

# A Users' Perspective on Valued Mobile Information Services



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# What to expect today

1. Who we are
2. 'Value' – what it is/how you measure it
3. Results of some studies
4. Design implications
5. Challenges

# Ergonomics & Safety Research Institute

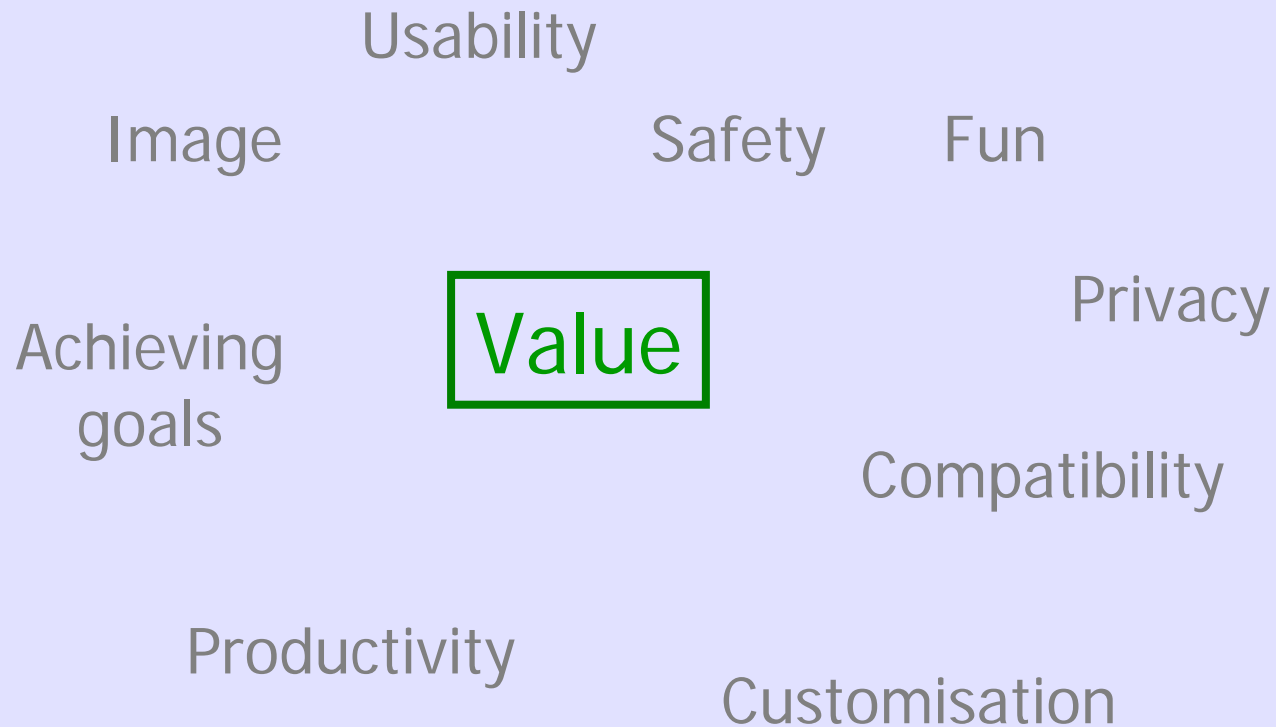


- Self-funding university research centre
- 40 staff, 30 year history
- User-centred design of products, services
- Vehicle safety
- Applied research
- Commercial work

# The users' perspective

- Technology is there to 'serve' the user
  - Do new things
  - Do them better, more easily, with more enjoyment
- Understand the user
  - Who they are
  - What they want to do, and how
  - Capabilities and limitations
  - Motivation for using services
  - Measures of success
- Design for the user
  - User-centred design
  - Take into account technological constraints

# What are the user issues?



# Why is 'value' important?

Proximity & information

Resource management

Navigation and traffic

Security

Mobile communities

Mobile gaming

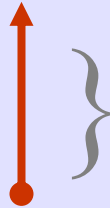
Commerce

- Uncertainty about future services
  - Which will be successful?
  - How do you design them?
  - Who should they be aimed at?

Services won't be successful unless they are valued (and used again and again) by the consumer

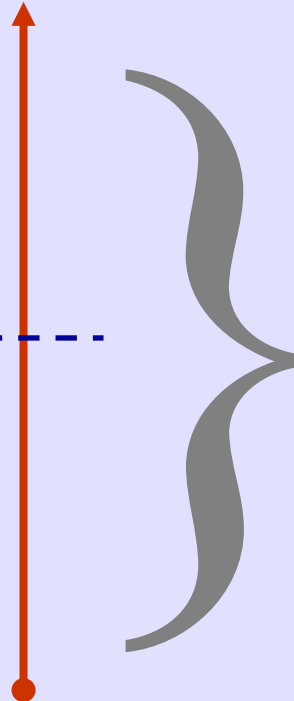
# Measuring the value added

Outcome with the information  
(a good user outcome)



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Acceptable outcome level

Outcome without the information  
(a poor user outcome)



The value added by the  
information

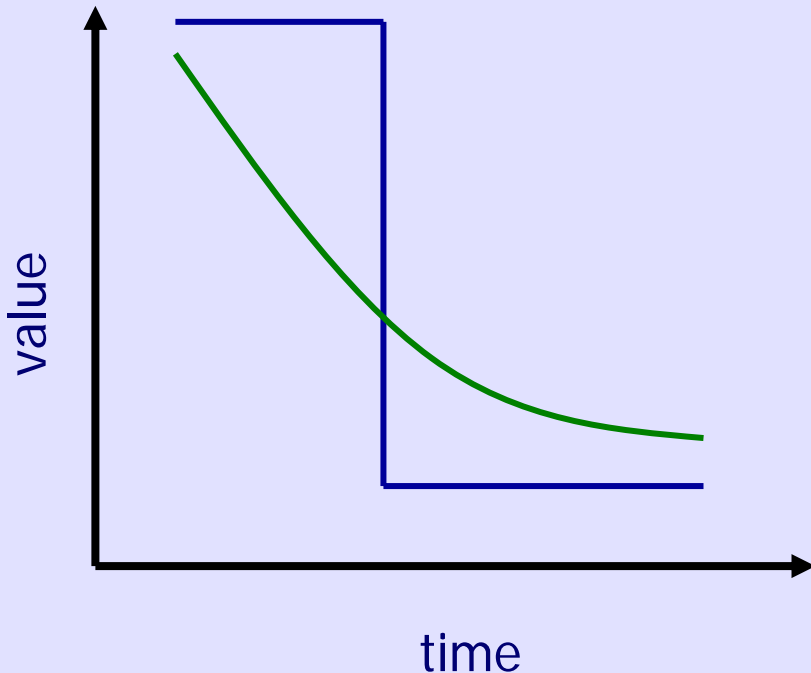
# How do information services provide value



- Relevant to the user
  - Enables better decisions
  - Leads to beneficial actions
- Accessible
  - Can be used
  - Does not require great effort
- Mobile opportunities
  - Time relevant
  - Location relevant
  - Both

