

Lesson Plan: Geographic Information Systems and 3D Maps

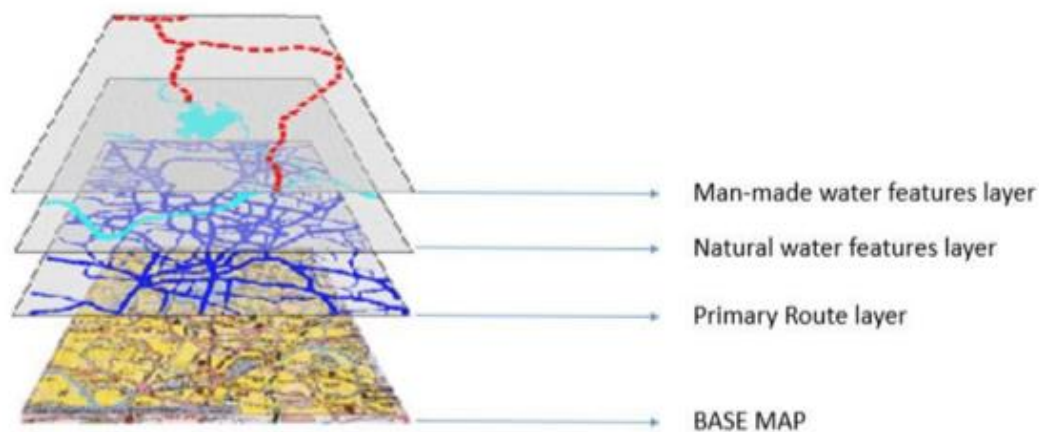
Class: Junior Cycle

Subject: Geography

Element: Geographical Skills

By digitising traditional maps we have transformed how we process information about our world in general. GIS data can be represented as several different layers, with each layer holding information about a particular kind of feature.

In the example below, each layer can be placed on top of the base map giving greater overall detail and allowing more information to be contained on the overall map as each layer is added.







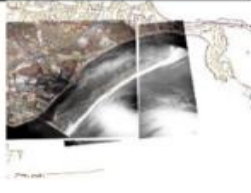

Analysis of GIS data enables us to better manage information about the world around us, allowing us to plan construction activities and monitor our environment with a greater degree of accuracy. Using GIS we can explore the spatial elements of our world and use the data to show regional or national characteristics, such as geology, soil types, forestry and disease patterns. We can also use GIS data in forecasting where the best place is to locate a business or resource. We can use GIS data to make decisions for many types of complicated problems that impact on society and the environment. Here are some of the main ones:


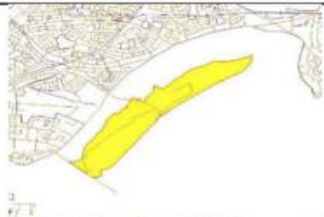
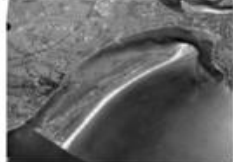









One of the key areas of concern associated with digital mapping is its accuracy. Where existing mapping systems occur, there are significant issues with merging and combining data to provide a uniform “digital” map. An example of this is the INFOMAR programme has been tasked with merging contemporary off-shore maps with traditional on-shore maps. When integrating off-shore to on-shore mapping data INFOMAR and other organisations have to be aware of the standards and scales originally employed in the development of the older information.

Migrating old paper maps to new digital maps

When merging old maps with new GIS, satellite and aerial images, the form of the land is defined as a multi sided shape. These multi sided shapes or polygons, can be referenced to older maps, allowing us to see how the shape of the land has been altered through human interaction and also by natural formation. As we build more accurate maps we can add more features and layers. In the table below we show how the original Ordnance Survey of Ireland, six inch scale maps were merged with newer map datums as they became available, each time improving the map details and displaying more contemporary information. See Bull Island below as an example.

Date of acquisition	Image used	Polygon outline taken
1906 Scanned OSI paper 6" map		
1936 Scanned OSI paper 6" map		
24/06/1952 IGN GSI aerial photography		

12/06/1973 IGN GSI aerial photography		
24/06/1995 CGR OSI aerial photography		
01/06/2000 Landsat 7 satellite imagery		
24/05/2001 CGR OSI aerial photography		
08/09/2004 FMK OSI aerial photography		

Which of the following geographical skills have you examined? Answer the question by ticking the appropriate box.

	Yes	No	Don't know
Reading and interpretation skills such as:			
1. Did you examine maps of different scales?			
2. Did you read and try to understand different types of pictures, diagrams, maps etc.?			
3. Did you read and try to understand different tables of information or data sets?			
Applied skills such as:			
4. Did you try to ask geographical questions of the information such as Who? What? Why? How? When? Where?			
5. Did you investigate the geographical data from different sources to build an answer?			
6. Did you use different types of geographical data such as paper maps, digital maps, satellite imagery?			
7. Did you analyse the geographic information to try to find patterns, relationships or connections between the different types of information?			
8. Did you manage and present the information or data in a clear and concise way?			

Why is Q5 important in your opinion?

What section or sections of your textbook or course did this connect with, in your opinion?

Maps and text created by INFOMAR and Scoilnet:



INFOMAR

Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

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