1.7 billion and TRY2.0 billion in 2028** and increasing **its market share to 6%**

▸ The **current limited availability** of **geospatial data analytics solutions** in these sectors **compared to other sectors** such as construction, **combined with their expansion potential,** is expected to **increase their market share**

▸ The **main drivers of growth expectations for each** sub-sector are as follows:

  ▸ **OIZs[1]: OSBÜK** (Supreme Organization of Organized Industrial Zones), **supports OIZs in adopting GIS solutions** for application areas such as **infrastructure** and **asset mapping** and **management, land use planning** and other applications, in line with its **digital transformation goals**

  ▸ **Financial services:** In **Türkiye,** where **the current availability** of geospatial data analytics solutions **is low, growth** is **anticipated** in **areas** such as **customer segmentation** and **analysis** and **branch and ATM location optimization,** aligning with **global trends**

  ▸ **Real Estate: Following the digitalization** in **zoning, land registry and cadastre** processes, **the demand for geospatial data analytics is expected to rise** in areas such as **customer** and **property analysis, real estate valuation** and **land development** and **planning**

  ▸ **Retail and FMCG: The use of geospatial data analytics solutions is expected to increase** due to their **benefits in data integration** and **cost efficiency.** Example application areas include **market analysis** with **demographic information** and **customer segmentation,** determining **sales channel** and **distribution network locations, inventory management** and **supply chain optimization**

1.Organizational industrial zone
Source: EY-Parthenon analysis

EY Parthenon

04

Competitive landscape

EY Parthenon
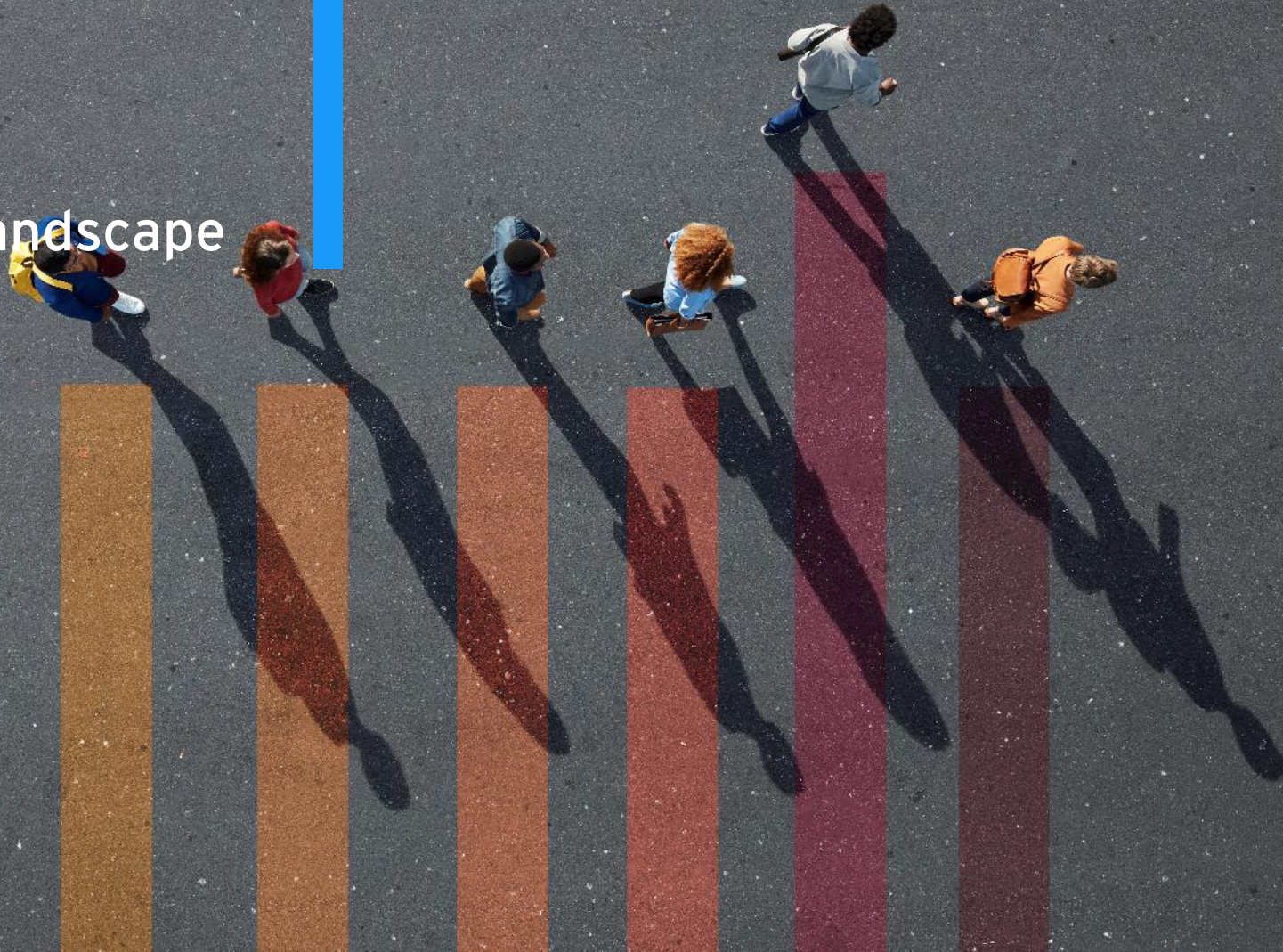
The geospatial data analytics software market is fragmented, with major players benefiting from customer loyalty and Türkiye-based players leveraging local incentives

Summary status

Fragmented competition structure	▸ The geospatial data analytics software market is highly fragmented, with diverse players offering a wide range of products and solutions. While some firms cover much of the value chain, others specialize exclusively in data analytics or focus solely on project production and mapping
Variable sectoral coverage	▸ In addition to local and global players with broad sectoral coverage, the market also includes local entities with a more narrow focus, targeting specific customers like local governments and map engineering bureaus
Growth through mergers and acquisitions	▸ In the global market, some players expand their value chain and broaden their scope by merging with or acquiring specialized companies offering complementary products and solutions
High customer loyalty	▸ Geospatial data analytics software is tightly integrated with IT infrastructures like ERP, CRM and other operational systems, making data transfer between systems challenging. This creates switching barriers and gives current software providers a strong competitive edge
Advantages of Türkiye-based players	▸ Türkiye-based players drive their growth by leveraging government incentives and a strong understanding of local regulations, which provides them with a competitive advantage
The spread of open-source software	▸ Open-source software is becoming increasingly important in geospatial data analytics because of its flexibility and cost benefits. However, its lack of reliability and support services prevents it from being a viable option for critical applications

EY Parthenon

The market includes major players offering a broad range of products across various verticals, as well as local and global companies specializing in specific areas

Position of players in the value chain and sectoral coverage plane[1]   Selected players

Coverage across the value chain

Comprehensive / Narrow scope

1 Industry leaders[2]
- Autodesk
- Esri
- Netcad
- Precisely

3 Sector-oriented players

2 Specialist solution providers

Limited coverage — Wide coverage

Sectoral coverage
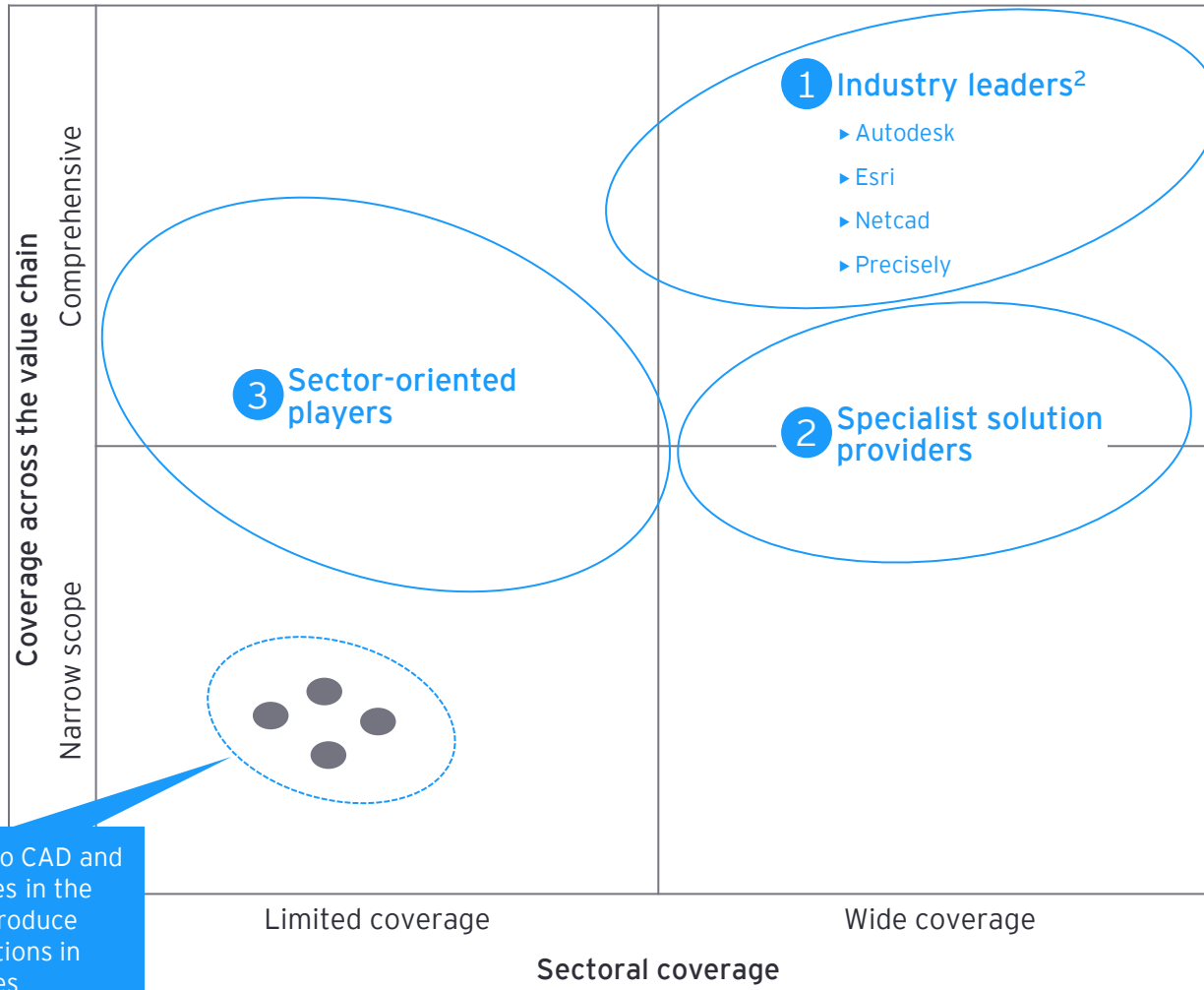
There are also CAD and GIS companies in the sector that produce singular solutions in smaller scopes