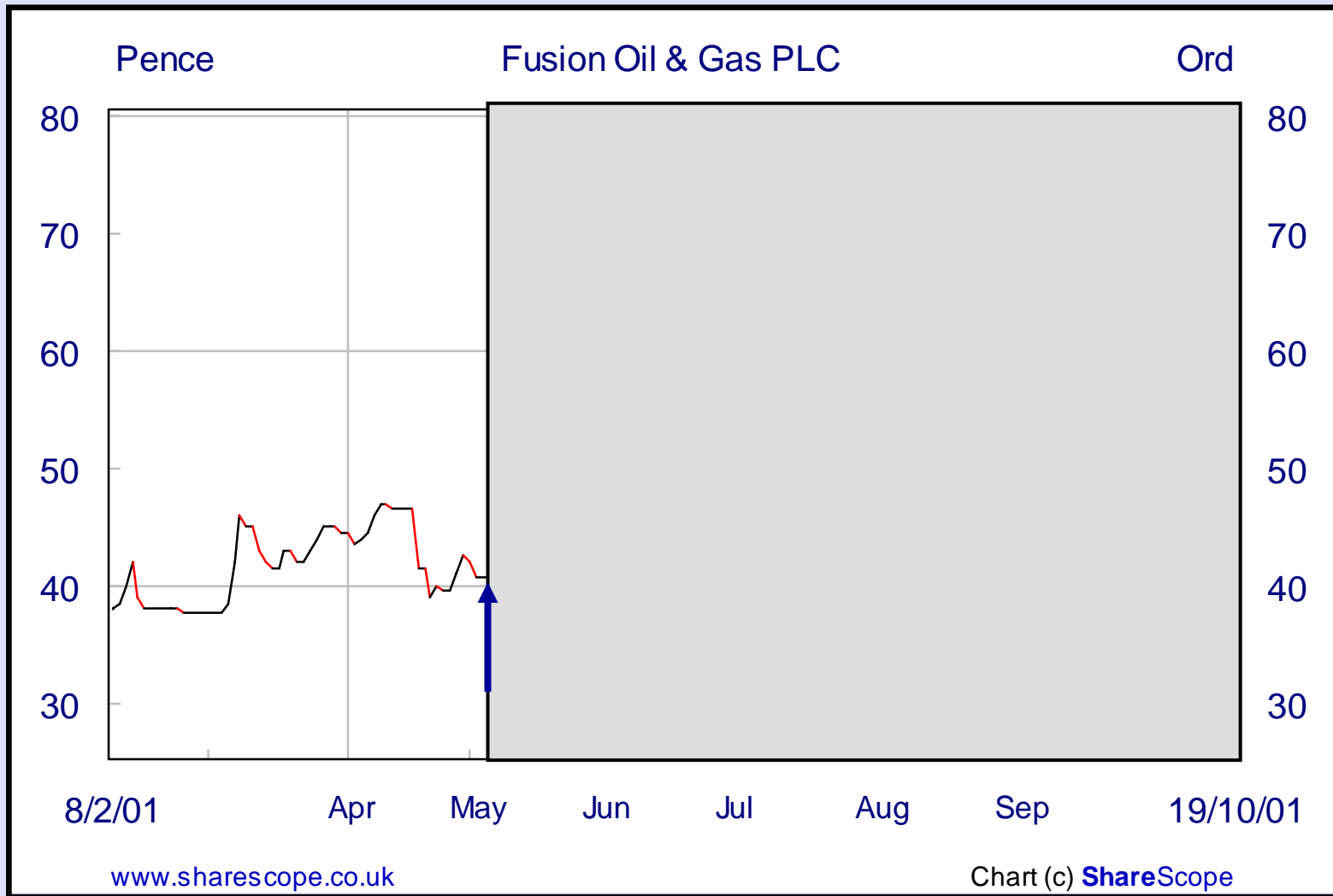


# Time-based value

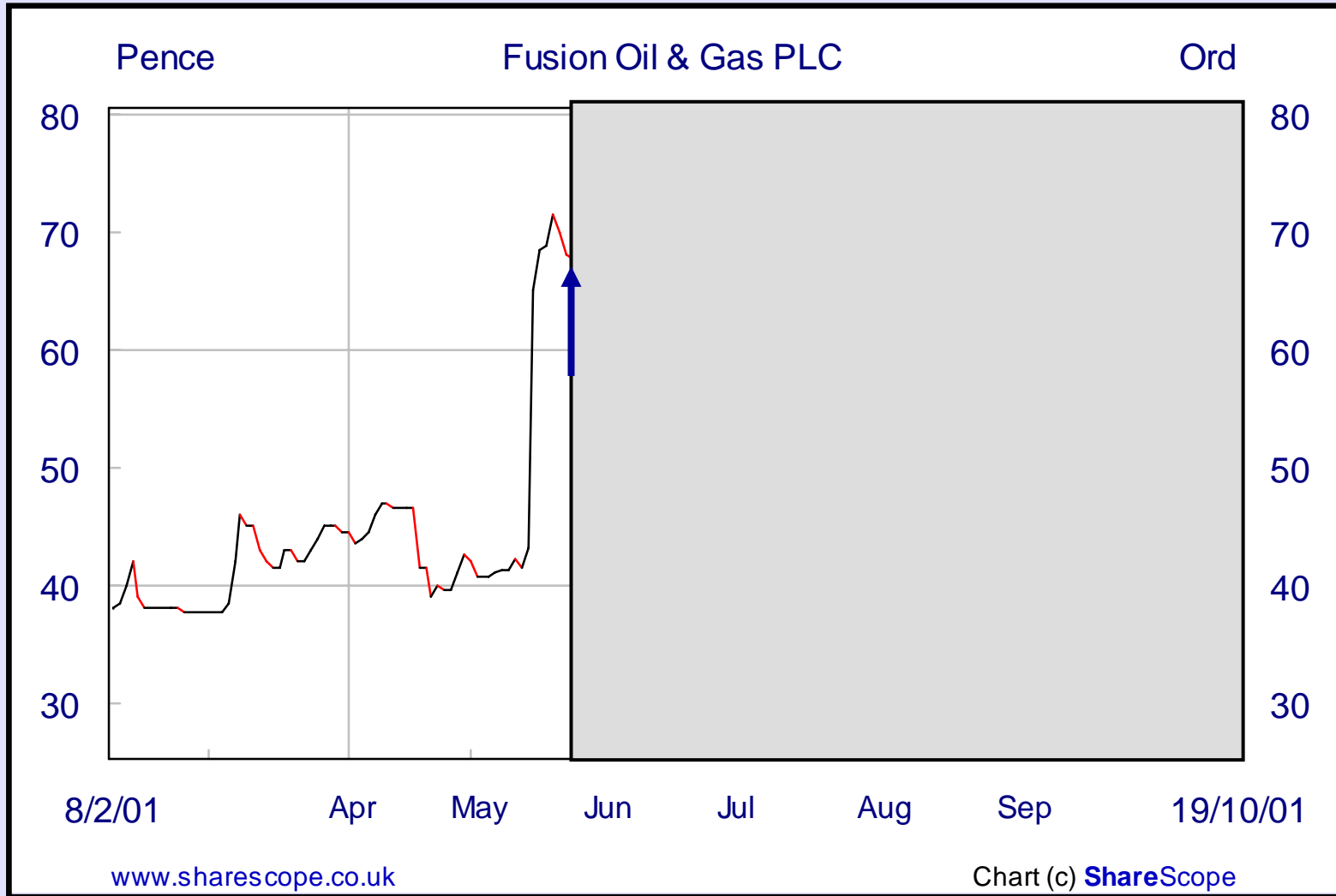


- *When* information is delivered may have a critical impact on the value of a service
- Rate of decay of the information:
  - Useful now
  - Useful in 5 minutes?
  - Useful in 2 days?

