

**Name:** Rob Sharpe  
**Place of work:** Esri UK  
**Position:** Training and education services manager

**Job Description:**

I ensure people understand Geographical Information Systems at every level, from schools to government organisations and commercial businesses.

**How do you use Quantitative Methods in your everyday work?**

My role as training and education services manager is to ensure people understand Geographical Information Systems (GIS), at all levels. For example, we have a schools programme where we're working with teachers on how to use GIS in the classroom and make geography, as well as other lessons such as maths more exciting. With universities we aim to help provide skills for research, higher education and fieldwork. We also provide training for our customers in the use of the software for commercial reasons.



**Can you tell us about Esri UK's involvement in the Walking with the Wounded project?**

Esri UK is a corporate sponsor of 'Walking with the Wounded', a charity set up to work with injured men and women from the British Armed Forces. We have produced all the online, public facing mapping for their expeditions. We've created maps for the Arctic expeditions where the team walked to the North Pole, and for the Everest expedition, and we're currently working on the Antarctic expedition. This is exciting because it is a race between the British, the Australians, the Commonwealth and American military services to get to the South pole - you'll be able to use the map to track the progress of each team and see who gets there first.

Working with the Royal Geographical Society (with IBG) (RGS-IBG) we've been able to access historic materials in the archives in the Foyle Reading Room at the Society. We've digitised a number of the historical paper maps in the collections, and overlaid them on contemporary mapping so that we can put these historic expeditions into context with those conducted by the Walking with the Wounded teams. When people access the map through the website they can see the difference between the routes of explorers like Nansen over one hundred years ago, and the Walking with the Wounded team now.



A collection of the Polar region maps held in the archive at the RGS-IBG.

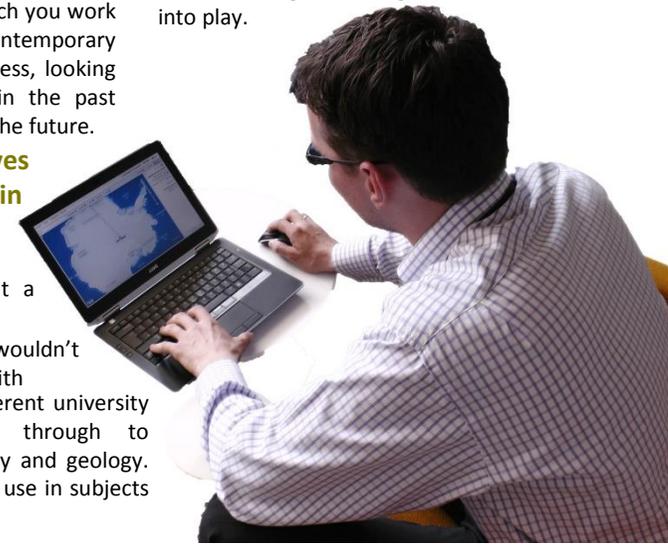
**Why do you need Quantitative Methods skills in your role at Esri UK?**

We work in the defence sector, the government sector, the education sector, and in the commercial sector with insurance companies and the oil and gas industry. All of them need to understand the geography that's around them in order to successfully maintain their organisations. Understanding the historical context of the area in which you work can help you understand the contemporary view of the world as well. In business, looking back and learning from lessons in the past helps you to make decisions about the future.

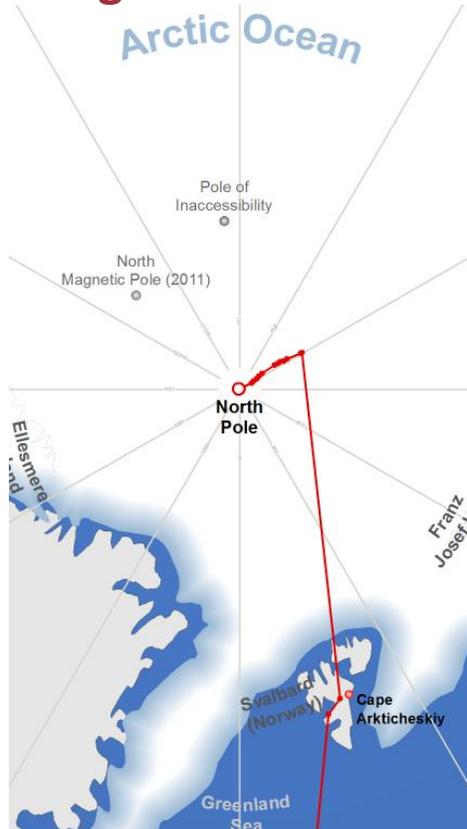
**How can different perspectives on data be used by students in universities?**

From an undergraduate perspective GIS is a great way of looking at a subject in different ways. It's like unlocking information that wouldn't normally be uncovered. We work with lots of universities and lots of different university departments from architecture through to traditional areas such as geography and geology. We're starting to see an increasing use in subjects like chemistry and biology.

