

1. Which changes or trends over the last five years do have had the biggest impact on the use of location data (e.g. market conditions, consumer behaviour, technological advancements you think)

There has been an increase in use of open source tools and data across the board, with a number of major companies adopting open source technologies. Over the last 5 years there has been a significant uptake of home deliveries, for which address data are a key element.

2. Which changes or trends do you anticipate having the biggest impact on the use of location data in the next five years?

Address data will still be key moving forward with the increase in home deliveries. Data access is also vital in terms of access to the internet in terms of both fixed line broadband and mobile broadband signal. Significant chunks of the population still do not have reliable access to broadband internet (some by limitations of the technology, some by choice) and this is an increasing issue for service access.

The other aspect coming into play in the future is the issue of informed consent regarding use of data, with regards GDPR. Individuals data is key to many developments with geospatial data, with an individual's location (at any point of time) as well as their home address being considered personally identifiable data.

The amount of data is growing really fast. In the past years, having a standardised metadata capturing tried to address some of the issues in regards to handling large volumes of the data. Going forward, there will be more needs to handle data versioning and change logs. Having access to historic data, can help with trends and pace of change.

Data capture and creation	Data transformation, processing, systems	Data analysis, visualisation	Application of data
<p>This is focused primarily with the hardware, software and work that goes into capturing and creating geospatial data. Production of equipment that collects/ captures data also sits here.</p>	<p>This is focused on the infrastructure required to host and maintain the data, as well as the data models in place. Provisions of services like cloud computing and data storage also sits here.</p>	<p>This focuses on the analysis and visualisation that is done to geospatial data to acquire and communicate insight from it.</p>	<p>This focuses in on how the information gathered can be applied to real world problems. This usually involves consequential work done by professionals, who have access to the final datasets, or may be used for specific use cases, like route planning by logistical companies</p>
<p><b>Example activities:</b> Physical &amp; remote collection, production of surveying equipment/ Scanners, 3D mapping</p>	<p><b>Example activities:</b> Data management &amp; hosting, Data linking/ fusion, Data architecture &amp; transformation.</p>	<p><b>Example activities:</b> Data analysis tools, data visualisation for maps/ dashboards, machine learning algorithms,</p>	<p><b>Example activities:</b> Journey/ navigation planning, service delivery, environmental management, asset management.</p>

3. Do you have any comment on this characterisation of the ecosystem (figure above), and is there anything you would add, remove or change?

The figure is a reasonable representation of the geospatial data environment. However I think there should be a greater focus on secondary data discovery and curation. For example, primary data collection is covered in Data capture and creation, but secondary data, which forms the bulk of data used in the geospatial industry only gets mentioned in passing in Data transformation, processing and systems.

Additionally education is not mentioned at all in this overview. To ensure that the best benefit can be gained from this data, education needs to underpin all stages. This includes things like the geospatial apprenticeship being spearheaded by the RGS-IGB, as well as existing short course and university level training. However it also includes education for users of data - so non experts, who do not have a training in this field. They need to be aware of their geospatial data and what it can be used for.

4. How integral is location data to your or your organisation's activities?

Select one from the following list

**Core to what we do** / Part of what we do / Not part of what we do

5. Which section(s) of the data value chain does your organisation operate in?

For each section of the value chain select "Core to what we do / Part of what we do / Not part of what we do"

Data capture and creation: Part of what we do

Data transformation, processing and systems Core to what we do

Data analysis and visualisation Core to what we do

Application of data Core to what we do

6-9 All multiple choice selections

10. Please give specific examples of how the UK public sector / the Geospatial Commission can support innovative applications of location data with these technologies?

Opening up of core government spatial datasets are key to this. Probably the data set that could have the biggest impact is address data. Much has been written on what could be achieved with open address data and we think opening this up could be transformative to the industry.

Wider government support for open standards and supporting a wide variety of software would also have a great impact.

11. Please give specific examples of where location data and technology could be transformational in sectors across the economy. What scale of economic, social and/or environmental impact do you anticipate as a result?

The address data issue could leverage billions of pounds of benefits. Supporting and developing ethical frameworks to address some of the issues surrounding GDPR and related issues could also prevent many of the potential issues around using individuals data. This would include the education elements mentioned above.

12. How could you or your organisation contribute to driving better awareness of the value of geospatial?

Having the resources to do more promotion of open tools and demonstrating use of full stack open source GIS tools.

13. Please give specific examples of effective collaboration to deliver geospatial applications, and the type of people or organisations that do, or could, collaborate. (Please include international collaboration if appropriate)

The Open Source Geospatial Foundation (OSGeo) is a not-for-profit organization whose mission is to foster global adoption of open geospatial technology by being an inclusive software foundation devoted to an open philosophy and participatory community driven development. They deliver a range of collaborations globally, including supporting software development and promotion. They run an annual FOSS4G (Free and Open Source Software 4 Geospatial) conference each year spearheading this collaboration.

We (OSGeo:UK) are the UK local chapter and support this work within a UK context. We also run FOSS4G:UK, a regular conference bringing together commercial, not for profit, academic, local and central government organisations to discuss open source geospatial. We also fund a range of open source projects, with £4k of funding awarded this year <https://uk.osgeo.org/pastdonations.html>.