1 Industry leaders
They are companies that operate **at many stages** of the value chain, offer a **broad range of services** and have **a wide sectoral coverage**

2 Specialist solution providers
They are companies **that specialize** in certain application areas **and offer solutions with wide sectoral coverage** in those areas

3 Sector-oriented players
They are companies **that offer a broad range of services**, but have a limited sectoral coverage

1.Only self-produced products and solutions are included in the value chain coverage of the players; partnerships are not included in this scope
2.The players are listed in alphabetical order
Source: EY Parthenon analysis

EY Parthenon

In addition to local and global players with a wide sectoral coverage, there are also some local players with limited sectoral coverage in the market

Service and industry coverage of selected players

Outside-in observation

Player[1]	Origin	Examples of services provided	Featured sectors
Autodesk	Global	Building Information Modeling (BIM) enables architecture, engineering and construction firms to integrate geospatial data and create better plans by receiving real-time updates	► Construction, engineering, architecture, manufacturing
Başarsoft	Domestic	In partnership with Precisely, it offers GIS solutions to central and local government, including analysis, mapping and urban planning. It also provides data analysis and BI[2] services to transportation and engineering companies	► Transport and logistics, energy, engineering ► Central and local governments
Belsis	Domestic	In addition to solutions such as geospatial data management, analysis and modeling, it serves planning offices with its CAD-based products and central and local governments with its zoning, cadastral solutions and projects	► Central and local governments
Bentley	Global	Bentley Systems, which offers geospatial data analytics solutions in large-scale engineering projects and infrastructure systems, offers services such as mapping, modeling and engineering design together	► Energy, construction, engineering ► Local governments
Datamine	Global	It provides services in mine modeling, optimization, planning and data management processes with its own software	► Mining
Esri	Global	It produces solutions in data collection, processing, management, location-based analysis and decision support processes and offers related solutions to a wide range of sectors	► Energy, construction, engineering, mining, URP[3] ► Central and local governments
Hexagon	Global	With its high-tech software for precise measurement, Hexagon provides solutions for the geospatial data analytics software market, offering data collection and visualization solutions to construction and URP offices	► Construction, URP, mining ► Central and local governments
Micromine	Global	With its own software, it provides services such as mineral exploration, geological modeling, operation and mining data management	► Mining
Netcad	Domestic	Focusing on GIS and electronic public service solutions, the company combines these solutions with CAD solutions and offers them to central and local governments and the private sector	► Energy, Construction, Engineering, Mining, URP ► Central and local governments
Precisely	Global	It produces geospatial business intelligence products and decision support systems and data analytics solutions for infrastructure sectors	► Energy, telecommunication, transport & logistics
Sampaş Bilişim	Domestic	It offers GIS solutions together with other management information systems and mobile solutions and provides smart city applications to local governments	► URP ► Local governments
Universal	Domestic	In addition to offering GIS module and network solutions from its partnership with Esri, it also has its own geospatial data collection, management and GIS-related integration services	► Energy, construction ► Central and local governments

1. The players are listed in alphabetical order
2. Business intelligence
3. Urban and regional planning
Source: EY-Parthenon analysis

Global   Domestic

EY Parthenon

Industry-leading player produce products and solutions that cover many aspects of the value chain

Coverage of industry leaders and selected sector-oriented players through value chain[1]

Outside-in observation

Player	Data collection	Data management	Project production	Land and asset mgmt	Data analytics	Decision support systems	Highlights
Player 1	✓	✓	✓	✓	~	✓	Being one of the oldest players in the industry, the company has extensive value chain coverage
Player 2	✓	✓	✓	✓	~	✓	Being one of the first players in the local sector, the company offers electronic public services[2] in addition to GIS and CAD solutions
Player 3	✓	✕	✓	✕	✓	✓	The company, standing out as an established leader in CAD solutions, also provides data collection and data analytics solutions
Player 4	✕	✓	~	~	✓	✓	The company's primary focus is on processing, analyzing, visualizing and integrating geospatial data
Player 5	✓	✓	✓	✕	~	~	The company offers software programs designed for large-scale, complex mining projects that require specialized expertise to use effectively
Player 6	✓	✓	✓	✕	~	✕	The company stands out for its compatibility with small-and medium sized projects

1.Only self-produced products and solutions are included in the value chain coverage of the players; Partnerships are not included in this scope
2.Electronic public services: A broad term that covers services such as e-government, e-cadastre, e-title deed, etc.
Source: EY-Parthenon analysis

✓ Full coverage   ~ Limited scope   ✕ Out of scope
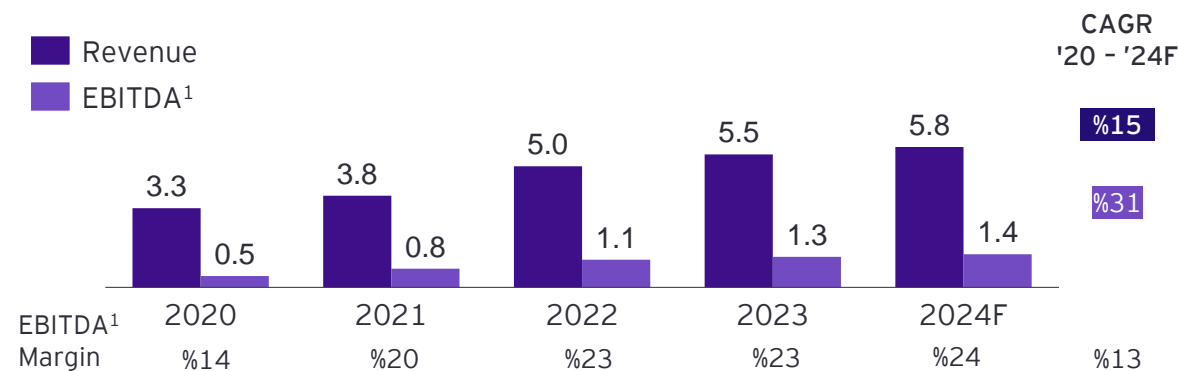
EY Parthenon

Autodesk is a global leading player in CAD software and solutions, generating more than 70% of its revenues from the architecture, engineering and construction industries

Overview of Autodesk

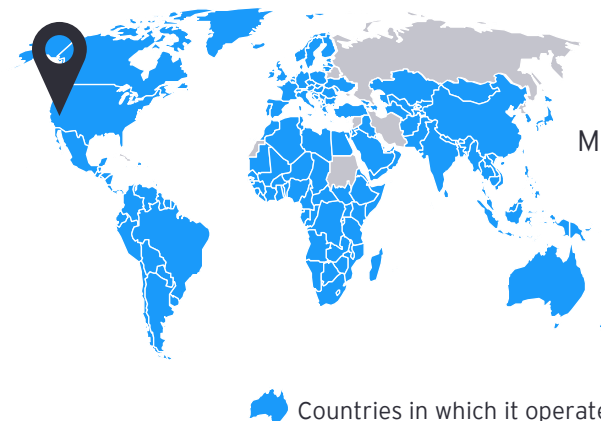### General information about the company

Industry focus
- Operating globally since 1982, Autodesk primarily provides solutions and services to the private sector in Türkiye through local partners and distributors
- The main sectors it focuses on in the private sector include architecture, engineering, construction, manufacturing and media and entertainment

Value chain coverage and products
- Autodesk, which provides solutions in areas such as design, 3D modeling, simulation and analysis, especially for data collection, data management and project production processes, offers the following main products:
  - AutoCAD and Revit for design and modeling
  - Inventor CAM and Autodesk Fusion for product development and manufacturing processes
  - BIM Collaborate Pro for project management