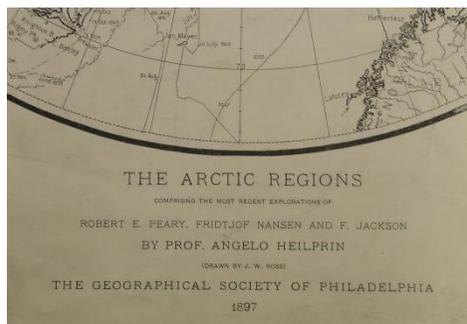
GIS in research can let you look at data in very different ways; it can be hard to analyse lines and lines of data in a spreadsheet, and at best you may be able to create some graphs and charts but GIS allows you to understand the spatial context of that. If there is a geographic context to the data, plot it on the map and start to look for different patterns and understanding and bring a new dimension in into play.



# “GIS creates new insights into data”



Esri UK Arctic platform



‘The Arctic Regions’ Map produced following Nansen’s 1897 expedition

## How does adding historical data to contemporary maps add value?

One of the reasons for digitising the mapping from the RGS-IBG archive is to try and make it more accessible for others. By digitising them and putting them on the internet anybody with internet access can view the maps and get a feel for the expeditions, the type of mapping people used and compare that to the expeditions of today.

A good example of this would be Nansen’s 1897 expedition, where he embedded his ship in the ice hoping that the drift of the sea ice would take him through the North Pole and then out again to Franz Josef Land meaning that technically he’d be the first person to actually visit the North Pole. We took this information from Nansen’s map, digitised the route, and overlaid that on a contemporary map. You could then compare what Nansen did with the route of the Walking with the Wounded team. We also put a panel on the website which had information about the expedition with the aim of bringing it a little bit more to life in the context of what the Walking with the Wounded team are doing. There are historic diary entries which have been sourced from the archives, and you can read and compare these to the accounts that the Walking with the Wounded team are uploading during their present day expeditions.

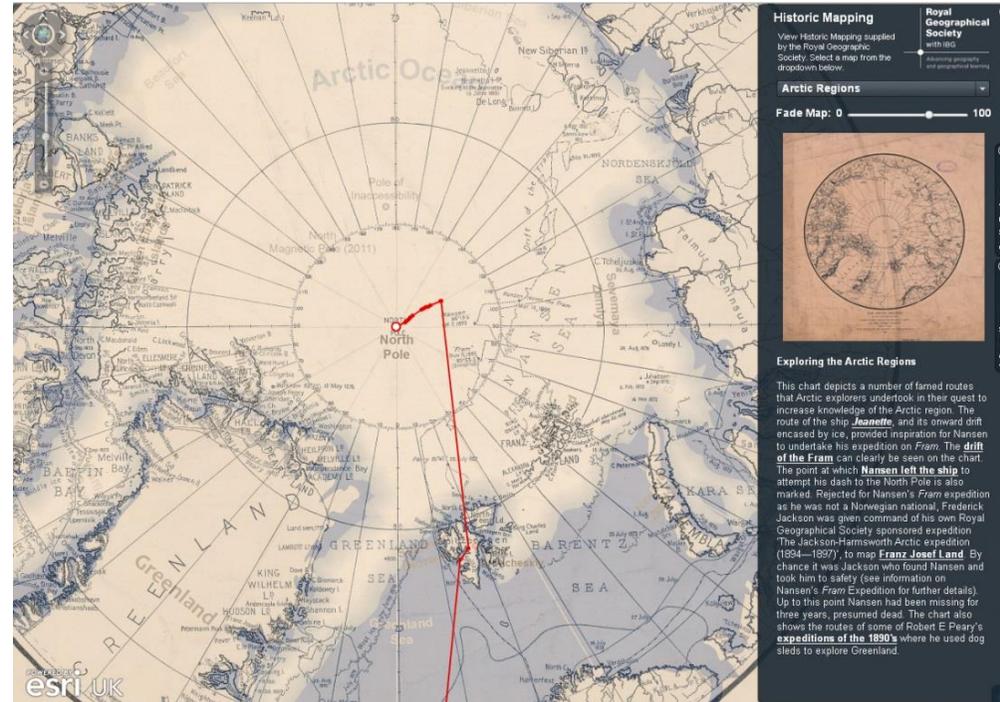
## What advice would you give undergraduates who are interested in the GIS industry?

For those looking to get involved with the GIS sector, either those still at university, or graduates looking to enter the industry now, I think a passion for geography, and an interest in technology are obviously important. Also, an analytical mind: an interest in exploring data, looking for patterns in data and effectively looking at data in a very different way.

Workplace studies

[www.quantile.info](http://www.quantile.info)

Royal Geographical Society with IBG [www.rgs.org](http://www.rgs.org)



Historic Mapping: the Esri UK platform created with the RGS-IBG archive maps

## How do Quantitative Methods and GIS benefit one another?

The power of GIS is being able to bring lots of different data sets together and analyse those data sets in one space. Quite often the only commonality between datasets is location so if you can bring those various data sets in to context through this it allows you to look at data in a different way, uncovering and understanding patterns in data that you may not necessarily see when you’re just looking at straight spreadsheets.