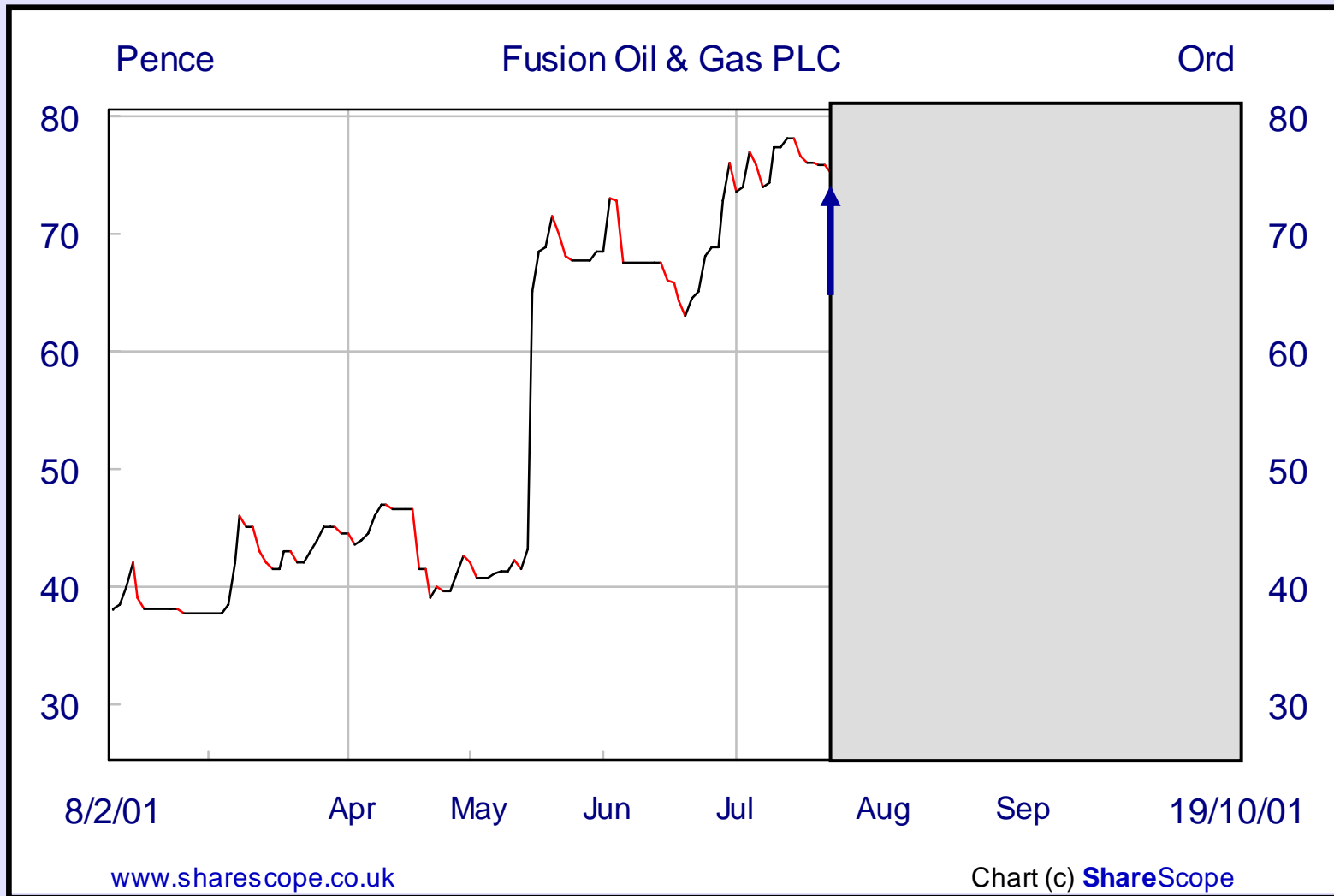
# Time-based value



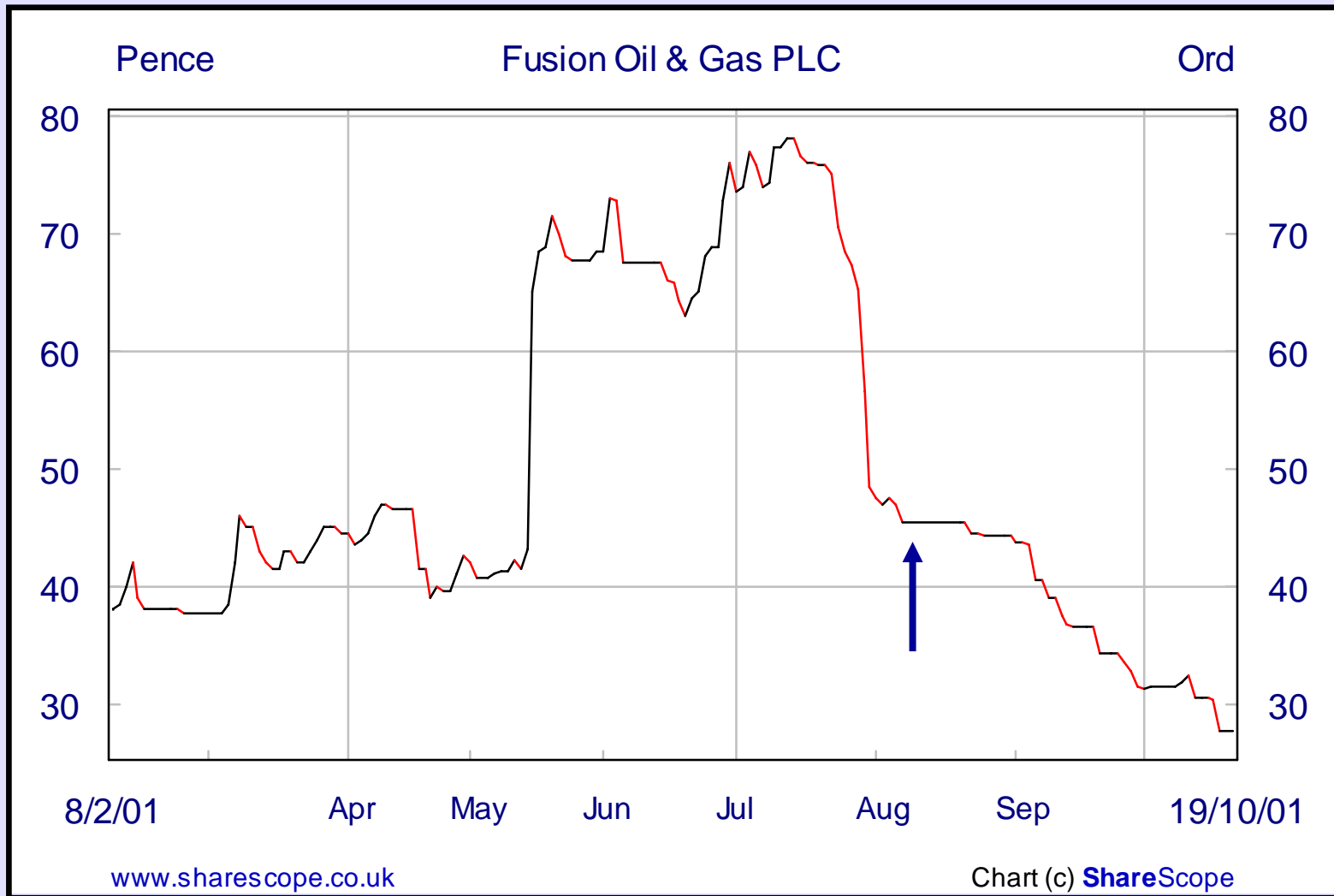
# Time-based value



# Time-based value



# Time-based value



# Location based value

- 80% of *all* information relates to some point on the surface of the earth  
(British National Geospatial Data Framework)
- Relevance to a user may have to be based on knowing where that user is
- Information vital at one location may be of no use at another location

# Location based value



# Time & location value

Late home again....



