

Leicester
City Council

WARDS AFFECTED: ALL

Highways and Transportation Scrutiny Committee

10 December 2003

Star trak

Report of the Service Director of Highways

1 Purpose of Report

The purpose of this report is to inform committee of the current status of the *star trak* real-time bus information system. The report is one of a series of reports that committee have identified for their 2003/2004 work programme.

2 Summary

The report details the current status of the *star trak* system, the ongoing development programme, the effectiveness of the system and the plans for the future. It also looks at the system's potential for revenue generation.

3 Recommendations

Scrutiny Committee is asked to note the contents of this report and the current and future development plans.

4 Financial & Legal Implications

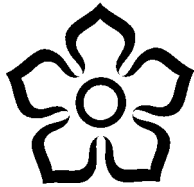
4.1 The development of *star trak* is funded from the Local Transport Plan Integrated Transport Capital Program, with substantial contributions from the bus operators. Additionally, *star trak* is currently benefiting from a grant of almost £1M of Central Government Supplementary Credit Approval funding.

4.2 Revenue funding for the system comes from the Department's Revenue Budget, supported by contributions from the Bus Operators and Leicestershire County Council.

4.3 There are no legal implications attached to this report.

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1. Report

1.1 Background

Star trak was launched in September 2000 as an initiative of the Quality Bus Partnership. Initially, 22 buses were equipped serving 3 routes, one for each of the bus operator partners: Arriva; First; Kinchbus. At selected bus stops along the routes, passenger information displays were installed: 20 throughout the City and County.

1.2 Current situation

Since its launch, *star trak* has undergone a sustained expansion, both in terms of the network and of methods of disseminating the information. There are now 155 buses equipped serving 21 routes, and over 200 passenger information displays have now been installed throughout the City and County. Also, a passenger information display has been installed at Judgemeanow College as part of the *Safer Routes to School* project. Recently, 10 signs, funded by the University Hospitals of Leicester have been installed in the outpatient areas of the three main hospitals. Additionally, real-time bus information is now available on a website and direct to your mobile telephone via *startext*, currently receiving almost 700 queries per day.

1.3 Operational and technical issues

Star trak is, on the whole, a very reliable and accurate system. However, earlier this year, there were indications that some parts of the system were not performing correctly. Some criticisms were received from Transport 2000 and a meeting was subsequently held with them to try to investigate further the substance of their claims. What resulted from the meeting was that there seemed to be times when *star trak* was not as accurate as it should be, and steps were taken to investigate further the issues that were raised.

Star trak then underwent a thorough period of checking, both by Leicester City Council and the system supplier. What was found was that the claims by Transport 2000 did have some substance, and extensive work has been taking place to sort out the problems. It was found that there were three areas where the system was not performing as it should at all times:

- GPS: this is the system whereby the bus checks its position on the road against the satellite positioning system. After many checks, a minor fault was found in the bus software that, in certain circumstances, caused this system not to function, resulting in the system's perception of the buses position being slightly different to reality.
- Radio channel swapping: There are two radio base stations in the *star trak* system. The buses are free to swap between the channels in order to obtain the strongest system. When the signal from one radio site becomes weak, the bus will change to the other, but this can cause a period of time when the system has to assume the position of the bus rather than knowing. A minor fault was found here that caused the buses to try to change radio channel too easily, causing gaps in the information on bus position. Again the effect was that the system perceived the bus to be in a slightly different position to reality.
- Passenger display algorithm: There is a complex algorithm in the software that predicts the departure time of the bus from the stop, and then transmits that value to the display at the stop. Due to the expansion of the system, with the massive increase in the number of signs, it was found that when information was sent out, it was being queued for up to 30 seconds, meaning that when the information arrived at the sign, it was out of date. This had the effect of the signs not having reached zero when the bus departs, giving rise again to a perception of inaccuracy.

It must be stressed that these problems were not apparent at all times, but they still caused concern. The current situation is that the first two problems have been fixed, with the third imminent at the time of writing.