Strategic priorities
- Offering cloud-based software platforms such as Autodesk Fusion to quickly adapt to the evolving integration of cloud technologies and artificial intelligence in the market
- Being among the pioneers of innovations in its focus sectors (e.g., BIM integration in the architecture and construction sectors)
- Maintaining a global growth strategy by expanding into new markets while developing its products and services with a customer-oriented approach
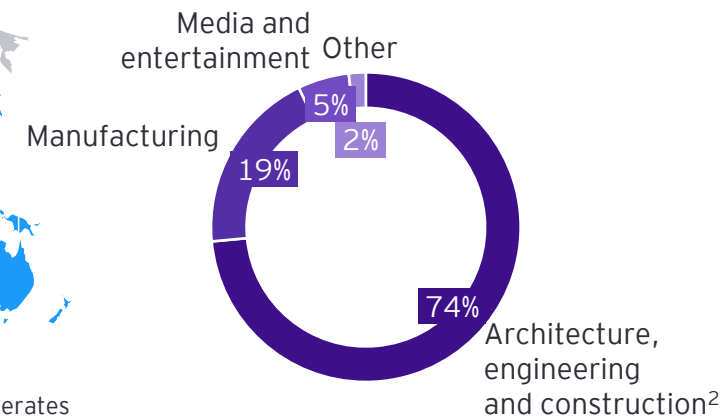
Financial performance (USDbillion)

Legend: ■ Revenue ■ EBITDA[1]

CAGR '20 – '24F

	2020	2021	2022	2023	2024F	CAGR '20 – '24F
Revenue	3.3	3.8	5.0	5.5	5.8	%15
EBITDA[1]	0.5	0.8	1.1	1.3	1.4	%31
EBITDA[1] Margin	%14	%20	%23	%23	%24	%13

Geographical and sector-based breakdown

San Francisco, ABD

Countries in which it operates

Sector-based turnover breakdown

- Media and entertainment: 5%
- Other: 1%
- Manufacturing: 19%
- Other: 2%
- Architecture, engineering and construction[2]: 74%
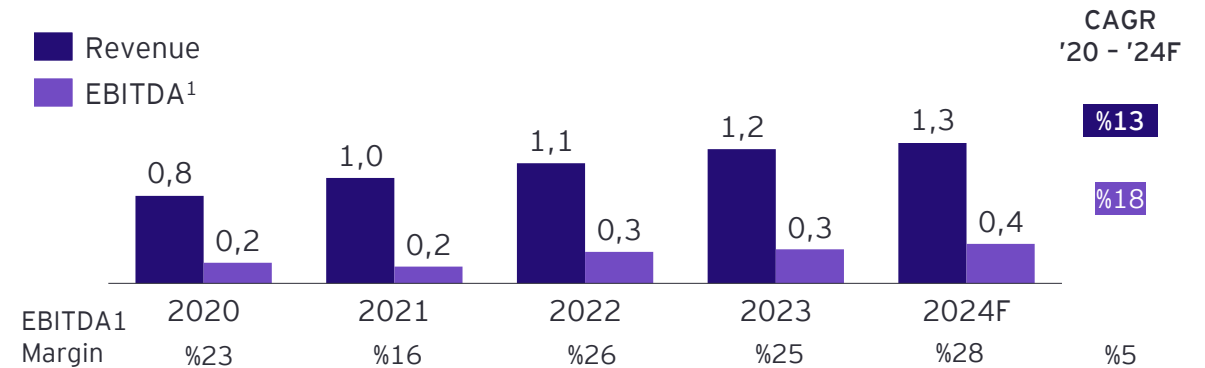
EY Parthenon

Bentley Systems, which has a global network, exhibits steady growth and derives more than 50% of its revenue from the public and infrastructure sectors

Overview of Bentley Systems

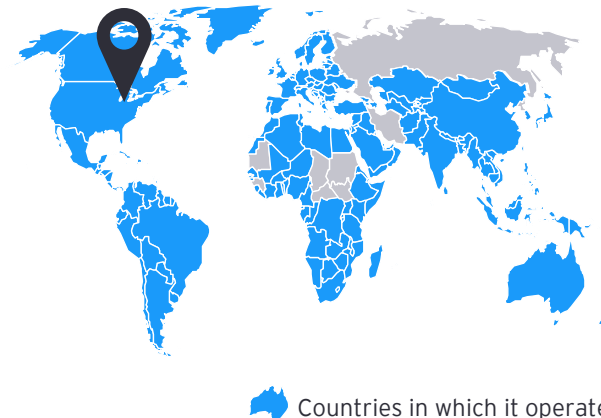### General information about the company

Industry focus	▸ Bentley Systems is a software company providing geospatial data analytics solutions for areas such as airports, skyscrapers, highways and bridges in the infrastructure and non-residential construction sectors ▸ While Bentley Systems works extensively with local governments in the USA and other markets, it focuses on the private sector in Türkiye
Value chain coverage and products	▸ The company offers a wide range of solutions for mapping, management, analysis, visualization and interpretation of infrastructure ▸ Prominent Bentley products: ▸ MicroStation for architecture and engineering CAD projects ▸ OpenRoads for utilities project production ▸ ProjectWise for data management
Strategic priorities	▸ In 2024, digital twin and asset analytics[2] are emerging as key priorities ▸ In these areas, the company is considering options for growth through development of existing software and acquisitions

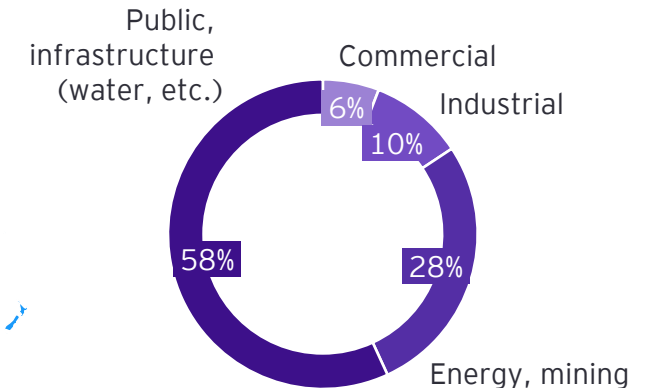### Financial performance (USDbillion)

- Revenue
- EBITDA[1]

CAGR '20 – '24F

	2020	2021	2022	2023	2024F	
Revenue	0,8	1,0	1,1	1,2	1,3	%13
EBITDA[1]	0,2	0,2	0,3	0,3	0,4	%18

EBITDA[1] Margin

2020	2021	2022	2023	2024F	
%23	%16	%26	%25	%28	%5

Geographical and sector-based breakdown

Pennsylvania, U.S.A.

Countries in which it operates

Sector-based turnover breakdown

- Public, infrastructure (water, etc.): 58%
- Commercial: 6%
- Industrial: 10%
- Energy, mining: 28%

EY Parthenon

Esri, a global player in Türkiye geospatial data analytics software market, provides end-to-end services for both public institutions and organizations and the private sector

Overview of Esri

### General information about the company

Industry focus	▶ ESRI[1] software is utilized by over 350,000 companies across various industries, including utilities, government, construction, healthcare and transportation ▶ Since 2007, Esri Türkiye has been operating as one of Esri's global distributors, providing services to public institutions and organizations, as well as private sectors such as energy and infrastructure, mining, architecture and retail
Value chain coverage and products	▶ Esri offers comprehensive end-to-end services ranging from data collection to decision support systems. Its core and most comprehensive product is ArcGIS, which facilitates data collection, mapping and geospatial analysis ▶ Prominent products include ArcGIS Pro for advanced visualization solutions, ArcGIS Online as a cloud-based platform for data sharing and mapping and ArcGIS Enterprise for large-scale, on-premises data management and analysis
Strategic priorities	▶ With adaptations in artificial intelligence and cloud technologies to ensure access to products and depth of analysis and… ▶ …to focus on 3D modeling, mapping and real-time data integration through ArcGIS Reality, while moving toward extended[2] reality solutions are among the priorities

Featured numbers

Workforce	Customers	R&D rate
▶ It has **more than 6,000 employees** from 73 different countries	▶ On a global scale, **it serves half of the Fortune 500 companies**, more than 20 thousand cities and more than 7 thousand universities	▶ Esri allocates **30% of its revenues** to R&D activities

Geographical breakdown

Redlands, California, ABD
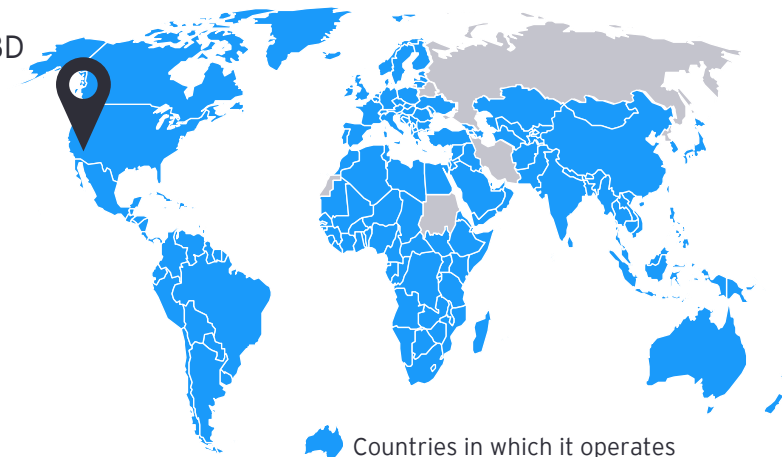
Countries in which it operates

