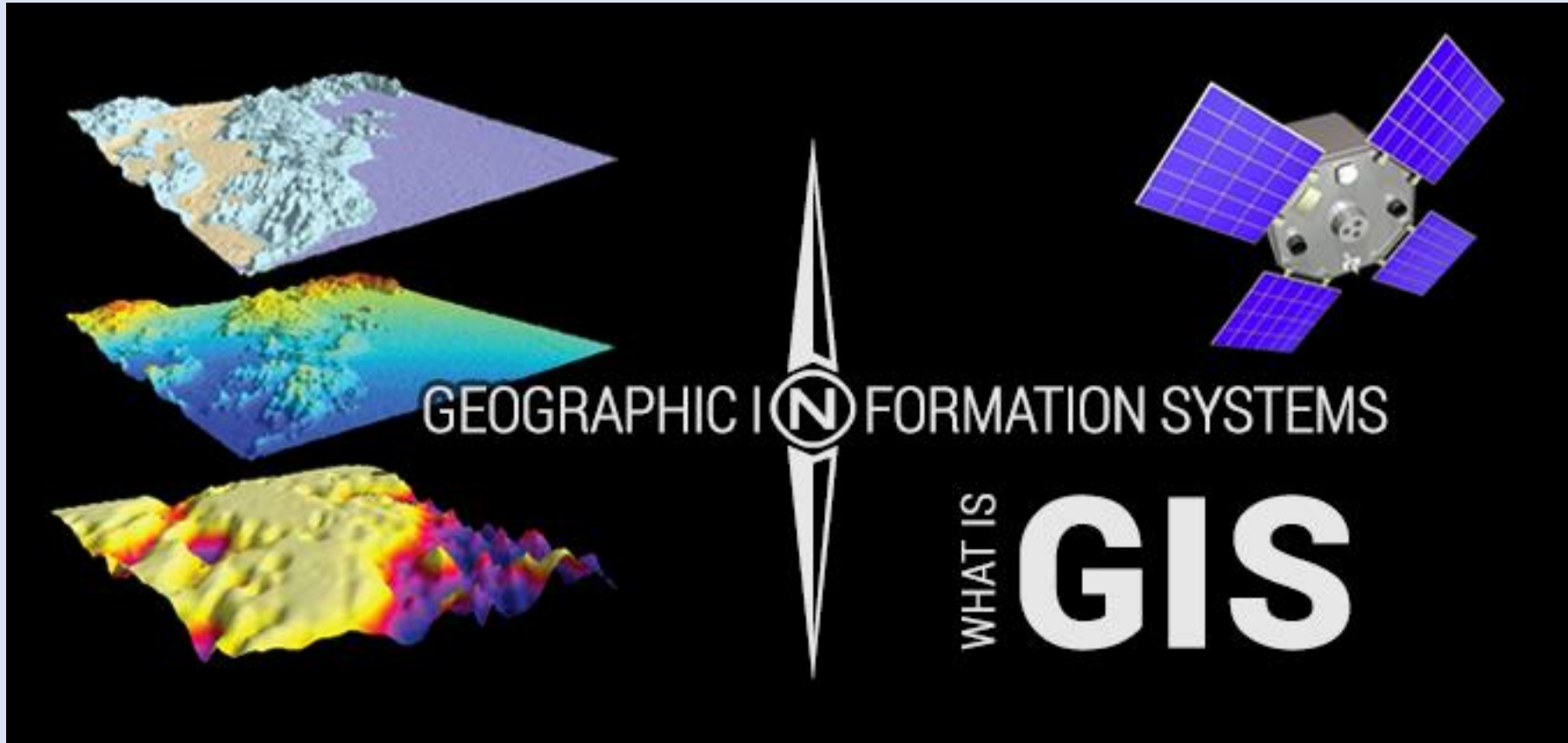


Wales University of Trinity Saint David



Name of Lecturer: JOY BOTU

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Members of our team:

