

18. GIS and Management, the Knowledge Economy, and information

Geographic Information Systems and Science

SECOND EDITION

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Overview

- We all work in 'managed businesses' now
- Why management in GIS is important
- Business drivers, leadership and management
- The Knowledge Economy (KE) and GIS
- Information as currency in KE
- GIS as a business and stimulant



Government, academia and commerce are all businesses

- *'Business'* used for entities which act coherently, meet particular objectives, act to please customers /clients /stakeholders
- *Many similarities* – goals to be achieved, cost-effectiveness, innovation, managing knowledge + creation of Geographic Information
- Some *convergence* between sectors e.g. revenue generation even by some governments
- But some *distinctions* e.g. complex of objectives in governments, profit motive in commerce
- Almost all GIS software now commercial



Some Bear Traps for Managers

- People cause more problems than technology
- Everything changes faster than you would like e.g. user expectations
- Uncertainty is always with us
- Everything interacts with everything else
- Users often have very imprecise ideas of what they want – even if they say otherwise
- Big differences in national culture impact on how things can be done



Why Management is Important in GIS

- How world represented affects results
- GI 'fuzzy' – managing it crucial to outcomes
- Our techniques for describing data quality still poor so judging 'fitness for purpose' difficult
- Some combinations of data produce 'ecological fallacy'
- Lack of understanding of GIS in general management ensures GIS managers are bridge between them and reality



Management errors & consequences

- Kashmir missing off Windows 95 time zone map – 200,000 copies withdrawn
- 'Kurdistan' on Encarta map of Turkey – MS employees arrested
- Missing Wales off map on cover of Eurostat Statistical Compendium – caused furore and reputation damage





Good managers understand why people do things..

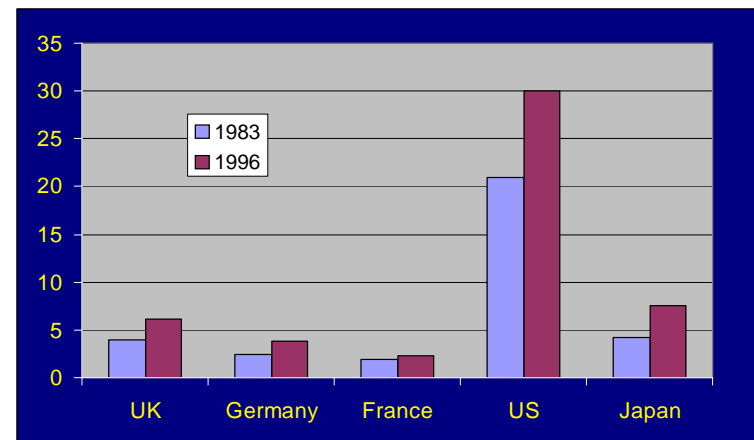
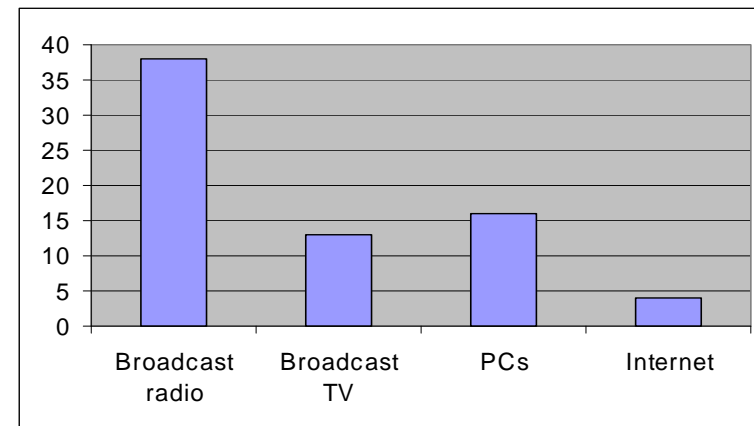
- Business drivers differ in detail by sector e.g.
 - ❑ Create profit and benefit shareholders
 - ❑ Minimise risk
 - ❑ Create new enterprises
 - ❑ Justify action to politicians
 - ❑ Support community
 - ❑ Achieve status, peer respect

