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Paper on Computer Aided Despatch

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Introduction

In the past few years we have seen the coming of age of Real Time Computing Systems.

The advantages of Real Time systems over conventional batch processing have been known for some time. However, it is only recently that the problem of collecting data in Real Time has been addressed and this now makes these systems realistic. Only now, through the use of new technology, are we seeing commercially available Real Time applications.

Around the world the first industries to capitalise on these technologies were those who could see major operational advantages from capturing information directly from the field, processing it and responding immediately. Taxi fleets and Courier companies, both high competitive industries, are obvious first candidates to use Computer Aided Despatch. It would enable them to improve customer services and reduce operating costs. Computer Aided Despatch systems extends the full benefits of computer systems out into every vehicle. In this paper we will look

at the example of how Computer Aided Despatch has benefited the New Zealand Taxi industry and provided potential gains for the logging industry.

What is Computer Aided Despatch

In essence the function of matching tasks with available resources becomes automated. To do this the computer system must know where the resources (in this case vehicles) are at any given moment in time and where assignments are coming in from. Using algorithms the computer immediately calculates the most suitable match.

If we look at how several Taxi companies in New Zealand are using Computer Aided Despatch we will get a general idea of the concepts. Taxis are also something we can all relate to. Let us begin by looking at how a conventional despatch system works, noting potential problems and then comparing these with how the automated system improves the business.

In a manual system messages requesting a cab are phoned through to a telephonist, who records these on

individual dockets which are then handed on to a despatcher. He or she works out where the nearest cab is and radios instructions to that cab. The only aid the despatcher has is a map of the area and pins denoting where cabs have reported their last position. It is a manual process and mistakes do occur. Voice communications over radio are subject to error, the person on the other end may believe the address to go to was "Par Lane" when in fact the despatcher said "Farlaine". Naturally if you are the customer and your cab is late while the cabby and despatcher sort it out you will not be impressed with the service. Other delays can occur at busy times and it is not because there are not enough cabs to go around but because the bottleneck is at despatch. He or she is only able to physically communicate so many messages per hour. The entire operation depends on the knowledge and speed of the despatcher and information is generally all one way.

Automated Taxi System

For years this is the way Taxi companies have worked, now they see major competitive advantages in using computers to do the despatching. This also gives drivers an in-cab business tool which they are able to use to determine where the jobs are coming from and where they should be to capitalise on this. Calls are received in the usual way via a telephonist or now through an electronic voice interface directly into the computer. Call takers are provided with on-line help to accurately pin point the callers position so that it can be relayed to the cabby without error. If a street is entered of

which there may be several, or if the street extends through several suburbs, the system will return a list of streets for the operator to select from, a good example is High Street. Once details are accurately entered the Despatching system decides which cab to send based on these rules:

1. Is the job immediate or to be released later.
2. First cab into that zone.
3. If no cabs in that zone then next cab in adjoining zone.
4. Any special vehicle requirements, eg: number of passengers, allow smoking, allow animals, wheelchair access, female driver, amount of luggage.

The computer system is much faster and consistent at matching jobs with cabs in the closest location, and at the appropriate time. Also within the Taxi industry there is a perception that the despatcher is in a prime position to favour some drivers with the more profitable jobs. The computer is seen as an unbiased judicator in performing this task thus removing a major head ache for managers. Factual information on jobs issued can be recalled and examined to set the record straight.

Drivers Benefit

In the past it was a case of a cabby waiting in an area in which he or she things there is a good chance of profitable work. The Driver only has his own experience and radio to judge where to be; a very subjective decision

in many ways similar to choosing a fishing spot. Now from the drivers' perspective more information is available giving him the ability to make decisions based on facts collated from in-coming jobs and the distribution of cabs. More information about running his/her own business without constantly referring back to the despatcher or monitoring and interpreting endless RT chatter. Now via a terminal in the cab drivers are able to interrogate the computer system to find out for themselves what the distribution of cabs is and where jobs are coming in from. A smart cabby will benefit from this type of system while those less motivated may become disadvantaged. Drivers have to work the system, find out where the jobs are and where they should position themselves. The roll of despatcher has changed and drivers are in control of their own business.

The roll of the despatcher has changed to one of customer service provider. The computer is handling 99% of the routine mundane work freeing up the despatcher to manage the exceptions and so give a much improved service to customers. An example would be Air New Zealand due to a flight delay, calling up wanting to take 300 passengers to hotels overnight and having them collected the next day. Imagine juggling a request of this size as well as carrying out normal despatching.

Business Advantages for Taxi Companies

Noticeably, the greatest impact of Computer Aided Despatch is the ability to increase job through-put without

increasing office staff or the number of vehicles in the fleet. In most instances office staff can be reduced or redeployed while the company has the ability to cope with a higher number of jobs per hour during peak or heavy loadings. How is this achieved?

- Speed
- Accuracy
- Does not get tired
- Totally impartial
- Constantly aware of all factors and changes

The computer system conscientiously goes about the task of despatching cabs to jobs, it handles about 95% to 99% of all jobs without the human despatcher intervening, handling all the repetitive tasks of tracking vehicles and matching jobs to vehicles. It is capable of handling considerably higher numbers of jobs per hour than via voice despatching. Due to higher accuracy of information transmitted to and received from, the fleet staff are used more efficiently.

The public image of Taxi companies is one of the few differentiators available for change. Using a Computer Aid Despatch system in the vehicles presents more modern and professional image to customers.

Other advantages include:

1. Increased revenue and profitability through travelling fewer miles for the same number of jobs.

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| <ol style="list-style-type: none"> 2. Reduced paper work for office staff and drivers. 3. Reduced call taking time by providing on-line help. 4. Reduced errors through input verification. 5. Improved fleet management through regular and ad-hoc reports on <ul style="list-style-type: none"> • Number and value of jobs per driver • Despatch activity • Booking activity • Late arrivals • Detect congestion • Jobs per area or zone | <ol style="list-style-type: none"> 5. Improved working environment in vehicle and office. 6. Reduced driver fatigue. 7. Increased levels of safety 8. Access to credit card verification and printers for receipts. 9. Confidentiality of data transmission. 10. Error free and accurate job details. 11. On-line help for locations, map references. 12. Reduced levels of stress listening to RT chatter. 13. Detailed record of work done. |
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Advantages for Drivers:

1. Increased earning potential.
2. Greater speed of allocation of work.
3. Fairer distribution of work.
4. Better information of location of work.

Background

Les Wootton is currently involved in a number of projects, as a consultant, involving mobile data applications including voice and data on the same frequency. Les has a background in radio frequency design and more recently in warehouse customisation.