

Integrated
transport
needs
integrated
information

BOAG ASSOCIATES

2004

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Boag Associates recent publications and activities

'When will we see what we get?', Andrew Boag's article on greyscaling technology originally published in 1992, was reprinted in *Typographic writing*, published in 2001 by the International Society of Typographic Designers.

In April 2002 Andrew Boag discussed bill design and the development of customer relationships through utility billing at the inaugural meeting of the IIID Expert Forum for Financial Information design held in New York, USA on 2 April 2002.

In Spring 2002, Boag's review of Ottmar Mergenthaler: *the man and his machine*, (by Basil Kahan) appeared in the *Journal of the Printing Historical Society*, new series, 4, pp. 66-67

In 2002, Andrew Boag presented papers on utility bill design and related matters at international design conferences on the Island of Skye, Scotland, and in Thessaloniki in Greece.

In 2003 Andrew Boag presented a paper on utility bill design at the international conference on Information Design held at Recife, Brazil.

In 2003 Andrew Barker presented an analysis of aspects of the Penguin book design process at the annual Association Typographique Internationale conference in Vancouver, Canada.

In April and May 2003 Boag Associates' exhibition, *Information design: a journey from print to personal messaging* was displayed at St Bride Printing Library, off Fleet Street, London, and in December the exhibition was displayed at Coventry University, England. If you would like to host this exhibition please let us know.

In 2000-2003 Andrew Boag has acted as external examiner for MA in Type Design at the University of Reading, England (Department of Typography & Graphic Communication), and in 2004 Andrew became external examiner for BA Graphic Information Design at the University of Westminster, London.



... too much information can lead to overload and confusion.



Keep left

Integrated transport needs integrated information

This second Boag Associates booklet looks at how the effective design and delivery of information can help transport providers meet their strategic objectives in helping people negotiate multiple modes of transport. It provides examples in four key channels:

- 1 signing
- 2 radio frequency identification (RFID)
- 3 real-time information delivery
- 4 timetables.

There are many opportunities in the transport sector for improving information delivery, from the pre-travel information provided in spoken or online interfaces, for example, to paper-based information to help people find their seat.

Improvement is not about simply increasing the amount of information – too much information leads to overload and confusion.

Integrated transport needs integrated information: the right information, provided at the right time, by the most appropriate means.

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The importance of a strategic, user-focussed approach

Information design has developed as a design specialism in recent years. There are many different views on what it involves. At Boag Associates we stress:

- putting the needs of users first
- satisfying our clients' strategic needs
- making information look good.

This involves teams of writers, editors, graphic designers, programmers, user experience consultants (who establish what users want and test prototype designs), and business and strategy consultants (who, amongst other things, establish measures to allow the value of well designed information to be quantified). The information design process consistently delivers measurable business benefits.

A person's perception of a transport service provider's reliability and efficiency is shaped by their experiences of using its services. Transport companies – often with a monopoly over the services they run – have a responsibility to their users to deliver services, and information about those services, in a manner which reflects their privileged position. It is critical to the company's brand that the information it makes available to people results – wherever possible – in reliable and straightforward experiences. Increased customer satisfaction will ultimately lead to increased profitability.

Some problems in presenting information across different modes

All of the signs, maps, timetables, etc., within one transport mode enjoy brand consistency. However, cross-modal travelling may be hindered by the lack of connectivity between the information graphics of each brand. But are methods of information presentation that are suited to one mode equally suited to another? For example, is the principle of the London Underground diagram suited to bus route diagrams or to the underground system of another city?

Should the content and design of information be consistent across modes? For example, consistent conventions could be adopted to indicate compass direction, which might significantly improve people's ability to function across modes using their own mental map.

North, south, east, west are sometimes used inconsistently. Strong graphic coding of direction (using symbols or colour for example) consistently in train signs and bus destination plates will help users as they transfer from trains to buses.



Wayfinding across modes of transport

Without wayfinding aids people would not be able to negotiate their way efficiently through an environment. Such aids (signs, maps, guides, timetables, etc.) are crucial to helping people make seamless journeys across multiple transport modes (or subsystems): e.g. from bus, to underground, train, or car.