As a manager, you need to understand what makes people seek to achieve



The Knowledge Economy and GIS

- 'Knowledge has become perhaps the most important factor determining the standard of living..' World Bank 1998
- Innovation crucial: 'If it works, it's obsolete' Hong Kong entrepreneur
- But what is 'knowledge' c.f. data or information (see the book pages 11-13)?
- How can we put a value on 'knowledge'?
- Top graph: faster innovation. Years to 50m adopters in USA
- Lower graph: licensing money ideas overseas in US\$bn





Information as Currency in the Knowledge Economy: some myths

- More information always leads to better decisions
- Managers need all the information they want
- Managers can model the decision they wish to make (cause and effect not always clear!)
- Managers don't need to understand information system
- Information systems lead to better communication within the organisation

But GIS can help in each case to create evidence for decisions...



Information as Currency in the Knowledge Economy: role of GIS

Information Process

- Provides 'factual' information Facilitation
- Computing derived 'facts' Facilitation
- Selects, compresses, visualizes Filtration
- Searches for patterns, regularity Filtration
- Links data, giving added value Fermentation
- Predicts future outcomes Magic



Information as Currency in the Knowledge Economy: its characteristics

- Value depends on use e.g. consumption or as factor of production
- Initial production costs often high
- For information to be a 'pure public good':
 - ▣ Marginal cost of copying near-zero
 - ▣ Use by one user does not prevent use by others
 - ▣ Individuals can not be excluded from its use



Is GI Special?

- Has many of the normal information characteristics, some of the time
 - Different governments take different views on access to GI – some seeing it as a ‘tradeable commodity’
- Some GI has the characteristics of a natural monopoly
- Its widespread availability brings positive and negative externalities e.g. sharing one ‘framework’ brings many benefits though anti-competitive!
- Difficult to exclude people from using GI? But licensing etc now common, even of government data
- Much GI is long-lasting, changing little



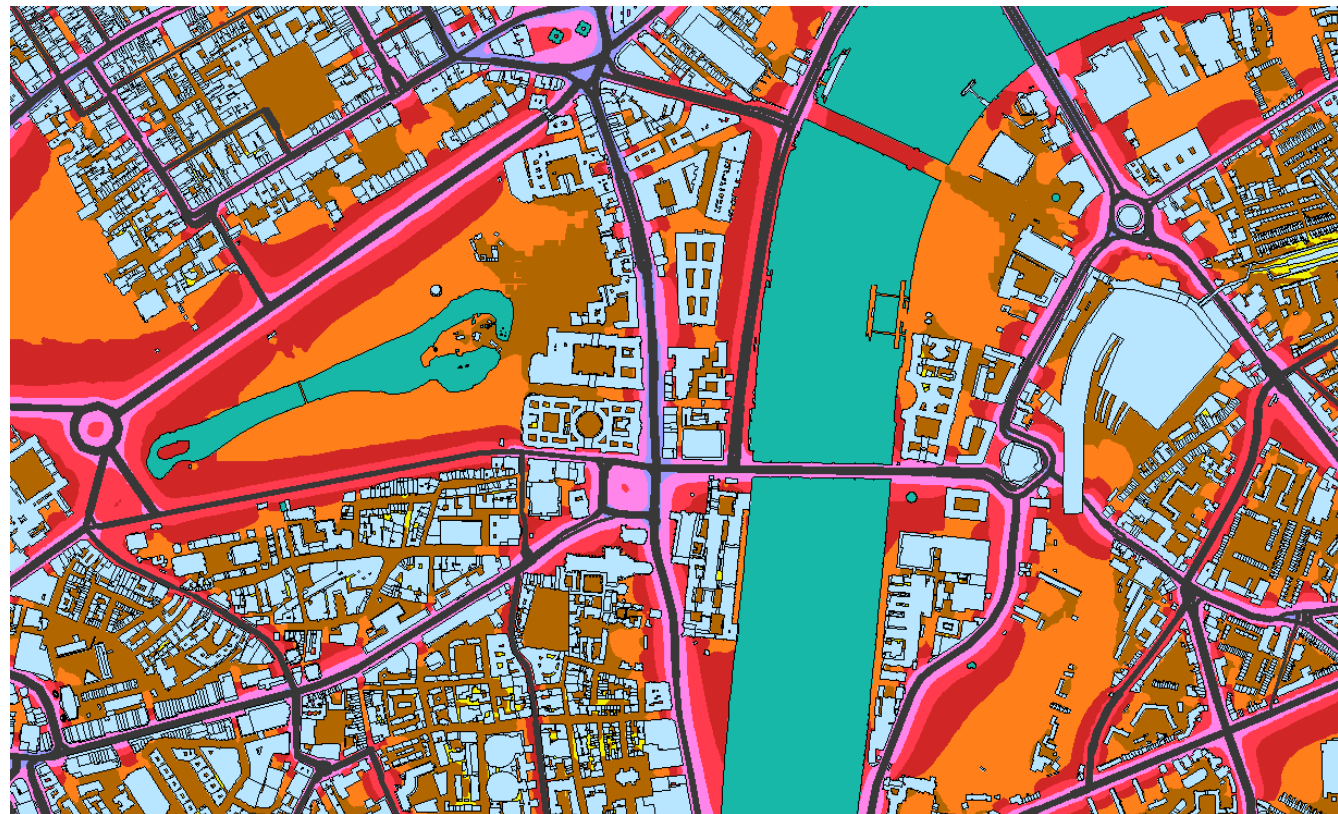
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Geography of a negative externality