- At what location do I need congestion information?
  - At the hold up?
  - Before the hold up?
  - When I can do something about it
- How up-to-date does this information need to be?
  - How old can it be?
  - How precise must it be?
- Is the information relevant to me *now*?



# The value added

## Outcome with the information

- Maximising a trading profit
- Minimising a loss
- Finding your way in good time
- Feeling confident



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Acceptable outcome level

## Outcome without the information

- Losing position
- Missed opportunity
- Getting lost, incurring a delay
- Anxiety



The value added by the information

- Financial gain
- Increased likelihood of catching a flight
- Increased confidence
- Etc.....

# Travel information: how much would you value it?

Late home yet again....



[www.FreeFoto.com](http://www.FreeFoto.com)

- Is my journey important?
- Opportunity to use the information?
- Quality of the information
  - Detail, timeliness, location preciseness
- What do I know already?
- Other potential sources of information?
- Cost/effort of other sources?

# Determining the value of an information service

## 1. Study the task

- What are the activities, outcomes, consequences, information needed?
- Don't need a real system or a prototype (or users!)
- Takes no account of the person, difficult to quantify things

## 2. Ask people

- What they would use, what they say they need?
- How much they would pay for information?
- Easy to do
- What people say may not be what they do

## 3. Study people

- People using real or simulated systems
- How good are their decisions, do their decisions lead to actions?
- Most valid, based on what people really do
- How do you study something that doesn't exist?

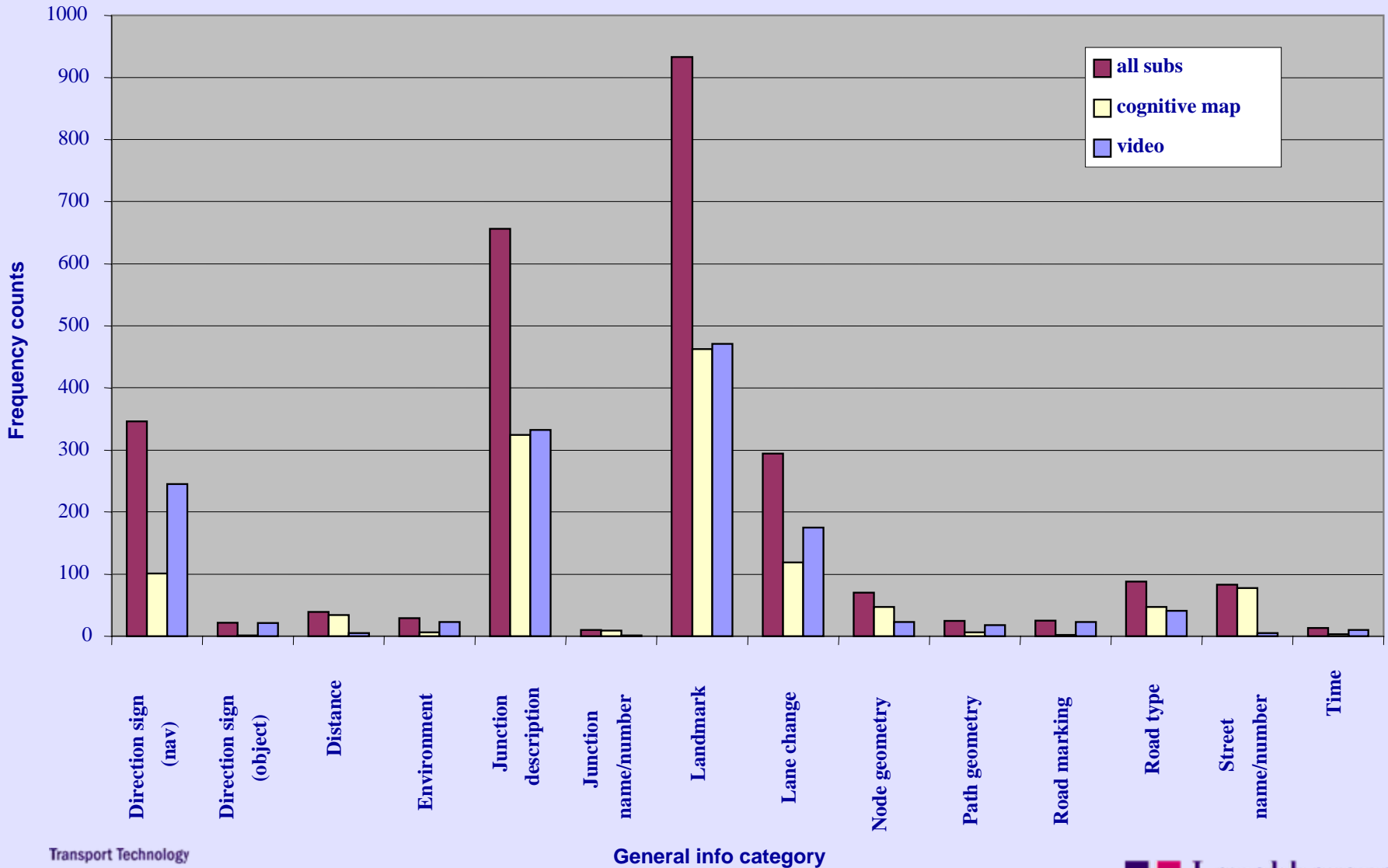
# Experimental results

- Location relevance
  - Driver navigation (asking people)
    - What information is valued
  - Pedestrian navigation (studying/testing)
    - What benefit (value) does information provide