EY Parthenon

Netcad, a leading local player in Türkiye's geospatial data analytics software market, provides end-to-end services to local and central governments and the private sector

Overview of Netcad

General information about the company

Industry focus	▸ Since 1989, Netcad has been a local leader in Türkiye market, focusing on public institutions and organizations while also serving the private sector ▸ The products and solutions of Netcad are used by the Presidency of the Republic of Türkiye and 14 Ministries, over 800 public institutions, 1,290 municipalities and more than 9,000 private companies
Value chain coverage and products	▸ Netcad offers 44 products across 5 main categories: ▸ Core products (e.g., GIS, CAD) ▸ Planning and land management (e.g., urban planning) ▸ Engineering (e.g., construction, geological engineering, mining) ▸ Information and management systems (e.g., low-code platforms, city automation systems, enterprise applications) ▸ Maintenance and support (e.g., training)
Strategic priorities	▸ Providing solutions with technologies such as smart cities, the Internet of Things and artificial intelligence ▸ Expanding business areas by adding new services to engineering, mapping and GIS fields (e.g., mining) ▸ Contributing to the national economy through technology exports as part of the E-Turquality program

Featured numbers

Workforce	Customers	R&D rate
▸ Netcad has **208** employees	▸ **A broad customer base** of ~**12,000 institutions** and **organizations actively** uses **120,000+ main module licenses**	▸ In 2023, Netcad allocated **30%** of **its revenues** to R&D activities

Geographical breakdown

Ankara, Türkiye

🇦🇺 Countries in which it holds trademarks

Acquisitions made in the last four years show that the players aim to incorporate new technologies and grow inorganically in the market

Acquisition activity of players in the market   Outside-in observation

Player	Hardware	Data and analytics	Platform/interface	Traditional GIS applications	Other applications (planning, visualization, etc.)	Area modeling
Esri		Synthetaic, Zibumi	*Zibumi 3D modeling studio is a Turkish company based in Ankara*	Impact Observatory	HawkEye 360	nFrames
Autodesk		Datum360	Moxion, ProEst, Pype, Bridgit	Spacemaker, Aurigo	Vapar, The Wild	FlexSim, UniFi, Transcend
Precisely		Transerve, PlaceIQ, Infogix, Winshuttle		Anchorpoint		
Hexagon		Infor, COWI	Itus, Avvir, Projectmates, MDENet	Geoprevent	HARD-LINE, Accur8vision	Voyansi, Immersal, LocLab
Bentley		SewerAI, Blyncsy, Eagle.io	FutureOn, Cohesive		Niricson	EasyPower, Seequent

Legend: 2024, 2023, 2022, 2021, 2020

EY Parthenon

Technical and organizational barriers increase customers' loyalty to their current solution providers and create barriers to switching to new solutions

Barriers to switching to new solutions

Technical barriers

System integration
Geospatial data software is tightly integrated with customers' IT infrastructure, through ERP, CRM and other operational systems

Data integration
Data collected within geospatial data analytics cannot be easily transferred between systems due to data models that were created and customized in the past

Organizational barriers

Reluctance to change
Customers are hesitant to adopt major changes, particularly regarding mission-critical solutions (e.g., infrastructure and network analytics solutions) and solutions related to local regulations (e.g., e-cadastre, e-zoning). Consequently, they often retain their existing solutions, resulting in high customer loyalty

Limited competence
Customers often have limited capabilities and/or insufficient internal resources for complex IT projects that require changes to critical software solutions. Those with limited capabilities also need a Turkish interface and Turkish technical support, which contributes to their reluctance to make changes

Barriers to switching to new solutions

Barriers to switching to new solutions, also create a certain pricing potential for geospatial data analytics solution providers

Türkiye-based players support their growth by gaining a competitive advantage thanks to government incentives and their dominance of local regulations

Local software incentives and advantages

Government incentives available to Türkiye-based players

The government provides incentives to software companies based in Türkiye, offering market access and cost advantages to domestic players:

▸ **Tax deductions and exemption:** Incentives such as stamp tax exemption, income tax withholding incentive and SGK[1] premium support reduce operational costs for companies, while companies located in techno-parks and R&D centers can also reduce their R&D costs with the provided incentives

▸ **Grants and low-interest loans:** Grants and low-interest loans from institutions like TÜBİTAK and KOSGEB, as well as grants from the Turkish Ministry of Commerce's Turquality[2] branding program, enhance the capital efficiency of companies

▸ **Fair and marketing incentives:** As part of internationalization support, particularly under the Turquality[2] program, grants for exhibitions, market research and marketing incentives facilitate the international expansion of firms

The value-added offered to the customers by Türkiye-based players

Additional advantages offered by Türkiye-based software companies to customers make them competitive against global players:

▸ **Government incentives offered to customers[3]:** For companies receiving software services, the incentives provided to companies who choose to obtain services from Türkiye-based software firms positively influence customer preferences

▸ **Easy compliance with regulations:** The expertise of Türkiye-based software companies in local regulations and their ability to quickly adapt to updated regulations facilitate the compliance process for customers

▸ **Accessibility:** The accessibility of local companies in after-sales services and support processes helps to shorten approval and processing times for large-budget projects

EY Parthenon

Open-source software is expected to continue gaining importance with new application areas, but it is not anticipated to cause a disruptive change in the competition

Open-source software

Growth drivers of the open-source trend

▶ **Free platform usage:** Open-source software provides a budget-friendly solution by allowing users to use the software without any cost

▶ **Customization and flexibility:** Open-source platforms enable users to easily customize the software to meet their specific needs

▶ **Independence from major providers:** Open-source solutions offer users greater freedom and flexibility without being tied to a particular provider

▶ **Growing affinity for the open-source trend:** Open-source solutions are increasingly favored by users due to broad community support

The role of open-source in the market

▶ Open-source software adoption is expected to grow, but it is anticipated that this growth **would be limited to customers who have the necessary resources and capabilities**

▶ **Open-source software is inadequate in terms of reliability and technical support** compared to other software in the market; therefore, they are not seen as an alternative for critical use cases

▶ Open-source software has an innovative and technological perspective and **offers new usage areas to the market**

05

Forward-looking insights

EY Parthenon

As the geospatial data analytics market grows, expanding applications, technological and regulatory changes and customer loyalty are expected to play significant roles

What players should pay attention to

Expansion of application areas	Adaptation to technological developments	High customer loyalty	Compliance with regulatory changes
In the expanding geospatial data analytics software market, the increasing range of applications is driving product diversification. Players need to carefully choose which areas to prioritize as they broaden their offerings	Rapidly evolving technologies such as artificial intelligence, big data, cloud-based solutions and digital twins are shaping customers' product and solution preferences. Players who excel at adapting to these innovations would succeed	Companies aiming to attract new customers in the geospatial data analytics software market need to provide reliable support and develop easily integrable, user-friendly products to overcome customer loyalty and resistance to change	Increase in regulations directly or indirectly affecting the geospatial data analytics software market in recent years has made it essential for players to be adaptable and respond quickly to regulatory changes to meet customer needs

Players need to re-evaluate their strategies in the growing and developing market within the framework of six key questions

As a company, how can you ensure success in the developing geospatial data analytics software market?

1	How should we define our value proposition across different customer segments?
2	What is the ideal product and solution mix that would fulfill the needs of our customers?
3	What technological innovations should we focus on to strengthen our solution portfolio and what is the optimum investment amount?
4	What pricing strategies should we adopt to retain our existing customers and acquire new ones?
5	Which sales channels should we manage for a fast and efficient go-to-market?
6	What are the potential financial gains and investment expectations for the strategic growth options?