1.4 Validation studies

To check the effectiveness of the modifications, surveys have been undertaken internally to judge the extent of the problem, before and after the modifications. The results of the 'before' survey, on 117 signs were:

Signs showing 0 minutes on departure of bus	48%
Signs showing 1 minute or less on departure of bus	80%
Signs showing 2 minutes or less on departure of bus	94%
Signs faulty	6%

At the time of writing, results of the full after survey were not known. However, the results taken from 25 signs on one route showed:

Signs showing 0 minutes on departure of bus	96%
Signs showing 1 minute or less on departure of bus	96%
Signs showing 2 minutes or less on departure of bus	96%
Signs faulty (1 sign)	4%

This shows a significant improvement in performance, although it must be emphasised that it is over a small sample.

A full check and survey is to be carried out prior to undertaking a further survey with Transport 2000.

A new arrangement has been set up to deal with faulty signs: the maintenance of the *star trak* signs has been passed to the maintainer of the City and County's traffic signals. This will enable a rapid response to any reported sign faults.

1.5 Effectiveness and value for money

In June 2000, the year of the launch of *star trak*, a 'before' perception survey was carried out. This survey was repeated in June 2001, 9 months after the launch of *star trak*. The results (from a sample of 1200) showed:

- 90% consider the *star trak* signs useful or very useful
- 90% consider the availability of *star trak* information makes waiting time more acceptable
- 80% consider the *star trak* signs enhanced their feeling of personal security after dark
- 73% find it re-assuring to know the exact time that their bus will arrive at the stop
- 72% consider the bus service has improved since the introduction of *star trak*

Results from the bus operators are equally encouraging, such as:

- First: All high frequency routes fitted with *star trak* have seen passenger growth
- Kinchbus: significant increases in passenger numbers on route 7, with more buses now deployed to cope with increase. Other Kinchbus *star trak* routes also showing increases

The conclusions here are that passengers find *star trak* useful, and that it generates passengers, fulfilling the City Council's Transport Policy objectives.

1.6 Current development program

The current development programme is centred on the expansions and enhancements of the £1M Real Time Information SCA funding package, although development work funded by LTP is still continuing. In addition to further route expansion (by the end of 2003/04, a further 60 buses will be equipped, serving 8 more routes) the SCA has funded the development of *startext*. It is also funding the 4 city centre multi-route signs, scheduled for installation in the New Year. These signs, in prominent locations in the centre of Leicester, will give real-time information on all *star trak* services leaving the City. To support this, passenger information displays giving destination as well as time are to be installed in the new JCDecaux shelters at the terminal points of the routes, as well as at key locations such as the railway station.

1.7 System expansion

The *star trak* system was originally conceived as a system for Leicester and Leicestershire. Due to the success of *star trak* on the Kinchbus routes in Loughborough, Kinchbus requested that they would like *star trak* fitted to some of the buses of their parent company, Trentbarton. Thus the SCA bid contained the 'rainbow 5' route which, as well as running into Loughborough, forms the main trunk bus route between the centre of Nottingham and the centre of Derby.

Not only has this route meant that *star trak* now serves parts of Nottinghamshire and Derbyshire, but it has opened up new opportunities also. Although the rainbow 5 route has radio coverage from one of the 2 existing *star trak* radio base stations, there are a couple of radio black spots in Nottingham. To solve this, funding has been secured from Nottingham City Council for the setting up of a third radio base station on the top of the Victoria Centre in Nottingham. This will improve radio coverage in Nottingham and Nottinghamshire, and also in North and East Leicestershire. The new station should be transmitting by Christmas.

An approach has also been made by Derby City Council to host routes in their area on the *star trak* system. They are paying for assistance in setting up their first route, which should be operational by the end of this year, and will also be paying an appropriate proportion of the *star trak* system running costs.

Finally, Derbyshire County Council have also approached us with a request to install passenger information displays on the Derbyshire section of the rainbow 5 route; this will generate a further source of revenue funding for *star trak*.