- Nicoleta Ciobanu – *1907756*
- Andreea Rusu – *1906868*
- Daniela Vidrascu – *1817905*
- Lucian Scobioala – *1907758*
- Pavel Alexandru Tirnoveanu – *1907764*
- Natalia Pinzaru - *1906870*

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Background of the NHS database G.I.S

- **GIS** stands for Geographic Information Systems.
- “GIS is the merging of cartography, statistical analysis, and database technology” – “integrates, stores, analyses and displays geographic information for informing decision making ”
- Data management and preparation – maps and health data
- Layers; Admin boundaries, road network, sites, people

GIS in the NHS

Support around:

- Contract management
- Performance monitoring
- Service review/development
- Public Health
- Commissioning
- Estate planning & facilities
- Emergency planning
- Travel & Access analysis

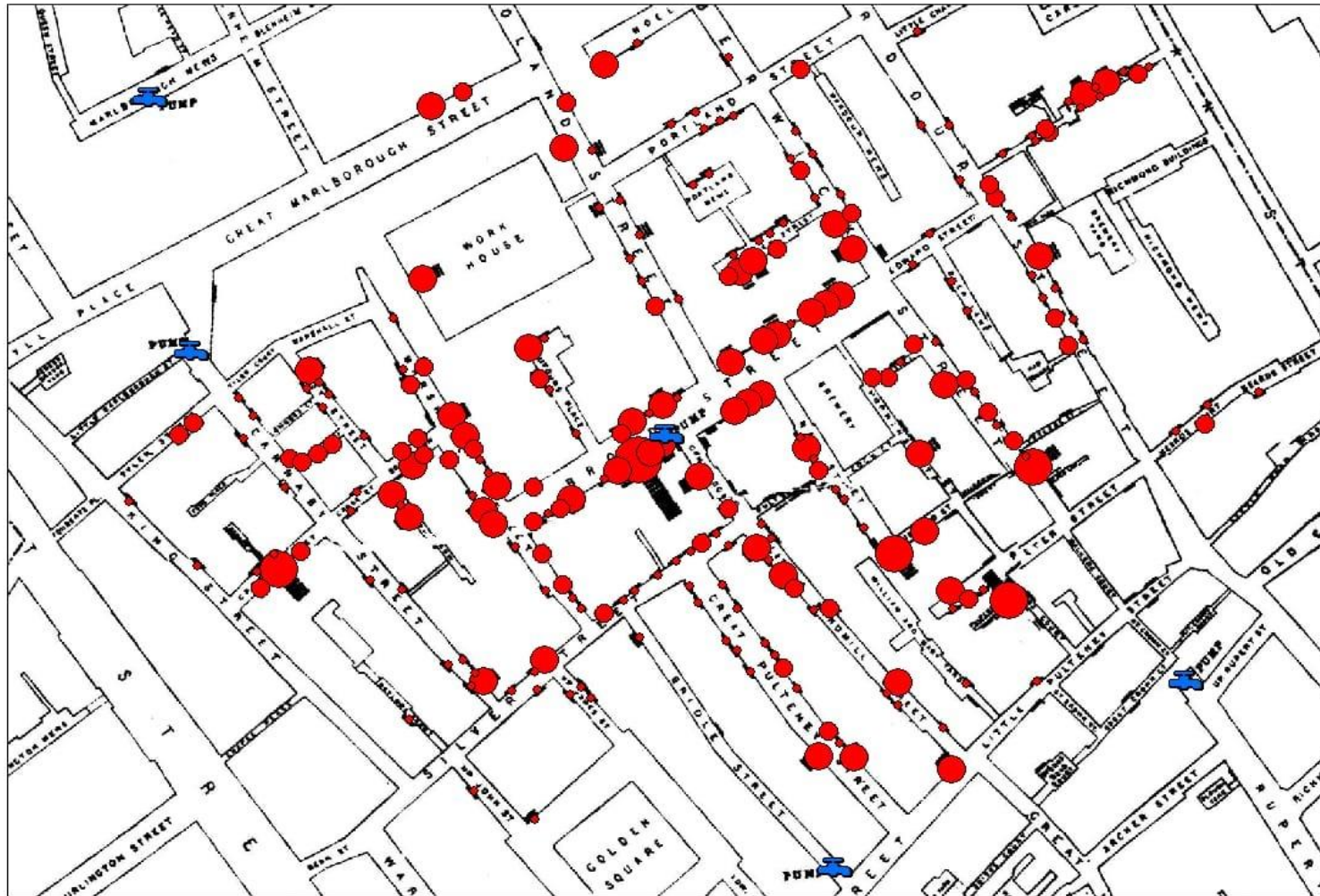
-> Using G.I.S

- Ordnance Survey digital data/maps
- Population statistics
- Patient distribution
- GP and Hospital activity data
- Route Finder

Challenges before introducing Modern Technology G.I.S. in NHS

- Appointment
- Finding the medical record
- Epidemiology map

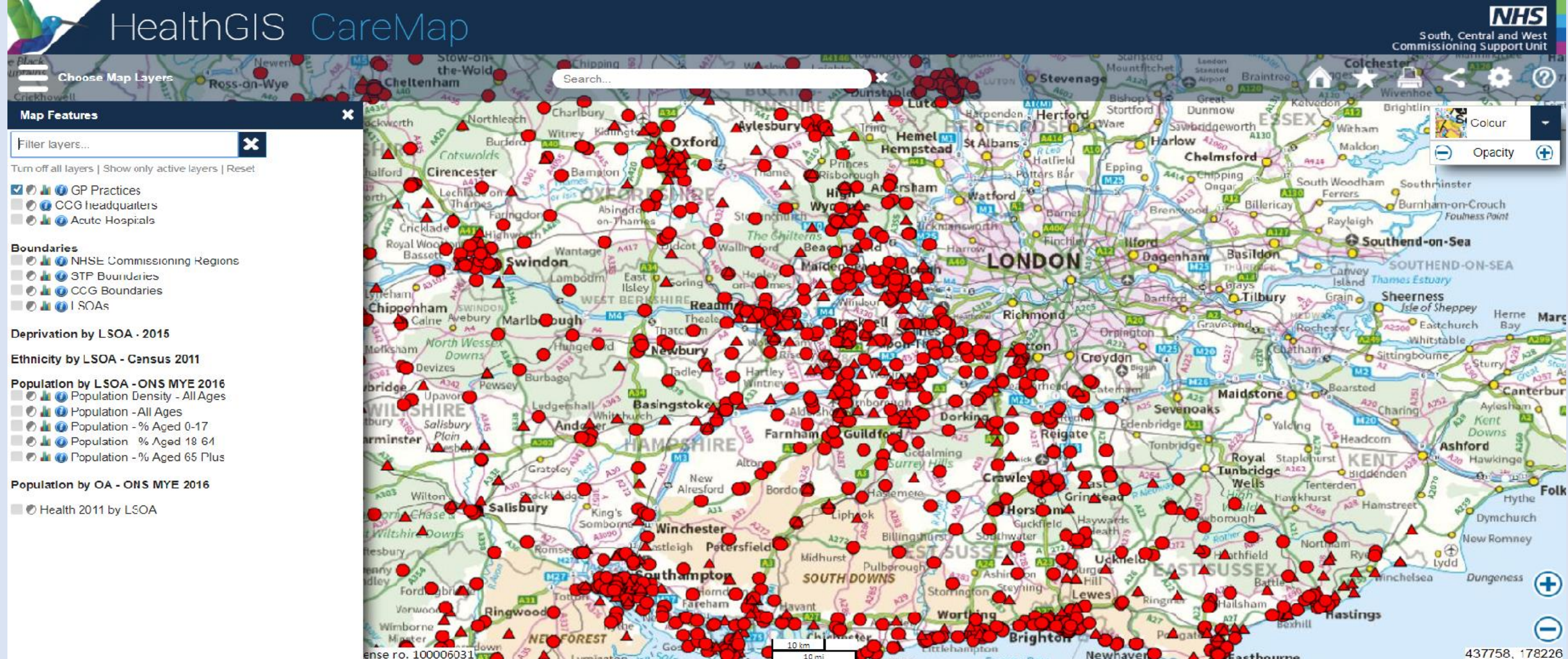
This is one of the first maps used in the medical field. Here is an example of the spread of cholera. It was used to prove the cause of the spread of the cholera epidemic. Red dots are victims and blue points are water sources.