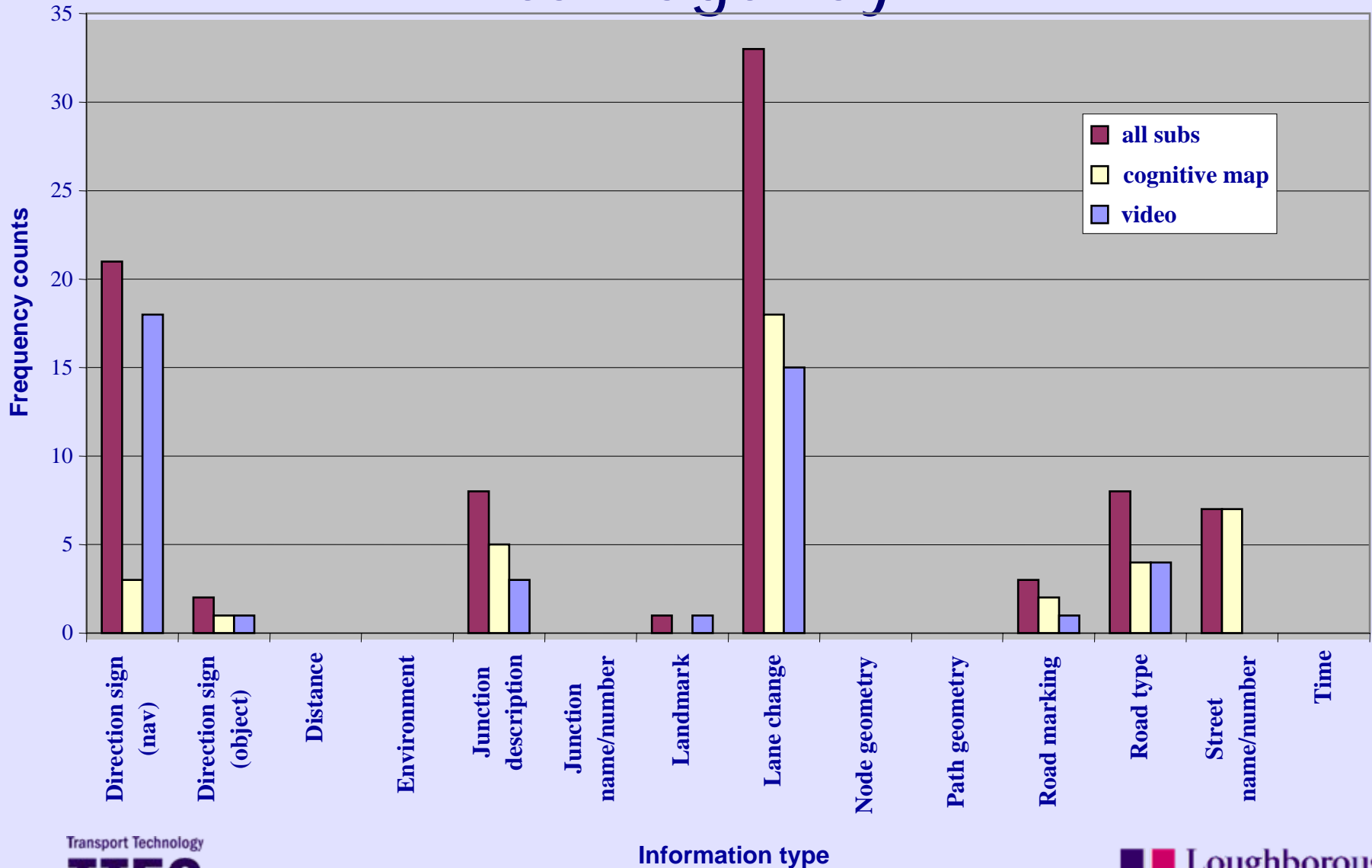
# Location relevance - drivers

- Experimental study
- What information is valued for navigation?
- Assumption - what is used to describe a route is that which is most valued
- 32 participants describing an unfamiliar route
- What information is used?
- When is it used?
- How important is it?

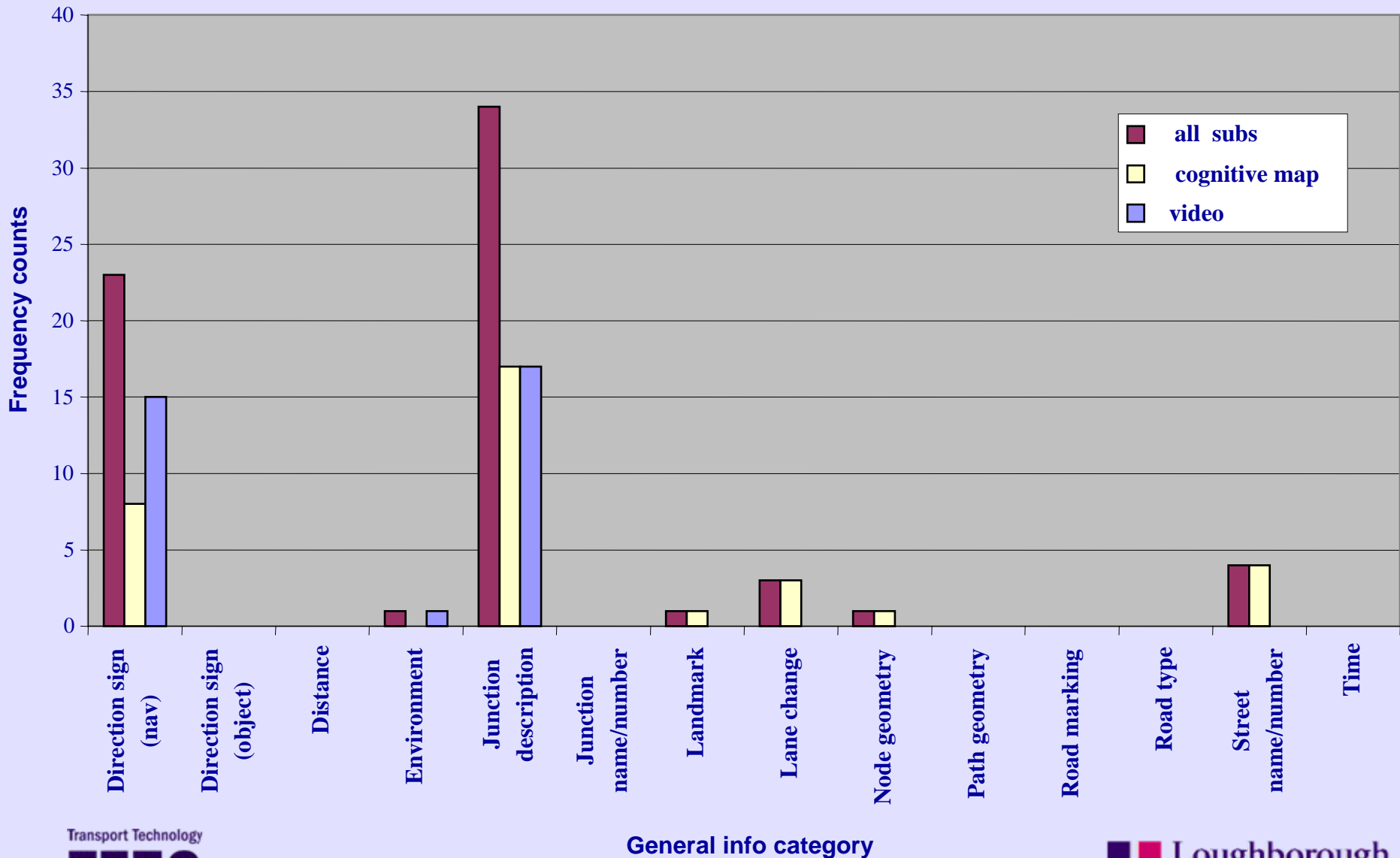
# What information is used?