06

Appendix
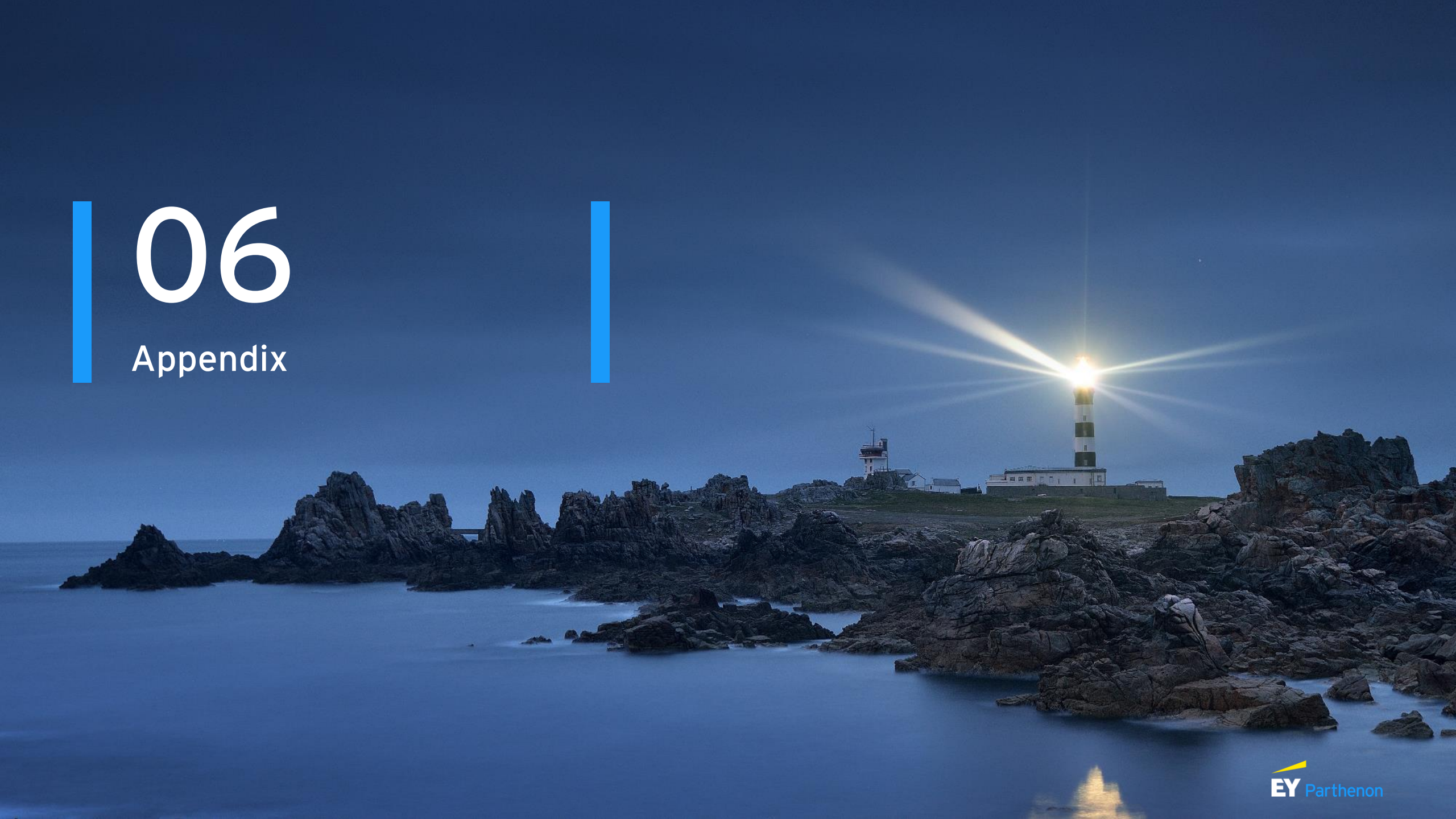
Explanations for abbreviations and terms used in the report

Terms and abbreviations

BIM	Building information modeling
IT	Information technology
CAD	Computer-aided design
CBS	Geographic information systems
MoEUCC	Republic of Türkiye Ministry of Environment, Urbanization and Climate Change
GNSS	Global navigation satellite systems
GPS	Global positioning system
GDP	Gross domestic product
GDA	Geospatial data analytics
SEGE	Socio-Economic Development Ranking Research
URP	Urban and regional planning
SGK	Social security Institution
TAKBIS	Land registry and cadastral information system
CAGR	Compound annual growth rate

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Macroeconomic indicators used as a basis for market size calculations

Macroeconomic indicators

Macroeconomic indicator forecasts (2019-28F, %)

Indicators / Years	2019 (Actual)	2020 (Actual)	2021 (Actual)	2022 (Actual)	2023 (Actual)	2024 (Forecast)	2028 (Forecast)
USD / TRY (Average)	5.67	7.01	8.91	16.55	24.01	36.80	56.67
USD Inflation (Average, %)	1.8%	1.2%	4.7%	8.0%	4.1%	2.9%	2.1%
TRY Inflation (Year-End, %)	11.8%	14.6%	36.1%	64.3%	64.8%	43.0%	11.8%

EY Parthenon

Türkiye geospatial data analytics software market size approach for local government segment (1/2)

Türkiye geospatial data analytics software market – Local government expenditure market size approach (1/2)

Local government expenditure market size approach

It is detailed on the next page

Total local government expenditure market (TRY)

$=$

Total number of licenses (#)

$\times$

Average license price (TRY)

Total number of municipalities[1] (#)

$\times$

Number of licenses per municipality (#)

After segmentation of municipalities, the number of licenses per municipality is calculated on a segment basis

Number of products per municipality (#)

$\times$

Number of licenses per product (#)

The average license price has been calculated by considering the weighted average of the prices of new, updated and non-renewed or non-updated (still in use) licenses

1. The budgets of the special provincial administrations were evaluated under provincial/district municipalities
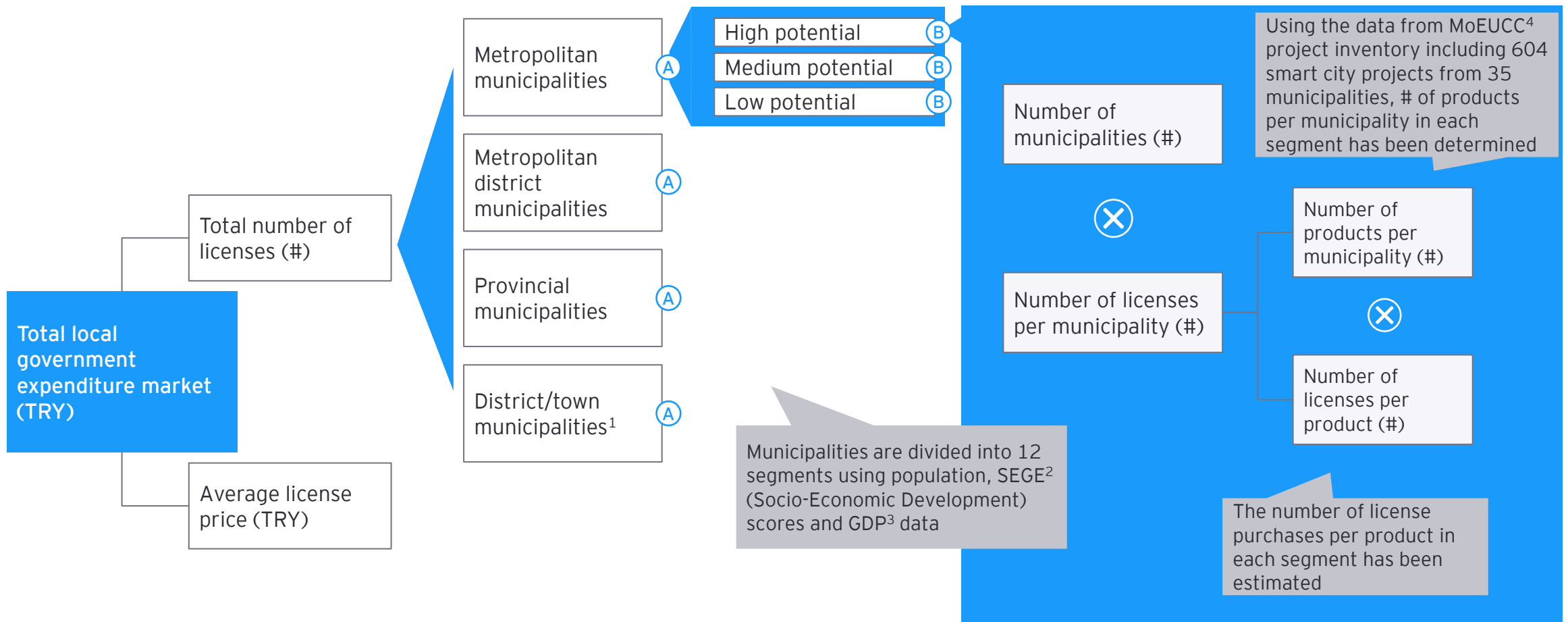Source: EY-Parthenon analysis

EY Parthenon

Türkiye geospatial data analytics software market size approach for local government segment (2/2)

Türkiye geospatial data analytics software market – Local government expenditure market size approach (2/2)

Local government expenditure market size approach

Total local government expenditure market (TRY)

Total number of licenses (#)

Average license price (TRY)

Metropolitan municipalities — A

High potential — B
Medium potential — B
Low potential — B

Metropolitan district municipalities — A

Provincial municipalities — A

District/town municipalities[1] — A

Number of municipalities (#)

Number of licenses per municipality (#)

Number of products per municipality (#)

Number of licenses per product (#)

Using the data from MoEUCC[4] project inventory including 604 smart city projects from 35 municipalities, # of products per municipality in each segment has been determined

Municipalities are divided into 12 segments using population, SEGE[2] (Socio-Economic Development) scores and GDP[3] data