Insights of G.I.S. technology.

- 1.The system can use different types of data including previous paper maps and combine it with others to show relationships between different factors. In our case it can use different kinds of medical information like disease prevalence, availability to medical resources, etc.
- 2.The ability to quickly update and model and create maps based on specific information
- 3.The software used in the NHS is HealthGIS.

(Ian et al, 2011 (2 to 31)

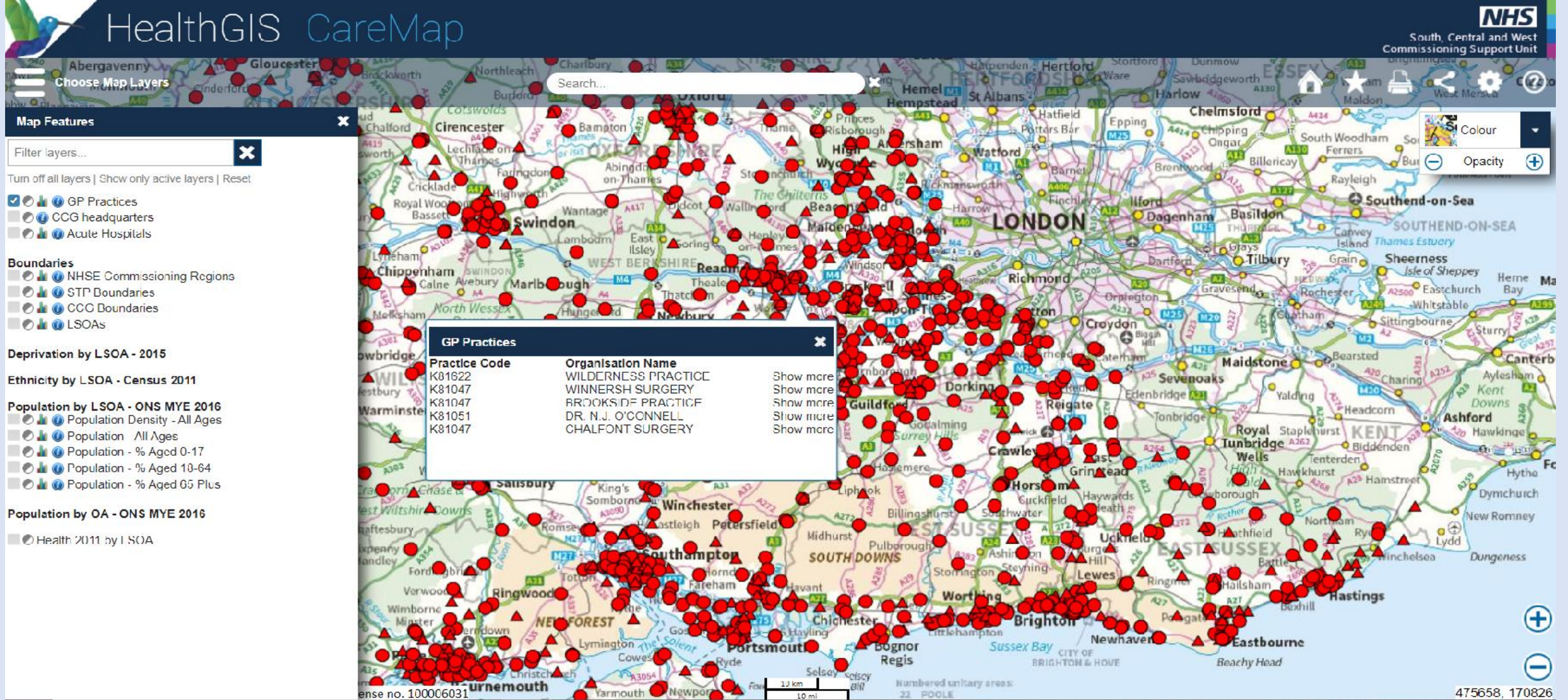


An example of an HealthGIS map. Shows layers, of which GP practices is active. (healthgis.nhs.uk)

Not just maps.

- G.I.S. Software also allows for searching, linking and selecting important and useful information, for instance information about a particular hospital, or GP.
- This makes it far more than just map software, as you can interact with its elements.

(Ian et al, 2011 (2 to 31)



An example of map interactivity
(healthgis.nhs.uk)

Impacts of new modern technology

Advantages

- It has the ability of improving the organizational integration.
- GIS would also allow viewing, questioning, understanding, visualizing and interpreting the data into numbers of ways which will reveal relationships, trends and patterns in the form of globes, maps, charts and reports.
- Geographic Information System is to provide a help in answering questions as well as solve problems .
- GIS technology could also be integrated into framework of any enterprise information system.
- And there would be numbers of employment opportunities.

Disadvantages

- GIS technology might be considered as expensive software.
- It as well requires enormous data inputs amount that are needed to be practical for some other tasks and so the more data that is to put in.
- Since the earth is round and so there would be geographic error that will increase as you get in a larger scale.
- GIS layers might lead to some costly mistakes once the property agents are to interpret the GIS map or the design of the engineer around the utility lines of the GIS.
