

Insights Paper

***System Integration: The Value of
Spatial Data in Industry Sectors***



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State of system integration in Asia

System integration (SI) has seen tremendous growth in recent years, and it shows no sign of letting up. Although the importance of SI may sometimes be underestimated when formulating IT strategies, the fact remains that it is still a critical component for businesses to stay competitive while supporting organizational growth.

System Integration market in Asia Pacific is expected to reach USD 286.56 billion by 2030

Source: Grandview Researchⁱ

SI is the process of creating a complex information system that may include designing or building a customized architecture or application, integrating it with new or existing hardware, packaged and custom software, and communications. Most enterprises rely on an external contractor for program management of most or all phases of system development.ⁱⁱ

The growing demand for digital transformation, increased government initiatives, and the deployment of high-end automated solutions such as AI accelerate the growth in the region. In addition, rapid expansion of IT and telecommunications sector in countries such as Singapore, India, and China are driving the demand for network integration services in the region.

Understanding how spatial data works

Geospatial analytics market size is estimated to worth USD \$107.8 billion by 2026 at a CAGR of 12.6%

Source: Markets and Marketsⁱⁱⁱ

The growing demands for SI has led enterprises to seek intelligent and analytical solutions powered by disruptive technology known as spatial data. Multiple technological trends are making spatial data insights more accessible and valuable. Developing "geo-enablement" for businesses, which augment system integration by combining location data, geographical information, data from sensors and tech assets, and business data from operations and customers, reveals new insights and growth opportunities.^{iv}

Also known as geospatial data/analytics or geographic information, it can numerically represent a physical object in a geographic coordinate system. Spatial data analysis solves complex location-based problems and provides a better understanding of where and what is happening in the world. It goes beyond simple mapping by allowing the study of place characteristics and relationships, which will greatly improve decision-making processes.

There are two primary types of spatial data:^v

Geometric is a two-dimensional flat surface-mapped spatial data type. Geometric data in floor plans is one example. Google Maps is a navigation app that uses geometric data to provide precise directions. In fact, it is one of the most basic applications of spatial data.

Geographic is information that has been mapped around a sphere. The sphere is usually the Earth. Geographic data emphasizes the relationship between latitude and longitude to a specific object or location. A global positioning system (GPS) is a well-known example of geographic data.

These types of data includes key technologies that comprises of specific variables, providing critical data sets for enterprises to use for successful system integration:

Remote Sensing

The process of detecting and monitoring an area's physical characteristics at a distance by measuring its reflected and emitted radiation



Internet Mapping Technologies

Using the internet to view, analyze, or share a map-based visual representation of geospatial data



Spatial Data

Global Positioning Systems (GPS)

A network of satellites that can provide precise coordinate locations to users who have appropriate receiving equipment



Geographic Information Systems (GIS)

A system for creating, managing, analyzing, and mapping all types of data by connecting data to a map and integrating location data with all types of descriptive information



Application of spatial data in key industries

Businesses have been facing unprecedented changes, and technological advancements continue to play a significant role in how businesses adapt. As organizations adopt cutting-edge technology, they must consider how location matters and what information location-based data can provide. Companies can reimagine their system integration strategies by analyzing data in a geospatial context to gain knowledge. Accurate and timely geospatial data can be used to improve operational efficiency for government and public services, marketing and advertising ROI, and even expand services and businesses to underserved areas.

Understanding how spatial data is used in various industries will provide a general understanding of how this technology can revolutionize and change the way companies do business while also meaningfully engaging customers and people in general.



Telecommunications

Telco companies can segment customers using geographical data to effectively customize market services and forecast demand. For service availability, signal propagation and human traffic data are used. As well as creating real-world environments to enable AR and VR experiences on customer-facing applications.



Government

To reduce risk from natural occurrences, government institutions can use spatial data to predict and mitigate disasters, making full use of location awareness and information to effectively use and deploy emergency services. Most importantly, this location information aids in contact tracing via mobile devices for prediction and alert the safety of citizens in their communities.



Banking

Banks can identify locations with lower utilization rates, higher loan default rates, or nearby competitors. Furthermore, it allows banks to consider factors such as capturing a larger potential customer base and safer prime locations. In addition, demographics can be used to determine which areas are most in need of specific banking products and services.



Insurance

Enables underwriters to make accurate risk predictions. Insurance companies can set coverage rates more appropriately with better predictions. Providing historical records that may indicate the likelihood of an accident occurring. Data on demographics provides insight into property accidents. In addition, local geography is used to determine the likelihood of natural disasters.



Supply Chain Management

Enables the tracking of shipments and inventory for increased accuracy while lowering costs, keeping track of delivery routes and product quality and making future deliveries easier to manage and facilitate.



Healthcare

Healthcare organizations can make better use of patient tracking and monitoring by utilizing their location for those in need of medical attention, allow better health interventions by assessing demographics and condition factors. In addition, transportation tracking and supply management ensure on-time delivery of critical vaccines and other medications.

Driving the changes in spatial data growth

Global economic impact of geospatial technology is estimated to reach USD 5.4 trillion to USD 10.2 trillion by 2025

Source: Geospatial World^{ix}

The spatial data industry has been transformed by numerous advances in the information and communications industries. With more sophisticated systems embedded with location technology, spatial data has risen to the forefront of business and application development. Furthermore, data interoperability, real-time information, and connectivity have gained traction, reinforcing connectivity and improving global understanding of people-place interactions. As a result, understanding the drivers that disrupt as well as push the future of geospatial data is critical.

Technological Progress

Automation, Artificial Intelligence, sensor technology, and the Internet of Things are driving disruption in geospatial data management.



Industry Structural Shifts

Spatial data addresses the criticality in consolidating a large number of data sources, understanding mapping requirements, and developing new toolsets to automate map creation.



Government Influence

The growing number of connected devices and data volumes have raised the concerns about data privacy and cybersecurity, potentially leading to calls for legislative or regulatory changes.



New Data Sources and Analytics

Mobile data collection, crowdsourcing, and social media will enable the accurate, near real-time applications that various geospatial data users are increasingly demanding.



Changes in User Needs

Data access is driven by end-user demands and expectations for instant and frictionless access to information on a variety of mobile devices.



Seizing the future of spatial data

Spatial data has evolved from a niche technology to an essential component for many industries. It is now recognized as a mission-critical asset to ensure decisions are made with the most up-to-date information and statistics, and the utilization of system integration to collect and analyze data has becoming the strategic and business priority. The growing needs for data collection and analytics are the primary driver of spatial data's phenomenal growth in the area of system integration that enterprises can capitalize in the coming years.

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