In many environments, each transport mode will be managed by a different contractor, each of whom will have their own brand identity and vision to promote. These separate brands can get in the way of visually-streamlined cross-modal information. And getting people from one transport mode to another can be further complicated by, for example:

- urban events which may be beyond the control of transport contractors (utilities works and disruptions, etc.)
- the distinctly different needs of the frequent or regular user as against the tourist or infrequent user
- uncontrollable circumstances (the weather, knock-on effects from one mode to another, etc.)
- visual pollution and the commercial pressures on the demand for advertising space, or as a result of aspects of infrastructure development
- legacy infrastructure that was not designed to meet the current or future needs of wider groups (disabled, parents with pushchairs, etc.).

The British road signing system

The British road signing system is renowned for its elegant and bold simplicity. A comparable cross-modal public transport signing system would be invaluable in assisting both frequent and occasional travellers, and be a powerful force in transport integration. Designed to be elegant and efficient, it would acknowledge the fact that high-quality design improves the quality of urban life.

Such a system would build on sign design conventions already in use, perhaps utilizing colour coding for different transport modes, with easily recognisable symbols and directional indicators.



1 Effective signing

Signing can play a crucial part in helping people negotiate multiple modes of transport. Existing signs that direct people from trains to underground within stations, for example, help people transfer from one mode to another. But signing from trains or underground to bus services are limited.

A cross-modal transport sign system would allow for the layout and creation of signs for all circumstances of application and location, utilizing a clear and distinct approach to directional indication, and a schematic approach to route layouts.

Research with people making journeys that span multiple modes would be necessary to establish, for example:

- where key decision points are for travellers
- how the placement of signs is affected by location and circulation routes
- where travellers prefer directional signs and/or routing signs
- appropriateness of colours, symbols, and graphic devices
- quantities of signs that people can easily cope with without feeling overloaded.



A signing system could well be made up of:

- recognition panels or 'information points' at key decision areas in main interchange areas (e.g. station concourses) indicating direction or routes to busses, underground trains, and taxis – using different colours and symbols for each mode. (Modules of this kind could be developed as furniture with advertising space to achieve value through a business partnership.)
- individual signs at decision points along routes
- special bus shelters at bus stops near major interchanges (e.g. those nearest to the mainline train stations, and key underground stations) with integrated signs that direct people to mainline trains, the underground, taxis, etc. (these bus shelters, again funded by partnered advertising and signing, would need to be structurally distinct from standard bus shelters)
- digital signs that can be varied according to unexpected circumstances and that allow the system to be flexible and adaptable as the system changes.

Information points and special bus shelters could use street furniture from existing ranges, or could be designed by leading architects and designers.

Optimising the benefits of an RFID-based system

An automated wayfinding system may be especially helpful to disabled travellers as it could be programmed with relevant information, and the use of RFID cards would make it easy to use for travellers who might find it hard to get close enough to a conventional terminal.

For regular commuters, RFID-enabled season tickets could be used to identify when they had entered the station and SMS messages could be sent to their mobile phones informing them of changes to trains and what alternatives were available to them.

There are also opportunities to extend the function of smartcards, whether RFID or other technologies: this has been implemented in Hong Kong, where the Octopus card is used for varied retail transactions as well as for transportation. Building a system around common standards would mean the system could be extended to National Health sites, educational and public sector environments, for example: a truly integrated wayfinding experience.

2 An RFID automated wayfinding system

Understanding how people use and move across modes, responding to unexpected events, is crucial to the development of wayfinding information that works. Transport for London's Oyster smartcard, which uses RFID-style technology, allows more detailed tracking and monitoring of peoples' movements and decision making.

The use of 'true' RFID tags, with a greater range and thus the capability to be read from several feet away, offers other opportunities: for example, monitoring traffic flows and user behaviour in wider spaces at stations or near bus-stops (suitably anonymised).

In an innovative RFID-based automated wayfinding system, disabled travellers, for example, could collect a card for their route (probably standardized to start with, but eventually customized), and when in doubt at complex interchanges consult a display terminal. The terminal would have been programmed with directions for each route, and as the person came within range it would display appropriate directions (for example 'go your right and follow the signs for taxis'). People would not have to make direct contact with the terminal or interact directly with it, reducing queuing times and allowing the wayfinding system to serve the maximum number of travellers. The presentation of the information would be tailored to the needs of the individual.



Because the wayfinding terminal would know exactly where it is, and therefore where the traveller is, it would be able to offer precise and informative directions, and respond to get people who had drifted off the best route back to the optimal path, or provide them with alternatives. They would be able to input a change of mind at any wayfinding terminal and be issued with a new token.