- There might be failures in initiating or initiating additional effort in order to fully implement the GIS but there might be large benefits to anticipate as well.

21st-century healthcare: how technology is improving the National Health Service

- According to The Telegraph, the NHS is a cherished and vital institution across the UK –the average life expectancy has increased by 10 years since it's introduction but yet is still under an increasing pressure.
- Due to recent news the hole situation could change by introducing a number of tech innovations that should lead to a more personalised , improved experience for patients , thanks to a new partnership with leading communications company BT.

Impacts of new modern technology that are yet to come:

- Personal access to health records
- Improving the bed blocking challenge
- Less repetition for patients

Differences between Traditional and Modern Technology

The way that people use services has changed over the past ten years, often expecting to have the option of accessing services online or by telephone. Over the next two years the NHS made very significant steps towards increasing how its services can be accessed online, whilst remembering that healthcare is about people and that many patients want and need the reassurance of a real person to talk to face to face.



The NHS has led the world for ten years with its health and care website “[NHS Choices](#)” which provides comprehensive and trusted advice on conditions and services. In 2016 there were more than 1.5 million visits per day of NHS Choices; over 550 million through the year. Progress has also been made in enabling patients to access their GP record online: 95% of GPs offer online appointment booking, repeat prescriptions and access to their summary care record. 10.4 million people are now registered for online services with 1.9 million repeat prescriptions ordered online in February 2017, 1.1 million appointments managed online and 1 million views of patient records in the same period.

Differences between Paper maps and Digital maps

Paper maps:

