A user’s perspective on valued mobile information services

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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?

- Usability
- Safety
- Fun
- Privacy
- Compatibility
- Customisation
- Productivity
- Achieving goals
- Image
- Value
Why is ‘value’ important?

- 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)

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

Pence

Fusion Oil & Gas PLC

Ord

80
70
60
50
40
30
20
10
0

8/2/01 Apr May Jun Jul Aug Sep 19/10/01

www.sharescope.co.uk

Chart (c) ShareScope
Time-based value

Pence

Fusion Oil & Gas PLC

Ord

8/2/01 19/10/01
Apr May Jun Jul Aug Sep

80 70 60 50 40 30

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Chart (c) ShareScope
Time-based value

Pence

Fusion Oil & Gas PLC

Ord

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Chart (c) Sharescope
Time-based value

Fusion Oil & Gas PLC

Scope
Share

Chart (c) Sharescope.co.uk
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
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

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.

Transport Technology
TTEC
Ergonomics Centre

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Travel information: how much would you value it?

Late home yet again….

- 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?

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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?

General info category

- 22 -
Information used on joining a dual carriageway

![Bar chart showing frequency counts for various information types related to joining a dual carriageway. The chart includes categories such as direction sign (nav), direction sign (object), distance, environment, junction description, junction name/number, landmark, lane change, node geometry, path geometry, road marking, road type, street name/number, and time. The data is represented for all subs, cognitive map, and video.]
Information used to leave a ring road

General info category

- 24 -
Information used at a junction

- Frequency counts
  - all subs
  - cognitive map
  - video

- General info category
  - Direction sign (nav)
  - Direction sign (object)
  - Distance
  - Environment
  - Junction description
  - Junction name/number
  - Landmark
  - Lane change
  - Node geometry
  - Path geometry
  - Road marking
  - Road type
  - Street name/number
  - Time

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- 25 -
Value of different information categories

General info category
Value of different traffic lights

[Bar chart showing frequency counts for different traffic lights labeled TL1 to TL20.]
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

Total Number of Errors per Instruction Set

Number of Errors

- Basic Instructions
- Improved Instructions

- 29 -
Adding value – higher confidence

Summary of Confidence Levels Over Entire Route

Confidence Level:
- Basic Instructions
- Improved Instructions

Confidence Points:
- 0
- 1
- 2
- 3
- 4
- 5

Confidence Levels:
- 0
- 1
- 2
- 3
- 4
- 5

Confidence Point:
- 1
- 5
- 9
- 13
- 17
- 21
- 25
- 29
- 33
- 37
- 41
- 45
- 49
- 53
- 57
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
  - 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!