Used cards for standard journeys would be returned for re-use, although one can imagine the technology built into tickets.

The conventional mobile phone may also have applications: a community of travellers communicating through SMS might provide each other with high-quality live travel information service based on real conditions, and with the expertise to be able to suggest alternative plans.

3 Using real-time information

Significant obstacles to people using multiple transport modes efficiently are caused by:

- unexpected problems in a transport mode (caused by breakdowns, overload, external works, or weather conditions, for example) – people need information about alternative routes and modes
- knock-on effects of unexpected problems occurring in another mode (an underground line failure will push many more people on to buses)
- people simply not having up-to-the-minute information that would allow them to make more informed choices.

Recent UK research has suggested that people are willing to pay between 25p and 40p for real-time information – on the next available train, for example.



Real time information = more informed choices

Information about car park space availability could be sent by SMS to regular users whose preferred route involves car use. Similarly such information displayed at bus stops along with bus frequency data would encourage car drivers to park and use the bus for the rest of their journey. Intelligent payment cards would reward people for making choices of this kind that benefit the system as a whole.

The frequent or regular user

Online and mobile resources already exist to assist the frequent user. These could be extended so that regular commuters register their preferred route (i.e. their daily cross-modal route from home to workplace), and perhaps register two or three alternate routes, ordered by preference, along with their mobile telephone number and daily travelling times. The system could then send an appropriately-timed SMS message to registered users when their preferred route is suffering disruption, or when unexpected problems occur. The message could suggest which alternate route the person might consider, and could ensure that regular commuters are encouraged onto other appropriate transport modes in order to even out the overloading in the system.

The tourist or infrequent user

Less-frequent users of the transport network need reassurance about their cross-modal decision making. Electronic displays could be installed inside train carriages, buses, and at interchanges, perhaps using digital paper or other high-resolution display technology. These would display information that changes according to where the train or bus is, and what is happening across the transport network. At each station or stop, the displays would inform people what interchange and cross-modal options are available, and this information could be tailored according to what is happening across the network at any time. As well as providing reassurance about their cross-modal decision making, these displays would provide information about options that a person might not otherwise have considered.

4

4 Timetables

London Buses successfully redesigned and implemented bus information so that bus frequency is provided (e.g. 'buses from this stop approximately every 12 minutes'), rather than the detailed presentation of traditional tabular layouts. This tailoring of information presentation to the transport mode and user needs could be developed across other modes. Analyses of people's behaviour when using different (and multiple) modes of transport would inform the design of appropriate timetable formats for the needs of different users and different modes of transport.

When journeys are disrupted – all trains suspended from a main interchange station, for example – users could look to printed timetables (or electronic timetables downloaded from the web to phone or pda) for suggested alternate routes.

Additionally, printed and electronic timetables have potential as a source of cross-modal information. Analysis of user needs and strategic assessment of the business benefits could maximize this potential, bringing operators together to produce innovative timetable information and presentation that can really help people make journeys in a seamless way.

London → Cheshunt Some alternate routes if the network is disrupted:

Buses: 149, 249 Liverpool Street towards Seven Sisters and Tottenham
153 Liverpool Street to Finsbury Park

Underground: Circle/District/Hammersmith & City Line to Kings Cross and Victoria or Piccadilly Line north/north-east. Change at Finsbury Park for buses.

London Liverpool Street	1809	1813	1828	1839	1843	1858	1909	1925	1940
Bethnal Green		1816	1831	1841	1846		1910		1943
Cambridge Heath		1818	1833	1845	1848		1912		1944
London Fields	1815	1819	1835	1846	1852	1902	1914	1935	1946
Hackney Downs	1817	1821	1837	1847	1853	1905	1915	1937	1948

Conclusion: value

Well presented information is of value to transport users – it can help them complete their journey most efficiently with reduced stress. This benefits transport service providers in not only facilitating the smooth running of their services but also through demonstrating the benefit to brand equity. In addition, recent UK research has suggested that people are willing to pay between 25p and 40p for real-time information – for example on the next available train. This further demonstrates that there is value in putting people and their information needs at the centre of transport integration policy. There's a real challenge for information designers to demonstrate that user-led design, strategic consultancy, and creativity can measurably benefit both transport users and transport service providers.