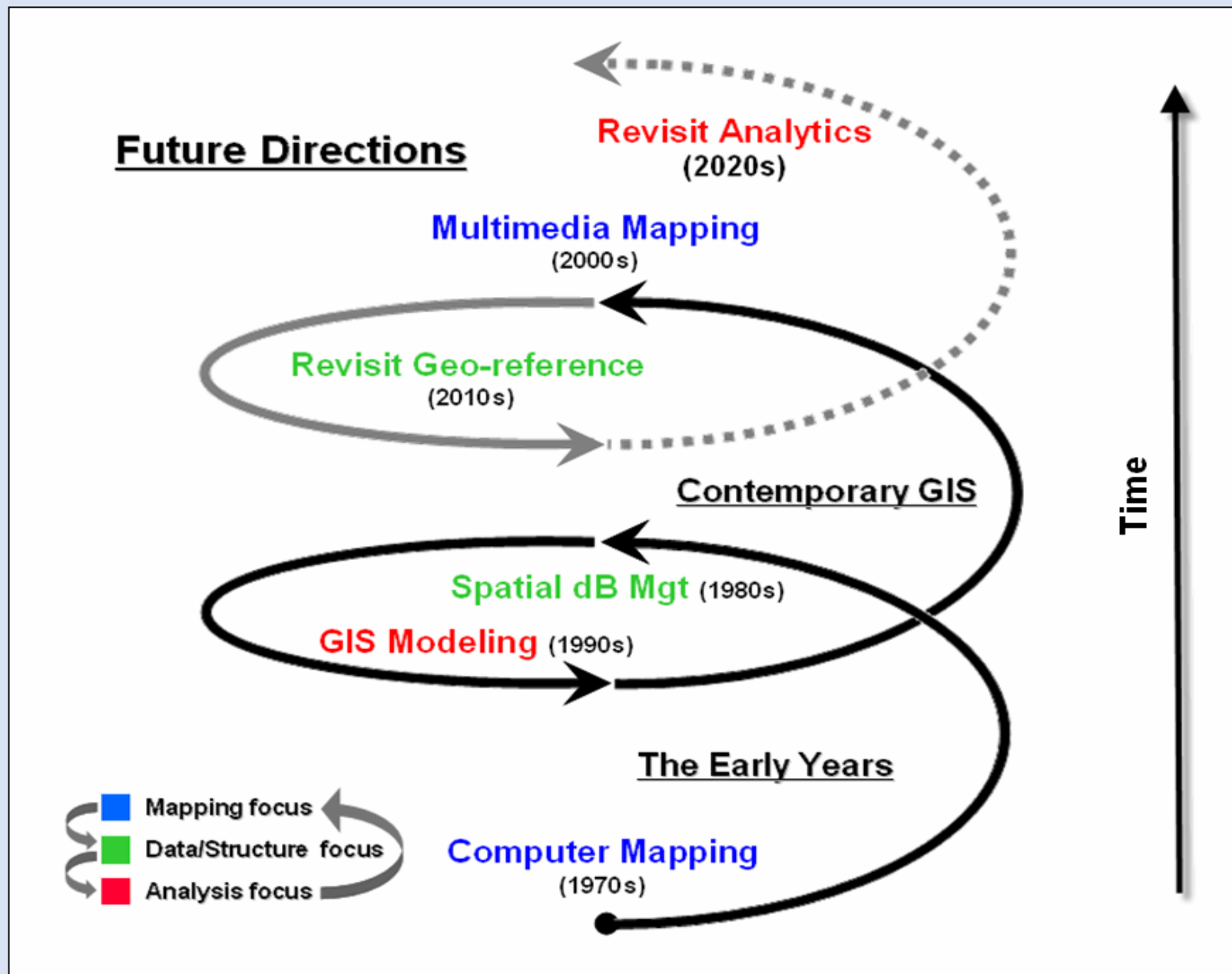
- ***They can be bought physically on physical stores:*** Paper maps are printed on physical papers and can be available for purchase on physical stores on your way home.
- ***Storage requires physical space:*** Storage of paper maps requires that you keep them in a dedicated place in your house or in your suitcase since it can be physically handled.
- ***Paper maps can be accessed offline:*** Paper maps are printed on paper that can be stored anywhere and can therefore be accessed from anywhere. You do not need a computer or internet connection to access it.
- ***Mostly uses symbols to represent features and routes:*** Paper maps mostly rely on symbols to represent features or routes that are physically seen on land. You therefore need to interpret the symbols when reading paper maps.