The number of license purchases per product in each segment has been estimated

1. The budgets of the special provincial administrations were evaluated under provincial/district municipalities
2. Socio-Economic Development Ranking Studies (SEGE) are analysis studies that objectively measure and compare the socio-economic development of Level-2 regions (26 sub-divisions), provinces and districts in Türkiye in order to provide input to policy, strategy and public practices. The 2022 District SEGE scores of the Ministry of Industry and Technology of the Republic of Türkiye were used to segment the municipalities
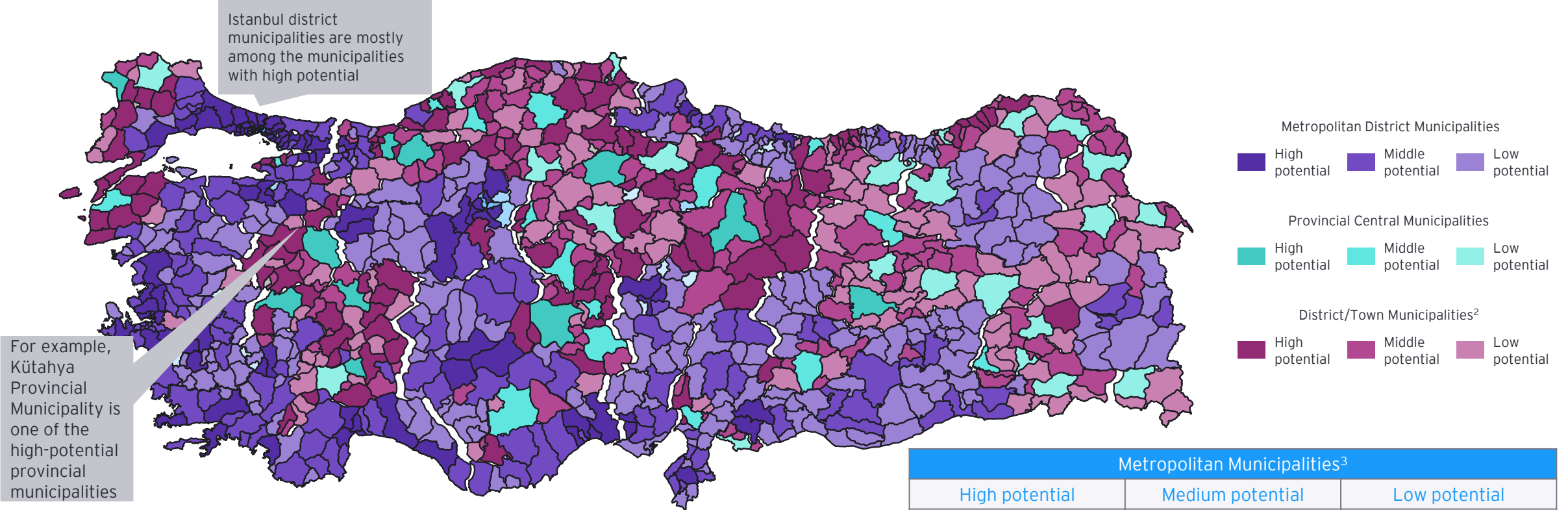3. In order to segment the municipalities, TurkStat's GDP (gross domestic product) data on a provincial basis for 2022 were used
4. Republic of Türkiye Ministry of Environment, Urbanization and Climate Change

Source: Ministry of Industry and Technology of the Republic of Türkiye, TurkStat, EY-Parthenon analysis

EY Parthenon

12 segments which are classified based on local governments' SEGE (Socio-Economic Development) scores and GDP[1] data

Distribution of local government by segments

Istanbul district municipalities are mostly among the municipalities with high potential

For example, Kütahya Provincial Municipality is one of the high-potential provincial municipalities

Metropolitan District Municipalities

- High potential
- Middle potential
- Low potential

Provincial Central Municipalities

- High potential
- Middle potential
- Low potential

District/Town Municipalities[2]

- High potential
- Middle potential
- Low potential

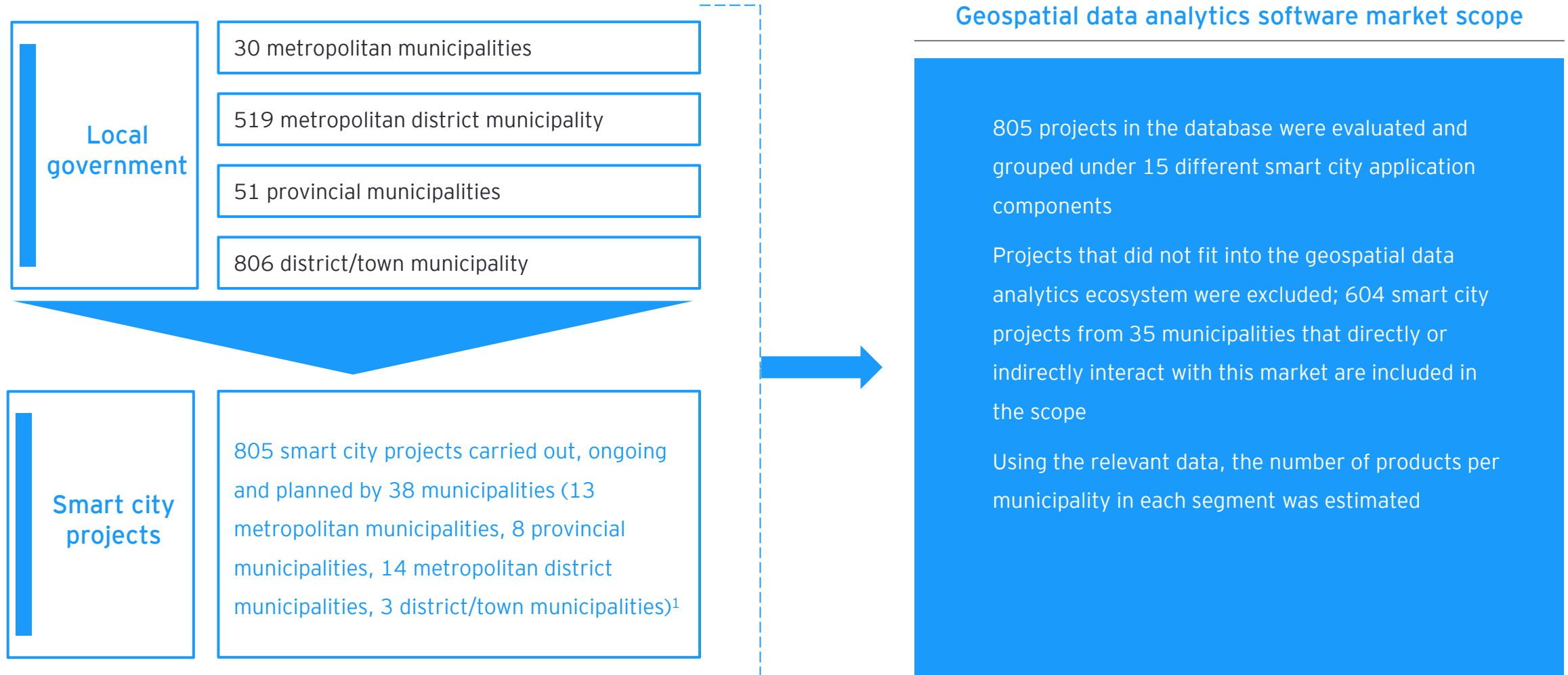| Metropolitan Municipalities[3]		
High potential	Medium potential	Low potential
İstanbul, Ankara, İzmir, Bursa, Antalya, Konya	Kocaeli, Gaziantep, Adana, Mersin, Tekirdağ, Kayseri, Balıkesir, Muğla, Manisa	Denizli, Eskişehir, Samsun, Hatay, Şanlıurfa, Diyarbakır, Aydın, Sakarya, Kahramanmaraş, Trabzon, Van, Erzurum, Malatya Mardin, Ordu

► Using the population, SEGE (Socio-Economic Development) scores and GDP[1] information of all municipalities, the weighted average potential score for each municipality was determined

► Using potential scores, 1,404 municipalities in Türkiye were classified into 12 segments

1. Gross domestic product
2. The budgets of the special provincial administrations were evaluated under provincial/district municipalities
3. The segment information of the metropolitan cities is not available on the district map and is shared separately in the table

Source: Ministry of Industry and Technology of the Republic of Türkiye, TurkStat, EY-Parthenon analysis

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Approach to smart city projects included in the scope of Türkiye geospatial data analytics software market

Smart city projects in the geospatial data analytics software market[1]

Local government

| 30 metropolitan municipalities |
| 519 metropolitan district municipality |
| 51 provincial municipalities |
| 806 district/town municipality |

Smart city projects

805 smart city projects carried out, ongoing and planned by 38 municipalities (13 metropolitan municipalities, 8 provincial municipalities, 14 metropolitan district municipalities, 3 district/town municipalities)[1]

Geospatial data analytics software market scope

805 projects in the database were evaluated and grouped under 15 different smart city application components

Projects that did not fit into the geospatial data analytics ecosystem were excluded; 604 smart city projects from 35 municipalities that directly or indirectly interact with this market are included in the scope

