A geographic information system (GIS) integrates hardware, [software](http://www.esri.com/what-is-gis/overview), and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

GIS allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts.

A GIS helps you answer questions and solve problems by looking at [your](http://www.esri.com/what-is-gis/overview) data in a way that is quickly understood and easily shared.

GIS technology can be integrated into any enterprise information system framework.

Geography is the science of our world. Coupled with GIS, geography is helping us to better understand the earth and apply geographic knowledge to a host of human activities. The outcome is the emergence of The Geographic Approach—a new way of thinking and problem solving that integrates geographic information into how we understand and manage our planet. This approach allows us to create geographic knowledge by measuring the earth, organizing this data, and analyzing and modeling various processes and their relationships. The Geographic Approach also allows us to apply this knowledge to the way we design, plan, and change our world.

GIS uses spatio-temporal ([space-time](http://en.wikipedia.org/wiki/Space-time)) location as the key index variable for all other information. Just as a relational database containing text or numbers can relate many different tables using common key index variables, GIS can relate unrelated information by using location as the key index variable. The key is the location and/or extent in space-time.

Any variable that can be located spatially, and increasingly also temporally, can be referenced using a GIS. Locations or extents in Earth space–time may be recorded as dates/times of occurrence, and x, y, and z [coordinates](http://en.wikipedia.org/wiki/Coordinate) representing, [longitude](http://en.wikipedia.org/wiki/Longitude), [latitude](http://en.wikipedia.org/wiki/Latitude), and [elevation](http://en.wikipedia.org/wiki/Elevation_(geography)), respectively. These GIS coordinates may represent other quantified systems of temporo-spatial reference (for example, film frame number, stream gage station, highway mile-marker, surveyor benchmark, building address, street intersection, entrance gate, water depth sounding, [POS](http://en.wikipedia.org/wiki/Point_of_sale) or [CAD](http://en.wikipedia.org/wiki/CAD) drawing origin/units). Units applied to recorded temporal-spatial data can vary widely (even when using exactly the same data, see [map projections](http://en.wikipedia.org/wiki/Map_projection)), but all Earth-based spatial–temporal location and extent references should, ideally, be relatable to one another and ultimately to a "real" physical location or extent in space–time.

Related by accurate spatial information, an incredible variety of real-world and projected past or future data can be analyzed, interpreted and represented to facilitate education and [decision making](http://en.wikipedia.org/wiki/Decision_making). This key characteristic of GIS has begun to open new avenues of scientific inquiry into behaviors and patterns of previously considered unrelated real-world information.

GIS data represents real objects (such as roads, land use, elevation, trees, waterways, etc.) with digital data determining the mix. Real objects can be divided into two abstractions: discrete objects (e.g., a house) and continuous fields (such as rainfall amount, or elevations). Traditionally, there are two broad methods used to store data in a GIS for both kinds of abstractions mapping references: [raster images](http://en.wikipedia.org/wiki/Raster_images) and [vector](http://en.wikipedia.org/wiki/Vector_graphics). Points, lines, and polygons are the stuff of mapped location attribute references.

Many disciplines can benefit from GIS technology. An active GIS market has resulted in lower costs and continual improvements in the hardware and software components of GIS. These developments will, in turn, result in a much wider use of the technology throughout science, government, [business](http://en.wikipedia.org/wiki/Business), and [industry](http://en.wikipedia.org/wiki/Industry), with applications including [real estate](http://en.wikipedia.org/wiki/Real_estate), [public health](http://en.wikipedia.org/wiki/Public_health), [crime mapping](http://en.wikipedia.org/wiki/Crime_mapping), [national defense](http://en.wikipedia.org/wiki/Defense_(military)), [sustainable development](http://en.wikipedia.org/wiki/Sustainable_development), [natural resources](http://en.wikipedia.org/wiki/Natural_resources), [landscape architecture](http://en.wikipedia.org/wiki/Landscape_architecture), [archaeology](http://en.wikipedia.org/wiki/Archaeology), regional and community planning, transportation and logistics. GIS is also diverging into [location-based services](http://en.wikipedia.org/wiki/Location-based_service), which allows GPS-enabled mobile devices to display their location in relation to fixed assets (nearest restaurant, gas station, fire hydrant), mobile assets (friends, children, police car) or to relay their position back to a central server for display or other processing. These services continue to develop with the increased integration of GPS functionality with increasingly powerful mobile electronics (cell phones, PDAs, laptops).