# Information used on joining a dual carriageway

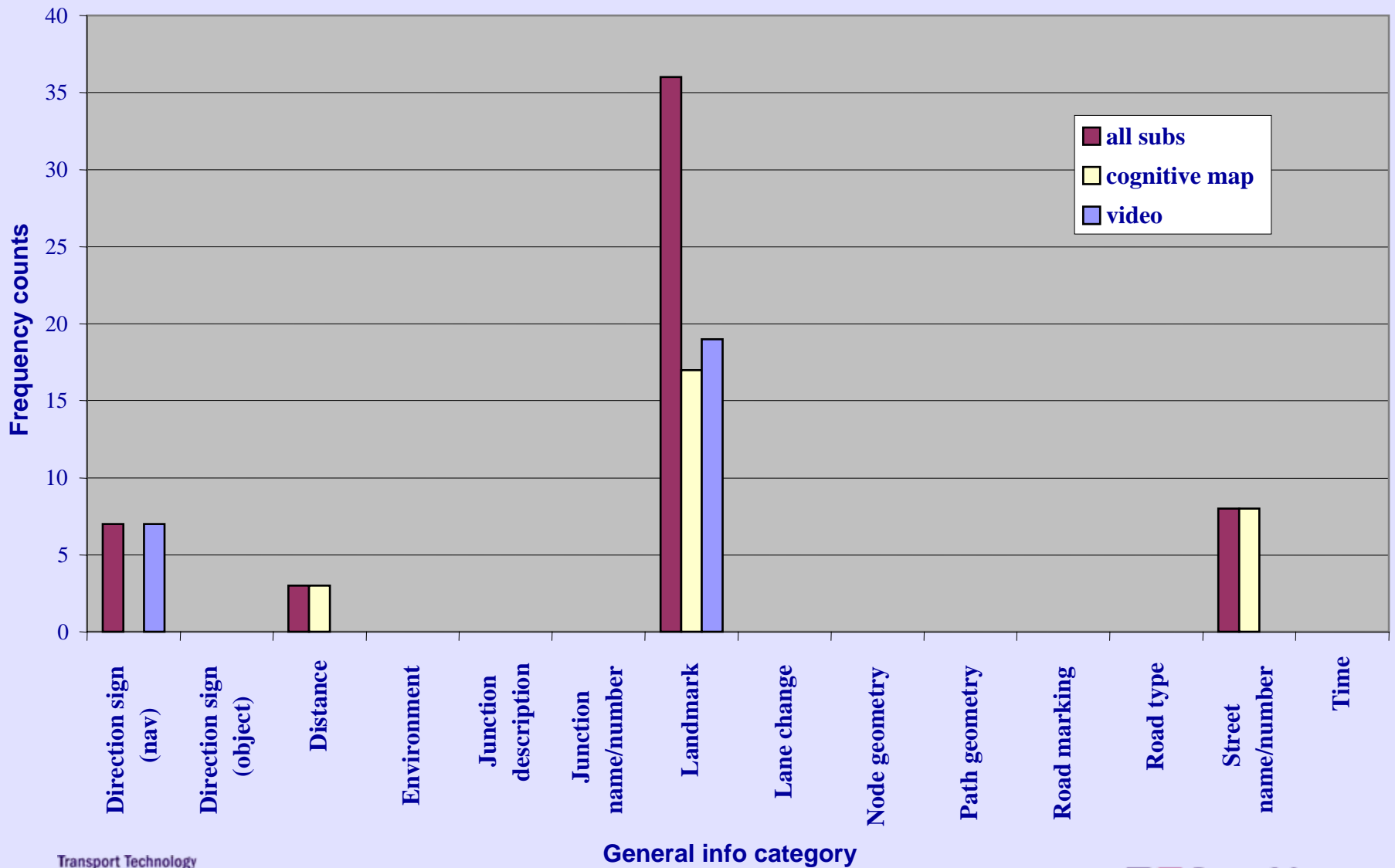


# Information used to leave a ring road

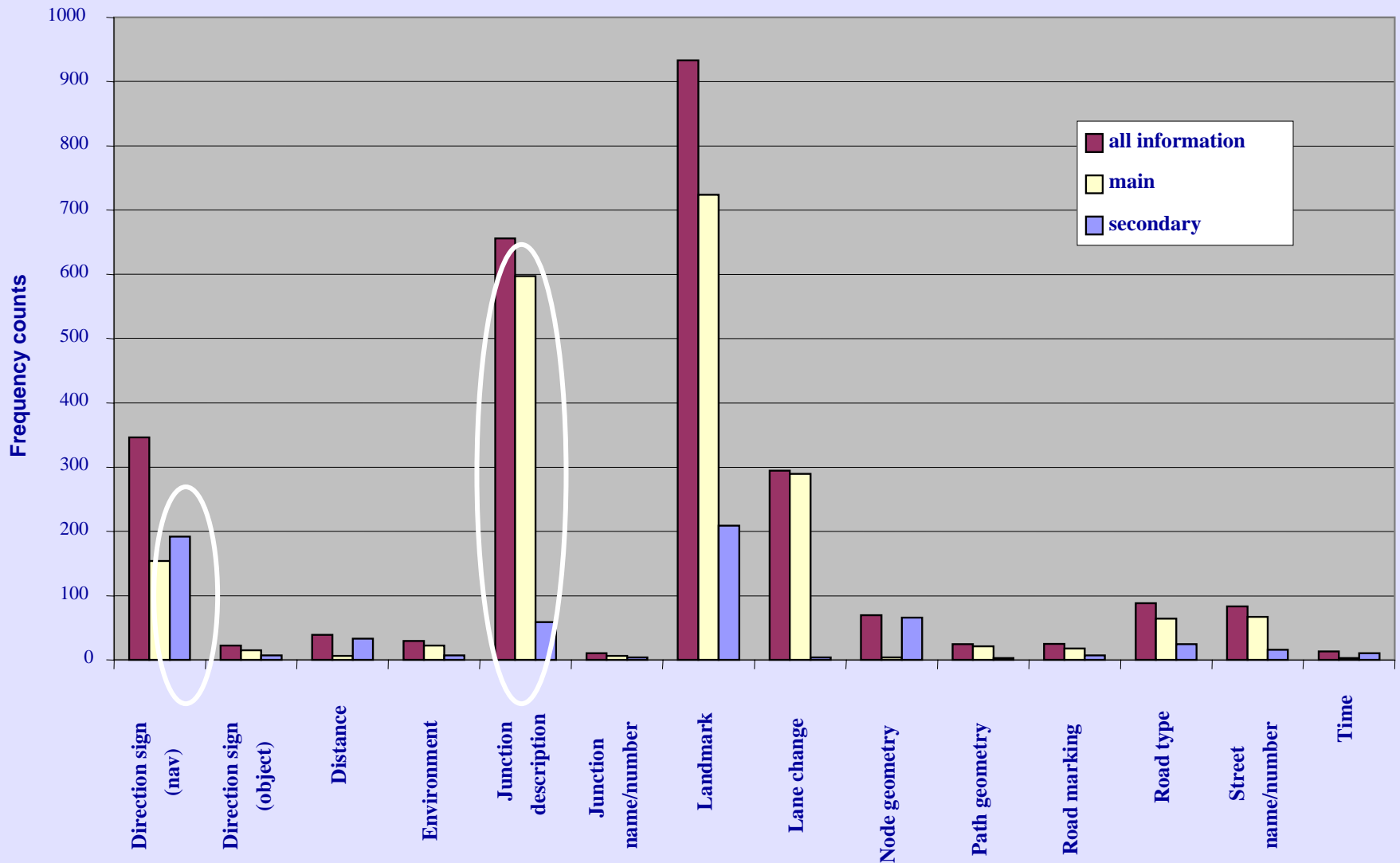




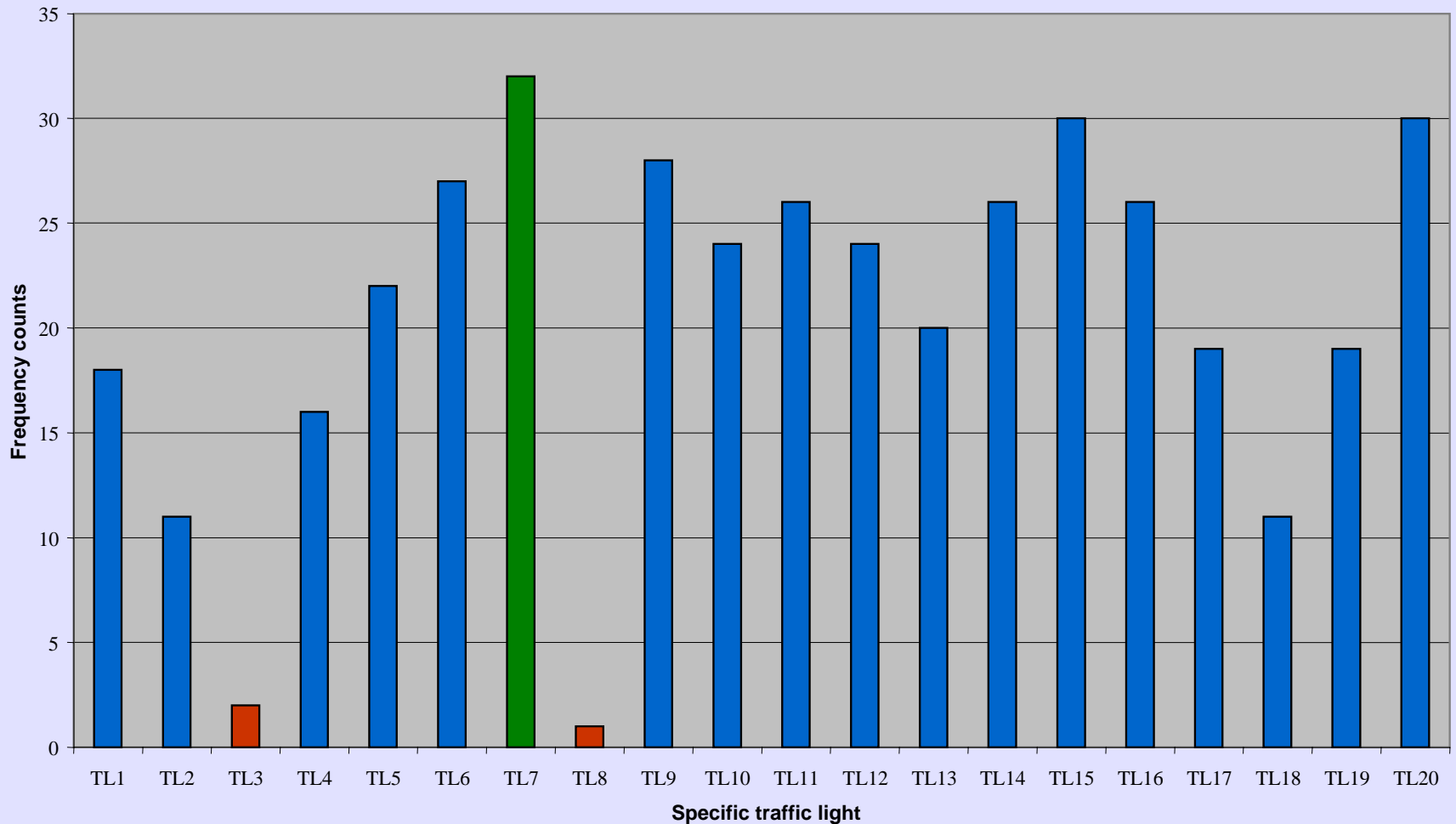
# Information used at a junction



# Value of different information categories



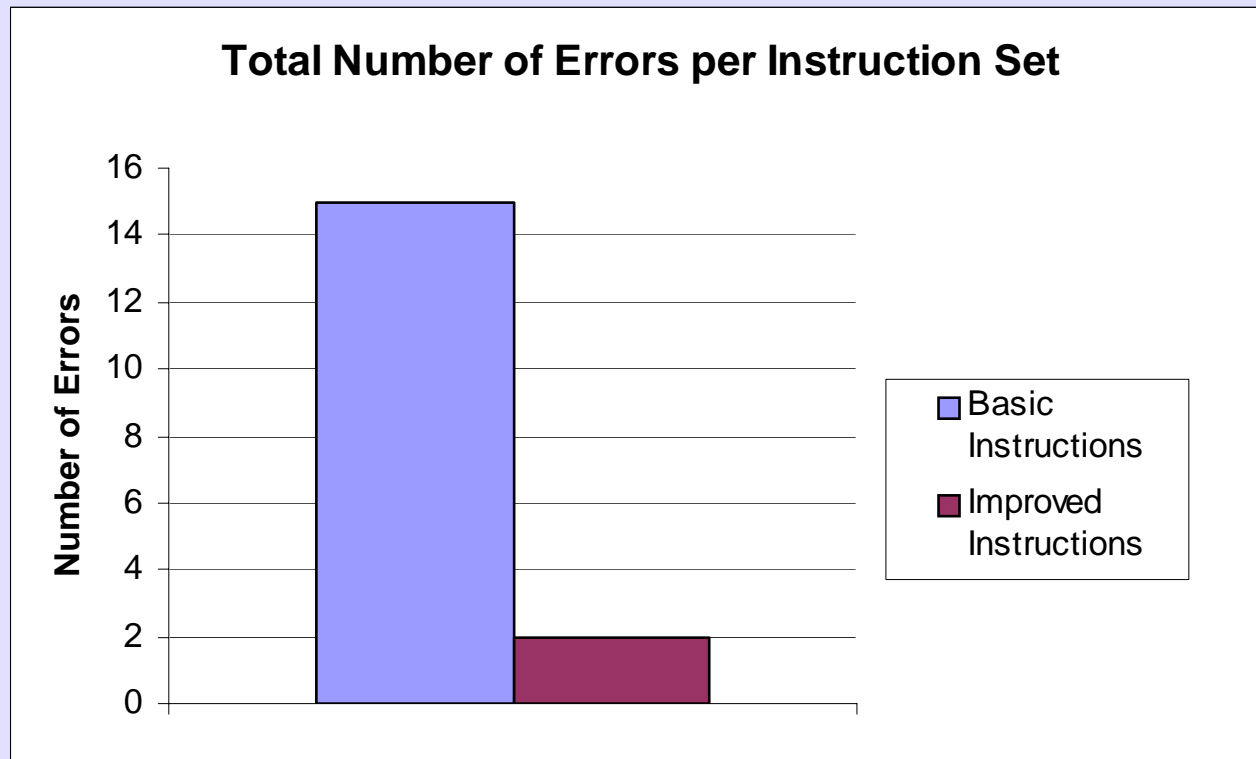
# Value of different traffic lights



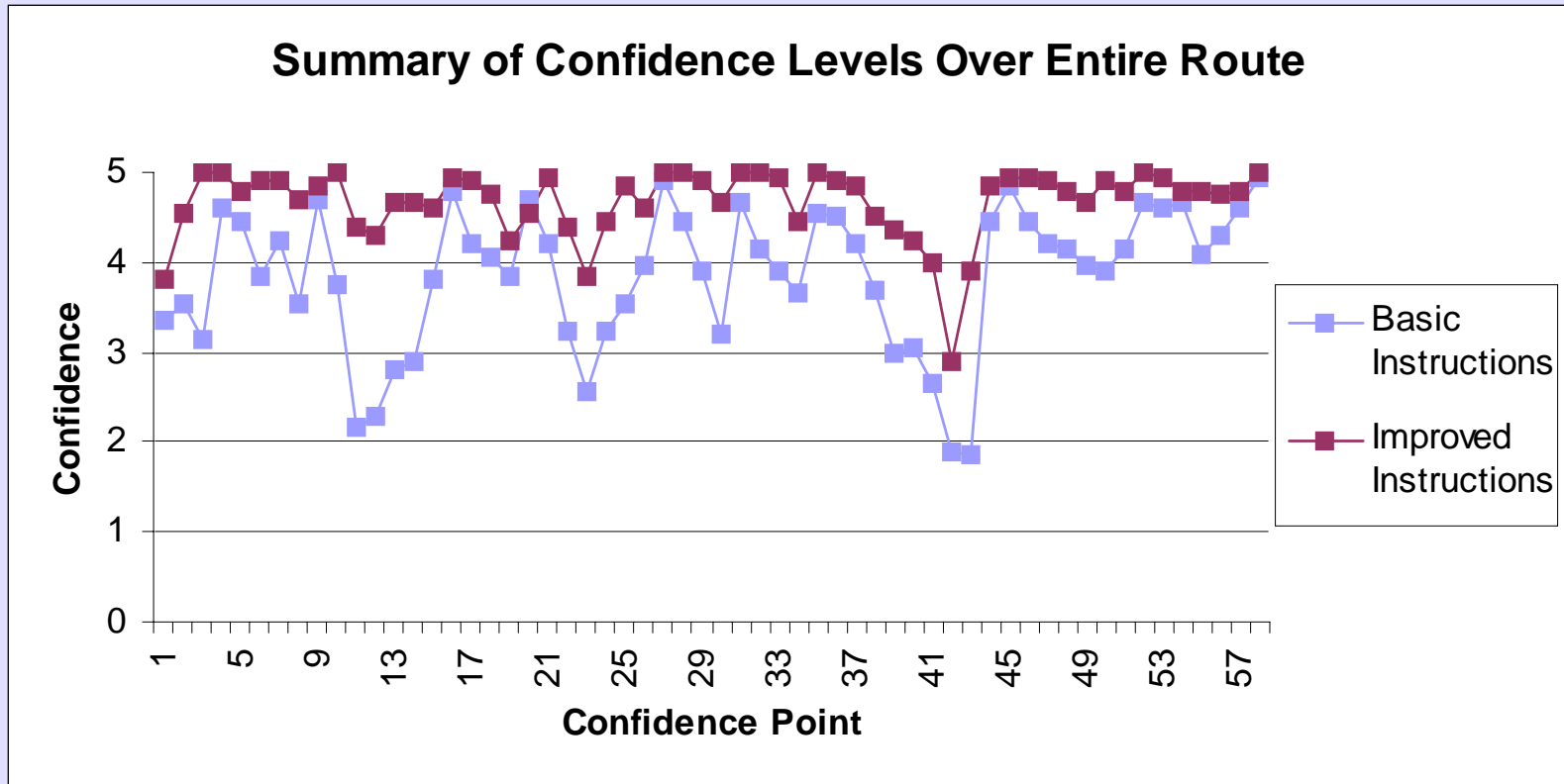
# Location relevance - pedestrians

- Experimental study
- The value-added by enhanced navigation instructions
- 40 participants
- Urban route following
- Text-based instructions
  - Basic instructions – distance & street name