To find out more about where Quantitative Methods can take you, visit the following:

Quantile website:

[www.quantile.info](http://www.quantile.info)

RGS-IBG website:

[www.rgs.org](http://www.rgs.org)

Royal Geographical Society with IBG

[www.rgs.org](http://www.rgs.org)

# GIS Applications: examples of data visualisations, data analysis and data management using Geographical Information Systems.

## Criminal activity:

Crimes and their locations can be mapped, providing interesting visualisations and revealing patterns that you may not have seen by simply looking at a dataset. The emergency services look at data for crime statistics and analysis, mapping the location of incidents which in turn identifies hotspots of crime. The time that crimes were committed can also be mapped, with all of this data coming together to allow informed decisions on where and when there may be a need to make changes to current services or protocols.

## Commercial:

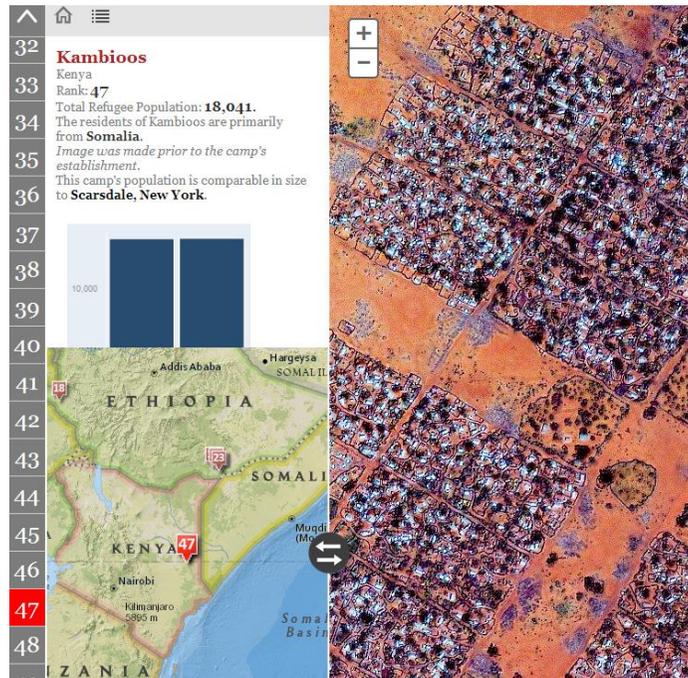
Prime locations are needed by supermarkets. Demographic data that comes from the Office of National Statistics, mapping data from Ordnance Survey, and information from companies like Experian on customer spending patterns and behaviours, are all used. This enables major supermarket chains to better understand their marketplace and therefore attempt to provide a better service to their customers, as well as greater profits leading to a more successful business. Location and customer understanding is key to this, and can be understood through the use of GIS.

## Building information modelling (BIM):

Traditionally GIS has been used to understand the “outside” world but increasingly GIS is being used within buildings to help manage where things are within the building. A particular example would be universities needing to store chemicals safely to meet certain international standards (ISO). Recently a GIS masters student was able to conduct an analysis across the university campus of where all chemicals were stored. Based on a spreadsheet, the chemicals were compliant, because they were stored in different rooms. However some of the chemicals were actually stored in adjacent rooms and against adjoining walls. If there were to be a spill in one room the risk might have been higher than acceptable for that environment. It was the use of GIS that brought this to light. This gives an interesting view of the world within buildings, and the importance of not underestimating the use of spatial data analysis.



Mapping transport routes (Source: Eric Fischer, Cabspotting)



Combining satellite imagery with UN Refugee data (Source: Esri UK, “Fifty most populous refugee camps”)

## Insurance:

Different disparate datasets can be used readily in GIS and analysed by layering on top of one another and then drilling through at a specific point. One example is by the Royal and Sun Alliance who use GIS for insurance purposes. When you use their website to find an insurance quote you’ll enter your postcode and be given a price; “£200 to insure your house”. What’s happened in the background however, is a large number of GIS processes, looking at 450 plus layers of data, drilling all the way through those data sets, analysing the risk of flooding, subsidence, crime and a huge list of different data sets relevant to your postcode. From that information the Royal and Sun Alliance are able to calculate the risk to them to insure your property and then charge you what they feel is appropriate for that.

## Conservation:

A recent student research trip to Peru used software to map the movements of monkeys across a particular area. Once back in the UK they were able to analyse the extent of the animals’ movements and feeding patterns in relation to other environmental/societal issues and datasets available for that location.

## Social media:

The importance of combing GIS and social media is increasing. Social media posts, twitter feeds and pictures posted to flickr, sent through a smart phone with GPS capabilities, have their origin coordinates with them. This data capture is particularly significant when large numbers of people are posting about a particular topic or event. For example, during the Arab Spring news agencies were following certain key words and hash tags to see where the news story was developing, and they could also try to predict what was going to happen next. Following the earthquake in Haiti, in 2010, social media was used as a form of communication, alerting rescue operations to trapped or injured individuals, and highlighting where specific aid was required. The mapping of social media can raise ethical and personal privacy issues, as with all technology it could be used for a number of purposes.