Digital maps:

- ***They can be downloaded for free:*** Digital maps are not sold in physical shops but instead they are available online and can be downloaded for free.
- ***Storage requires digital space:*** Digital maps do not require physical space for storage. They are stored in digital format and therefore require digital space.
- ***Digital maps must be accessed online:*** Digital maps cannot be accessed anywhere else besides online. One therefore requires an internet connection to access them online.
- ***Shows all features including time and the actual building:*** Digital maps do not depend on symbols to represent features. Instead, they show the actual features and the time.
- ***Can be easily updated:*** Digital maps are mostly real time representations of an area and can therefore be updated easily because the changes will be updated automatically.

- **Cannot be updated easily:** Paper maps are printed on paper and can therefore not be updated on the same paper. This means that you cannot make any changes on the map based on the changes in landforms.
- **It is static:** Paper maps are static representations of features on land at the time when the representations were created. One cannot modify to see the previous version of the area.
- **Paper maps cannot represent all features at the same time:** paper maps usually make a representation of one aspect of the land at a time, for instance, a map could represent the rivers only or the geographical area of a place.
- **It requires skills to interpret because of the symbolic representation of features:** Paper maps do not show objects but use symbols instead. Which means special skills are required to interpret the symbols when reading the map.
- **Good at showing boundaries and for data analysis:** Paper maps are ideal for showing boundaries of an area and for analysis of data.
- **It is dynamic:** Digital maps are dynamic which means one can choose to view the previous versions of the represented area unlike paper maps.
- **Digital maps can represent all features at the same time:** Digital maps can be used to represent all features of a given area at the same time. They allow filtering for specific features but can also show the entire area.
- **May not require special skills since it shows the real life object:** Interpreting digital maps is easier than paper maps since the features are real representations of the real world objects.
- **Good at showing area overlays from various angles:** Digital maps do not only show 2D representations of an area. They can be used to show the 3D angle of the area and also show the area overlays.





An image that shows how computer mapping has evolved over time

Why Modern Technology(GIS) is important for the NHS organization?





1. **Make it easier** for patients to access urgent care online.
2. **Simplify and improve the online appointment** booking process for hospitals.
3. Make patients' medical information **available to the right clinicians wherever they are.**
4. Increase the use of apps to help people manage their own health.
5. **Confidential storage and secure information** about service users or patients which is kept and treated confidentially and respectfully.
6. **Information access.** Internal and external access to information held by the NHSBSA, and to the systems within which it is held, is governed by the security classification of the information.
7. **Transfer and exchange of information.** Information and data can be transferred and exchanged in a variety of ways, both direct and indirect. These include: spoken word, post, fax or e-mail, internet or intranet, magnetic media (including CDs, DVDs, Memory Sticks and Data Cartridges), electronic file transfer, web portals (i.e. NHSBSA web-enabled applications), print, film, fiche, video, DVD images.

Consequences of not using Modern Technology in the organisation - NHS

- Risking Bad Analysis

If the data is full of errors, that means any data analysis you run could be completely and utterly wrong. Delivering bad information is one of the hardest challenges that a doctor faces in their medical practice. Bad analysis it can influence to the therapeutic results and can have a disastrous effect on patient treatment.

