What is Georeferncing?

Georeferencing means that the internal coordinate system of a digital map or aerial photo can be related to a ground system of geographic coordinates. A georeferenced digital map or image has been tied to a known Earth coordinate system, so users can determine where every point on the map or aerial photo is located on the Earth's surface.

The relevant coordinate transforms are typically stored within the image file (GeoPDF and GeoTIFF are examples of georeferenced file formats), though there are many possible mechanisms for implementing georeferencing. Georeferencing in the digital file allows basic map analysis to be done, such as pointing and clicking on the map to determine the coordinates of a point, to calculate distances and areas, and to determine other information.

Depending on the spatial resolution in effect, georeferencing mechanisms can be generally classified into metric georeferencing and indirect georeferencing. Metric georeferencing, also called continuous georeferencing, is coordinate-based. Every location on the earth surface can be specified by a set of values (coordinate) in a coordinate system. Metric georeferencing underpins GIS databases, which contain collections of spatial features referenced by coordinates. Based on existing metrically georeferenced GIS databases, indirect georeferencing methods retrieve the metrically georeferenced locations through attribute data. For example, the attribute could be the name or index associated with a location. Alternatively, it can be some spatial relations such as topological relations or distance relations. A few variations of indirect georeferencing methods exist, among which discrete georeferencing (also termed as geocoding) is very commonly used in human geography and many other fields.