1.8 Revenue generation

Work is underway to find ways of using *star trak* for revenue generation. As mentioned, revenue streams are being negotiated with the Councils of Derby City and Derbyshire County. Additionally, the prospect of charging users of the *star text* SMS system 25p for the return message is being investigated. Early indications from the *star trak* route 'rainbow 5', which has charged 25p from the start, are that the charge does not deter users. If this were implemented, a return of 5p per call would be credited to the City Council (the majority of the fee going to the telephone network operators).

1.9 Future developments

A comprehensive statistical analysis package has just been installed onto the *star trak* system. This will enable summarised reports and statistics to be generated, showing adherence to schedules, parts of the routes where delays are suffered, average headway of buses and much more. These reports can then be used by the bus operators to improve services, and by the City Council to produce reliability statistics for LTPs and APRs.

To further enhance this package, consideration is being given to the equipping the *star trak* buses with wireless LAN technology, allowing them to download much more comprehensive statistical data each time they enter the bus depot. This would further enhance the quality and range of the reports produced.

The *star trak* website is being upgraded to include stop finding by name, by route, by postcode or by map. The site is being made easier to use, with much more comprehensive information.

Consideration is being given to a voice information service, whereby users of any touch-dial telephone, mobile or fixed, can dial up a service, key in the code of their bus stop, and receive real-time departure information verbally.

The use of audible announcements at bus stops – talking bus stops – for visually impaired passengers will be investigated.

FINANCIAL, LEGAL AND OTHER IMPLICATIONS

1 Financial Implications

1.1 Funding of the *star trak* development programme in 2003/04 is as follows:

Leicester City Council LTP settlement	£ 62,000
Leicestershire County Council LTP settlement	£ 32,000
Leicester City Council RTI SCA (2 year)	£588,000
Leicestershire County Council RTI SCA (2 year)	£410,000
Arriva Midlands	£154,000
Kinchbus	£ 28,000
Trentbarton buses	£135,000
Asda (section 106)	£ 88,000
University Hospitals of Leicester NHS Trust	£ 35,000
Nottingham City Council	£ 25,000
Total:	£1,557,000

1.2 Revenue expenditure is as follows:

Leicester City Council	£39,000
Leicestershire County Council	£29,000
Arriva Midlands	£ 4,000
First	£10,000
Kinchbus	£ 3,500
Total:	£85,500

2 Legal Implications

There are no legal implications of this report.

3 Other Implications

3.1

OTHER IMPLICATIONS	YES/NO	PARAGRAPH REFERENCES WITHIN SUPPORTING PAPERS
Equal Opportunities	No	
Policy	Yes	1.5
Sustainable and Environmental	Yes	1.5
Crime and Disorder	Yes	1.5
Human Rights Act	No	
Older People on Low Income	No	

3.2 Risk Assessment Matrix

Risk	Likelihood L/M/H	Severity Impact L/M/H	Control Actions (if necessary/or appropriate)
1 System supplier, Init, go out of business	Low. Init have now implemented over 300 systems. Since April 2003, they have received new orders totalling 33.4 million Euros.	High.	All software source code is held at the National Computing Centre under an escrow agreement. In the unlikely event of Init ceasing to trade, we have full rights to all source code.
2 Init cease to support UK customers	Low. Init have just been awarded a contract to equip over 1000 buses of the Metroline fleet in London, they also now have a contract with Derby.	Medium.	
3 Bus operator partner pulls out	Low. <i>Star trak</i> has the full support of all the bus operators in the partnership. Bus operators have invested heavily in the system.	Low. <i>Star trak</i> would continue to function on other operators routes.	Regular meetings are held with the bus operators to discuss ongoing operations and development. Any discontent would be picked up at an early stage.

4 Background Papers – Local Government Act 1972

None

5 Consultations

There have been no recent specific consultations. However, regular discussions regarding operational and development aspects of the system are held through the Quality Bus Partnership and meetings with Transport 2000.