Noise pollution in central London

Dark blue = high, brown = medium

Source: DEFRA





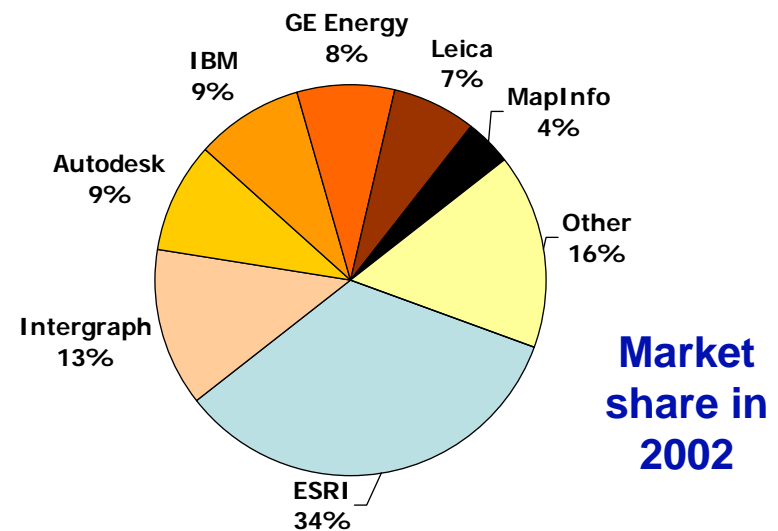
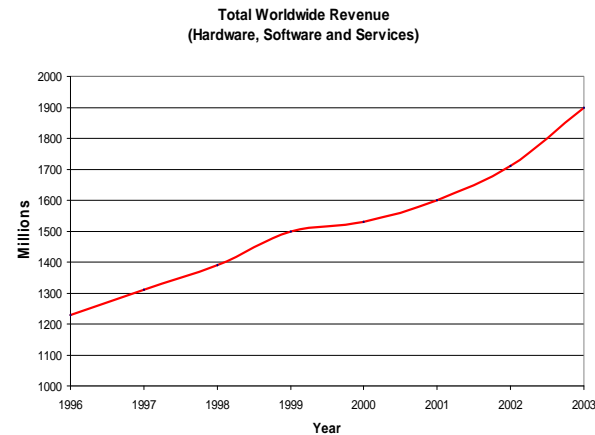
GIS and GI is Big Business

- GIS software revenues \$1bn+, US dominates
- Total GIS-related expenditure c. \$19bn (graph)
- Over 2 million professional users (many more 'incidental' ones), growing 20% per year
- GIS operated in every country

Source of information:

Daratech Inc

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Summary

- Successful projects require technical and management skills – and leadership
- Everyone has to manage some people sometime
- Many standard management approaches are applicable to GIS/GI
- But the nature of the field produces its own complexities in management
- You can't learn how to manage well without practice...