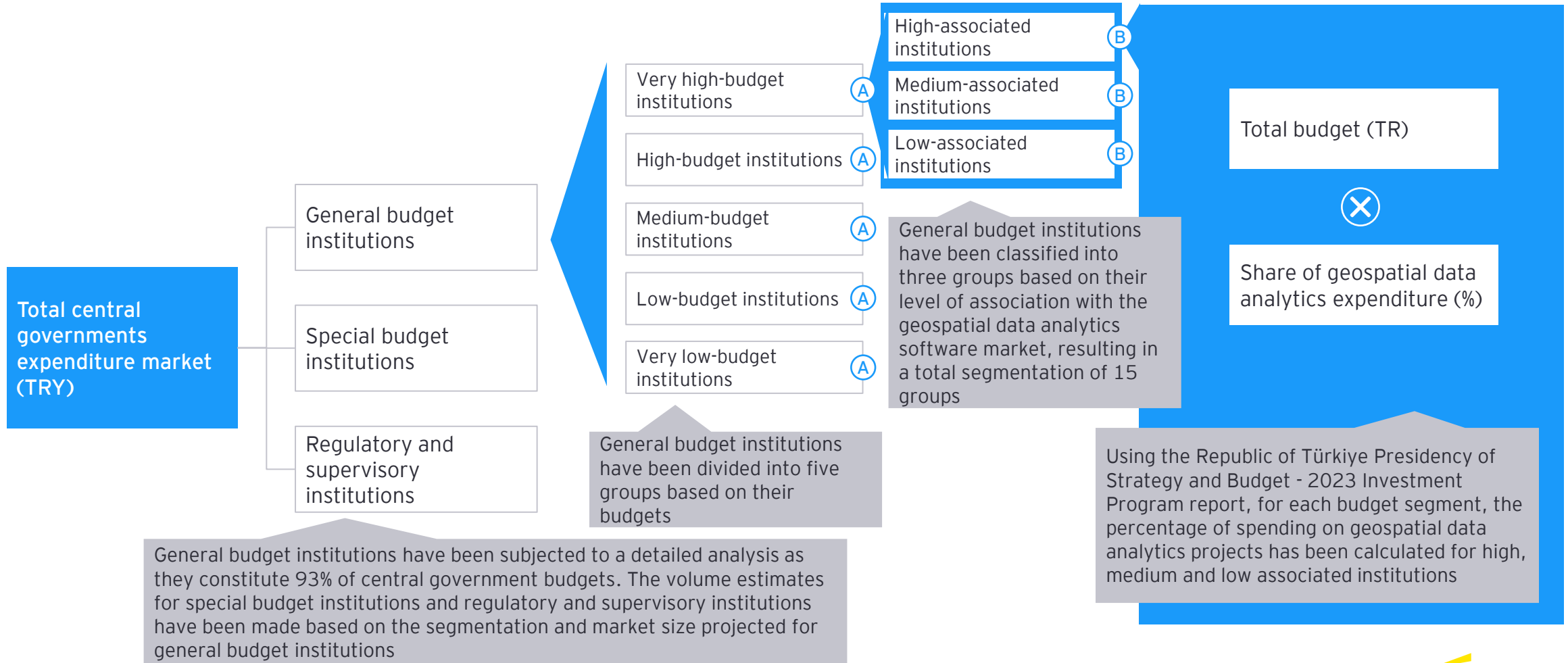Using the relevant data, the number of products per municipality in each segment was estimated

1.These are the projects that are only in the Smart Cities Portal database of the Ministry of Environment and Urbanization
Source: Republic of Türkiye Ministry of Environment, Urbanization and Climate Change, EY-Parthenon analysis

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Türkiye geospatial data analytics software market size approach for the central government segment

Türkiye geospatial data analytics software market – Central government expenditure market size approach

Central government expenditure market size approach

Total central governments expenditure market (TRY)

General budget institutions

Special budget institutions

Regulatory and supervisory institutions

Very high-budget institutions (A)

High-budget institutions (A)

Medium-budget institutions (A)

Low-budget institutions (A)

Very low-budget institutions (A)

High-associated institutions (B)

Medium-associated institutions (B)

Low-associated institutions (B)

General budget institutions have been classified into three groups based on their level of association with the geospatial data analytics software market, resulting in a total segmentation of 15 groups

General budget institutions have been divided into five groups based on their budgets

General budget institutions have been subjected to a detailed analysis as they constitute 93% of central government budgets. The volume estimates for special budget institutions and regulatory and supervisory institutions have been made based on the segmentation and market size projected for general budget institutions

Total budget (TR)

⊗

Share of geospatial data analytics expenditure (%)

Using the Republic of Türkiye Presidency of Strategy and Budget - 2023 Investment Program report, for each budget segment, the percentage of spending on geospatial data analytics projects has been calculated for high, medium and low associated institutions

Source: Presidency of the Republic of Türkiye, Republic of Türkiye Presidency of Strategy and Budget, EY-Parthenon analysis

Page 60

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Segmentation of general budget institutions based on their budget amounts and their level of associaton with the geospatial data analytics software market

Distribution of general budget institutions by segments

General budget institutions	Budget (billion TRY)	Level of association with the market[1]
Ministry of Treasury and Finance	2,489.8	Middle
Disaster and Emergency Management Presidency	490.9	High
Ministry of Education	461.6	Middle
Ministry of Health	311.3	Middle
Ministry of National Defense	213.7	High
Ministry of Labor and Social Security	196.5	Middle
Ministry of Family and Social Services	196.0	Low
Ministry of Transport and Infrastructure	172.1	High
Directorate of Strategy and Budget	166.1	Low
Ministry of Agriculture and Forestry	141.5	High
General Directorate of Security	125.3	Low
Gendarmerie General Command	83.5	Low
Ministry of Justice	83.2	Low
Ministry of Youth and Sports	82.4	Low
Ministry of Industry and Technology	37.1	Middle
Presidency of Religious Affairs	36.2	Low
Ministry of Interior	36.0	High
Ministry of Energy and Natural Resources	32.2	High
Ministry of Environment, Urbanization and Climate Change	24.8	High
Ministry of Culture and Tourism	17.6	High

| General budget institutions	Budget (billion TRY)	Level of association with the market[1]
Ministry of Commerce	17.4	Low
Ministry of Foreign Affairs	17.3	Low
Revenue Administration	13.5	Low
Presidency of Migration Management	10.4	Low
Directorate of the National Intelligence Organization	7.7	Low
Presidential	7.3	Low
Turkish Grand National Assembly	5.6	Low
Coast Guard Command	5.3	Low
Directorate for EU Affairs	3.9	Low
General Directorate of Land Registry and Cadastre	3.1	Middle
Directorate of Communications	1.6	Low
General Directorate of Meteorology	1.6	Middle
Court of Auditors	1.3	Low
Court of Cassation	1.3	Low
Council of State	0.8	Low
National Palaces Administration	0.7	Low
State Archives	0.4	Low
Council of Judges and Prosecutors	0.3	Low
Constitutional Court	0.3	Low
Presidency of Climate Change	0.2	Middle
General Secretariat of the National Security Council	0.1	Low

Decreasing budget

1.Turkish geospatial data analytics software market
Source: Republic of Türkiye Ministry of Treasury and Finance, Republic of Türkiye Presidency of Strategy and Budget, EY-Parthenon analysis

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Budget amounts of the institutions used as a basis for the central government segments and the share of their spending on geospatial data analytics solutions in budget
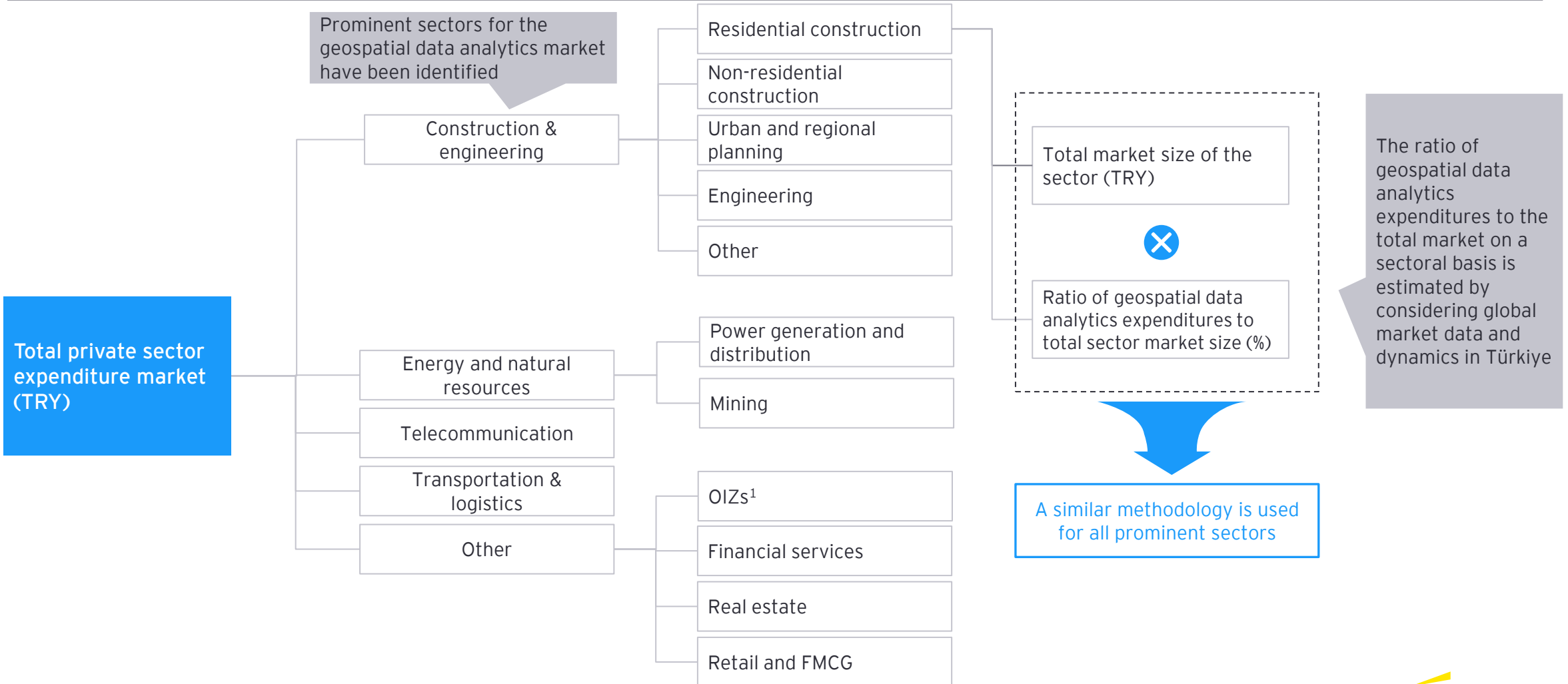
Budgets of general budget institutions and shares of geospatial data analytics expenditures in the budget (2023)