  - Enhanced instructions – addition of landmark or junction info
- Impact on decisions > actions (the route they took)
- Impact on their confidence

# Adding value – better decisions



# Adding value – higher confidence



# Location relevant services - summary

- Valued information services are those which:
  - Are relevant at a particular location
  - Provide benefits
  - Are better than alternatives (may be none)
  - Easily used
  - Highly location responsive
  - May be time-dependent

# Design implications

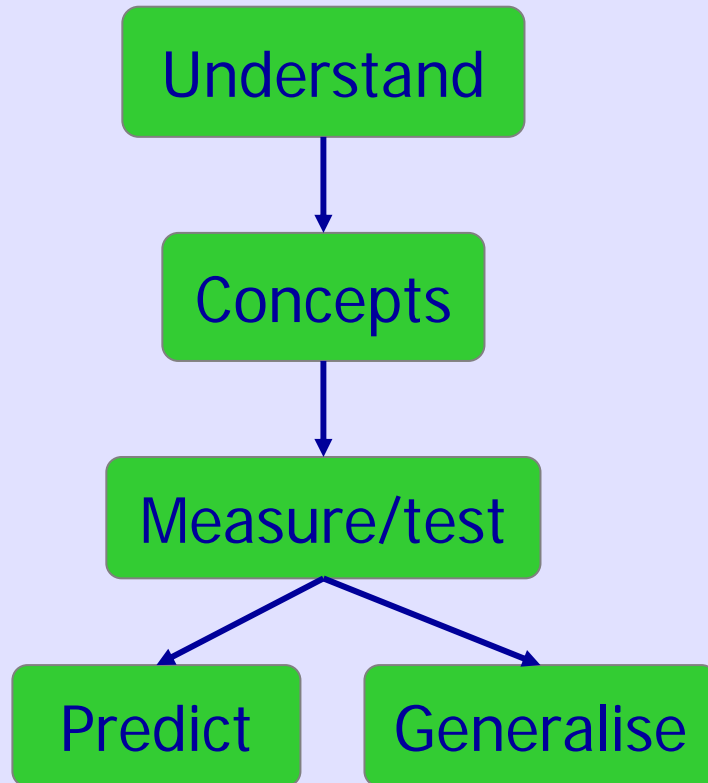
- Databases
  - Content, attributes, descriptions, accuracy, maintenance
- Services
  - Concept, information delivery, marketing
- Networks
  - Bandwidth, quality of service,
- Devices
  - Design of these



# Successful services?

- Enable a new possibility ✓
  - Doing something new
  - Doing something whilst ensuring safety
- Increase convenience ?
  - A bit quicker
  - A bit less effort
- Add a feature X
  - Included because it *can be*
- Being responsive to location
  - “Does the information I need depend on where I am?”
- AND / OR Connecting with a moment of value
  - “Does it matter if I get this information 30 minutes later?”

# Valued services: the challenges



- Valued location-based services project
  - OS
  - Yeoman Navigation Systems
  - Loughborough University
  - VTT Finland
- 2.5 years
- Some of the answers!