- Missing Data

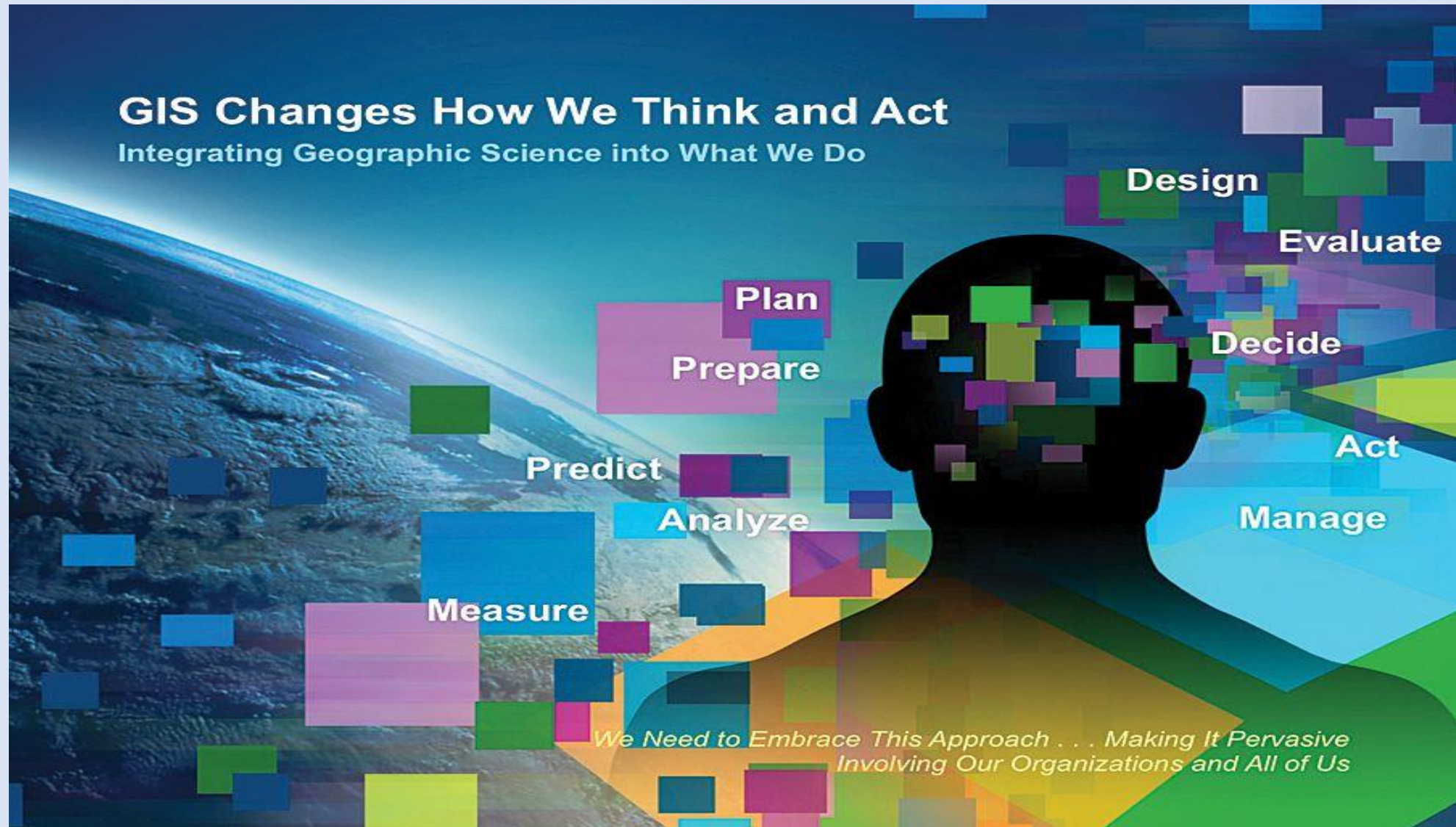
If NHS doesn't have the data they need, then they can't even try to analyze specific situation or to provide any diagnostics to the patients.

- Lack of Visibility

Without high quality data, no one really knows exactly what's going on across the medical system. Poor data means there's no transparency across the organization.

Providing medical services without accurate data is a complete waste of time and leads to loss of patient confidence in the medical system. Many times medical errors are inevitable but in clinical practice often these cases are generally underreported.

'A geographic information system(GIS) lets us visualize, question, analyse, and interpret data to understand relationships, patterns, and trends.'



In conclusion using the GIS system is not bad at all, it made our life much easier. It helped NHS save more life by responding quick and productive to the incidents .

Technology can be GOOD.





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