Share of geospatial data analytics expenditure (%)

Source: Republic of Türkiye Ministry of Treasury and Finance, Republic of Türkiye Presidency of Strategy and Budget, EY-Parthenon analysis

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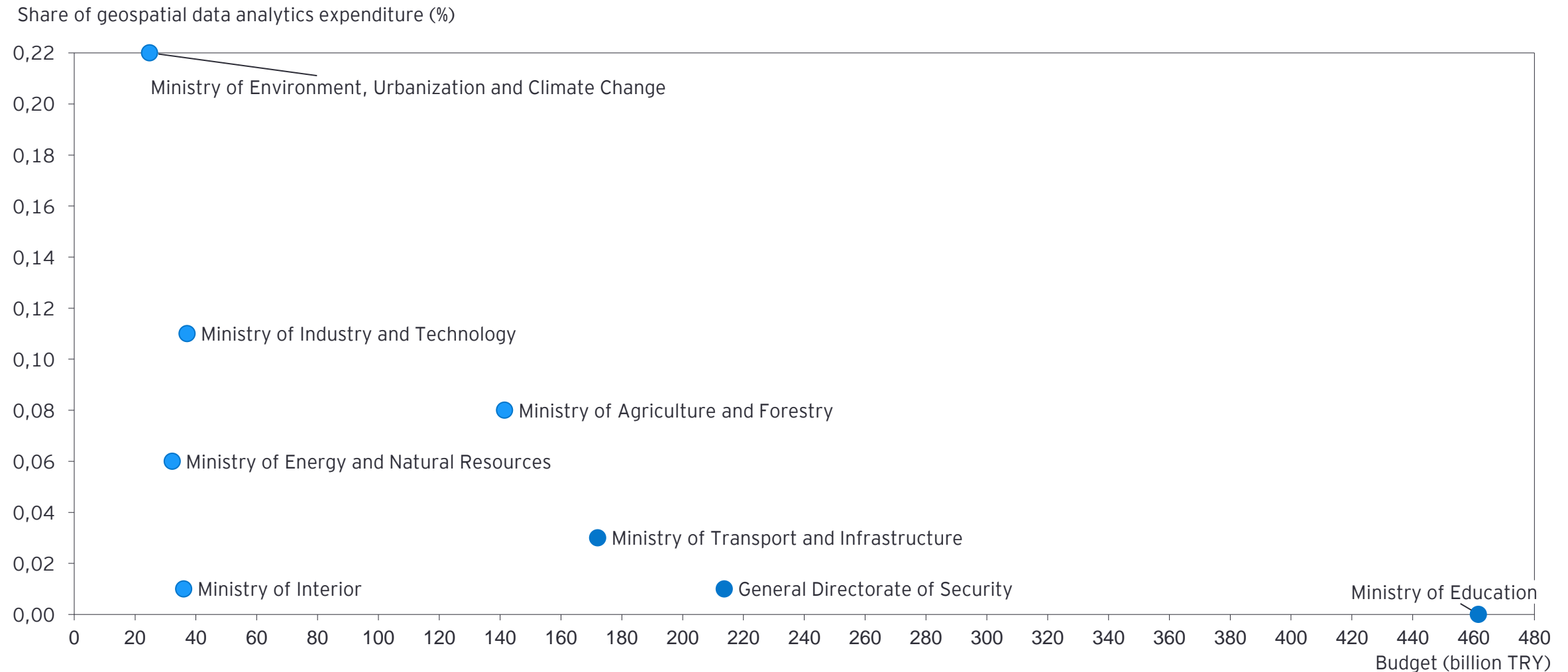
Türkiye geospatial data analytics software market size approach for the private sector segment

Türkiye geospatial data analytics software market – Private sector expenditure market size approach

Private sector expenditure market size approach

Prominent sectors for the geospatial data analytics market have been identified

Total private sector expenditure market (TRY)

Construction & engineering
- Residential construction
- Non-residential construction
- Urban and regional planning
- Engineering
- Other

Energy and natural resources
- Power generation and distribution
- Mining

Telecommunication

Transportation & logistics

Other
- OIZs[1]
- Financial services
- Real estate
- Retail and FMCG

Total market size of the sector (TRY)

✕

Ratio of geospatial data analytics expenditures to total sector market size (%)

The ratio of geospatial data analytics expenditures to the total market on a sectoral basis is estimated by considering global market data and dynamics in Türkiye

A similar methodology is used for all prominent sectors

1.Organizational industrial zone

Source: Presidency of the Republic of Türkiye, Directorate of Strategy and Budget, EY-Parthenon analysis

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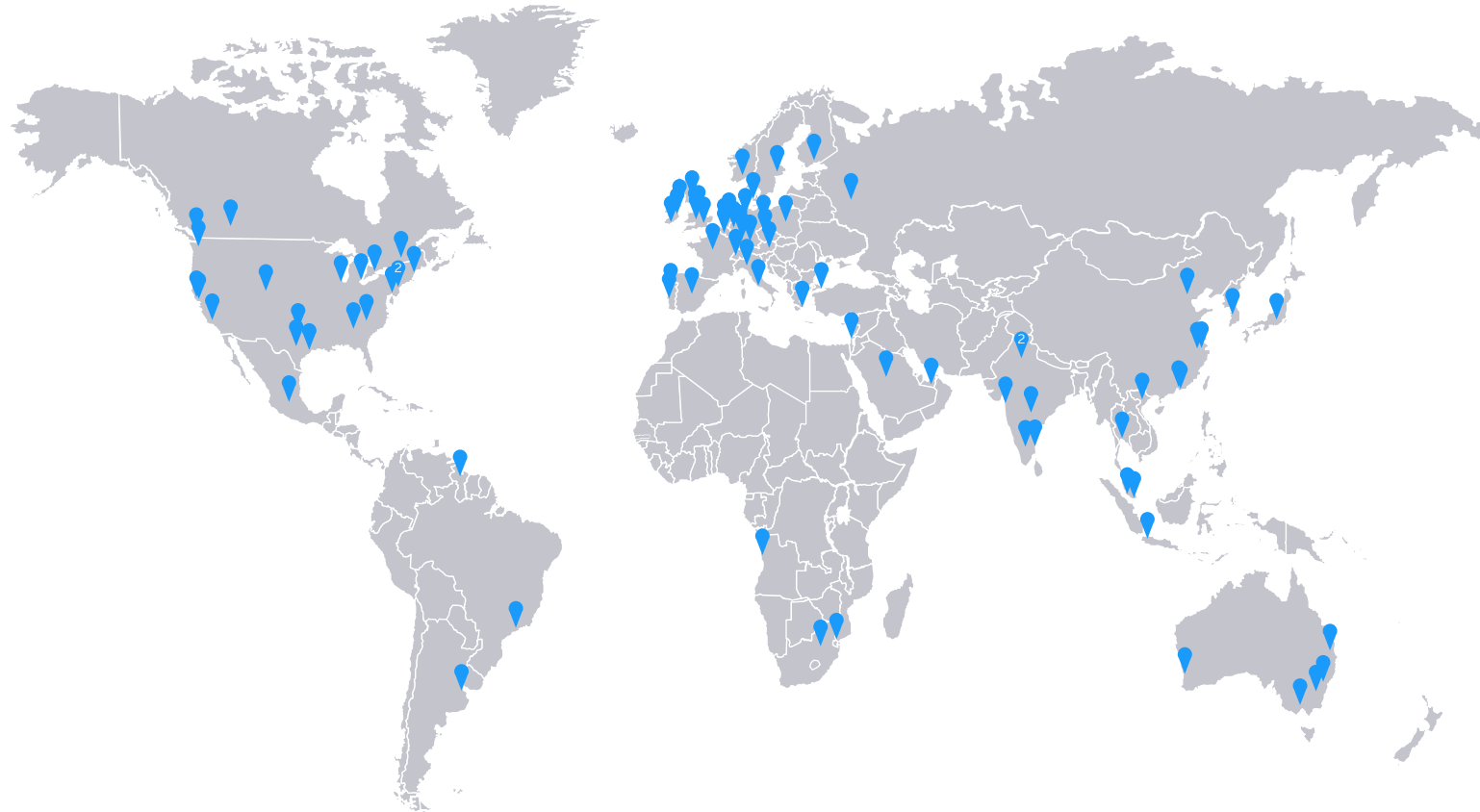
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