SmartSign

A novel approach to navigation in complex environments

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www.smartsign.co.uk
I-AIM

Improving Accessibility for those with Impaired Mobility

EPSRC EQUAL programme

Newcastle City Council

Transport Operations Research Group, University of Newcastle upon Tyne

Dept. of Child Health, University of Newcastle upon Tyne

Card Europe Ltd
The I-AIM brief

To develop a simple navigation system suitable for use by both pedestrians and wheelchair users.

To produce a prototype system based on a notebook PC

To carry out user trials to prove the concept
Previous Navigation Systems

Accepted wisdom

Intelligent signs

Passive users

Signs look for users and give instruction

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How Do You Find Your Way?

Passive signs

Intelligent user

You make the decision

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Passive signs

KEEP
RIGHT
The SmartSign System

Passive signs incorporating smartcards

Intelligent user device

User device makes decision

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SmartSign Advantages

Drastically reduced installation cost:
No cabling or power required for signs

Signs can be changed by re-programming whenever required

Users can deviate from indicated route and still be guided to chosen destination
SmartSign Implementation

Signs: Contactless smartcard encapsulated between clear acrylic sheets

User device: Hand held computer and card reader
The SmartSign

SmartSign

3mm acrylic sheet

GemEasy 8000 smart card

ISO 14443 Contactless smart card

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The SmartSign

3mm acrylic sheet

GemEasy 8000 smart card

Laser printed sign
The SmartSign

3mm acrylic sheet

GemEasy 8000 smart card

Laser printed sign

Acrylic adhesive bonded

3mm acrylic top sheet
Deploying the SmartSign

SmartSigns can be fixed to any convenient wall or item of street furniture.

Fixing or replacement takes about 5 minutes.
Deploying the SmartSign

74 SmartSigns installed across campus

Many fixed to purpose made wooden posts, others to walls, bollards etc

Total cost to manufacture and install - £1,400
SmartSign in Use

Starting up:

Destination

Current location

System displays:

Direction (1 of 8 arrows)

Distance to next sign

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SmartSign Display

Forward 80m to next sign

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Current Location

A user reading a SmartSign, programming the system with his current location.

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Destination Cards

King George VI Building
Sign Number SCEL/0058
Node Reference 42
I-AIM

Medical Centre Claremont Road
Sign Number SCEL/0887
Node Reference 66
I-AIM

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Deviating from the Route

User mis-interprets directions or wanders off the route

Find any SmartSign and read it

System recalculates route every time a SmartSign is read
Problems with prototype system:

- Notebook PC and batteries weigh 2.1Kg
- LCD display lacks brightness
SmartSign - Future Development

Replace notebook PC with new purpose built system based on either a PIC chip or a Hand held PC

Replace display with an electroluminescent panel and single line LED display

The use of a hand help PC will greatly reduce the power requirement, allowing the use of internal batteries
SmartSign - The I-AIM Project Team

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