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Information Services as an E Business Tool

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Information Services as an E-Business Tool

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"Knowledge is of two kinds. We know a subject ourselves or we know where we can find information upon it"

Samuel Johnson

1. The Knowledge Challenge

In this paper I have been asked to discuss information services as a tool for e-business in shipping. I will try to do this, by looking at information provision in shipping and answering four questions.

1. What is information?
2. What information does the shipping industry require?
3. How is information provision managed today, and
4. How can information services enhance E-Commerce?

In making this presentation I will draw on our experience at Clarksons, a company that has been providing information to shipowners since 1852.

2. What is information?

2.1 The definition of "information"

There is not much point in discussing information, unless we are clear what it is. Webster's dictionary says that to inform is to

"give form" and information is "communication of knowledge or intelligence". These definitions make the important point that information provision is not about throwing as many facts as possible at the customer. It is about useful knowledge.

2.2 Two key principles of information provision

Let me give you an example. Suppose you are walking down Oxford Street and you ask a passer-by "Where is the Selfridges Hotel?" If he answered "the Selfridges Hotel is a prize winning development located just off Oxford Street. It has 140 rooms and extensive conference facilities, with an excellent restaurant" you would be pretty annoyed. The correct answer is "Turn right at Selfridges". The key to information provision is relevance, not volume. As an afterthought I might add a second issue, pricing. If the passer by demanded £1 for directions you would be outraged! We tend to treat information, like air, as a free commodity. Unfortunately it is not. Somehow information providers with structured information systems to support have to tap into a revenue stream, or they will not survive long.

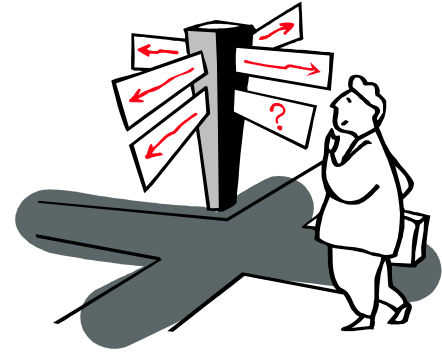


Figure 1 Relevant answers are needed!

2.3 The age of information overload

Nowadays the pace of shipping business has accelerated, and shipowners need directions through the market maze more than ever before. There is no shortage of information, but most of it is not relevant. The information system is largely to blame for this. Over the last century the cost of transmitting information has fallen dramatically. In 1866 there was much less information because data transmission was so expensive. It cost a \$1.00 per word to send a telegram to the United States, so a single 40-word message cost a four

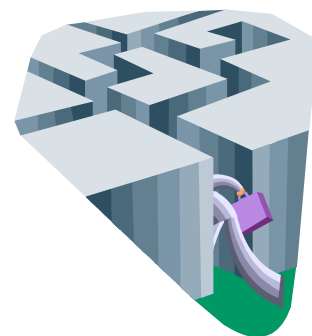


Figure 2 Help needed in the shipping maze

months wages for a clerk¹. The information had to be very relevant to pay its passage. Today we have arrived to the other end of the spectrum. I can send everyone in this room a 10,000-word message and it costs me nothing.

As the cost of data transmission has fallen, the cost of data analysis has increased. The Clerk that cost £20 per year in 1870 costs £20,000 per year today, so sifting through that message to find the few lines that are relevant to the recipient is very expensive. This change in the relative cost of data analysis and data transmission has created the "information overload" problem.

Today most executives are bombarded with information, most of which is completely irrelevant and adds little value to their business. The "information utility curve" in Figure 3 suggests that as the volume

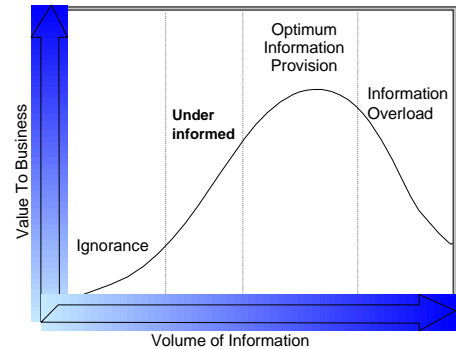


Figure 3 The information utility function

of information increases, its value falls because the irrelevant information starts to hide the useful information. Anyone deluged with e-mail will know what I mean. The ability to deliver large volumes of information, whilst leaving the analysis to the recipient, may well cloud the decision process.

The point I am leading up to is that cheap transmission is a necessary, but not sufficient condition for effective information provision. You do not care if you get the directions to the Selfridges Hotel verbally or in writing. That is a matter of convenience. What matters is packaging the information into a format that adds value by increasing executives' productivity.

This sums up the philosophy that underlies our information strategy at Clarkson Research. We aim to provide less information, but to present it in a form that makes it easy for the decision maker to access.

¹ In 1870 Clarksons spent £5000 on wages and £5,300 on cables, showing just how important the cost differential was.

3. What information does Shipping Need?

Now we turn to the information needed by the shipping industry. Cuffley, in his textbook "Ocean Freights and Chartering" sums up the information management duties of a shipbroker in the following way:-

*"To communicate to his principal all information coming to his knowledge which may affect the attitude of the principal in connection with the business under negotiation"*²

Over the last two centuries brokers have been developing systems for improving this aspect of their business. The best way I can think of to deal with this issue is to briefly run through the way shipping has developed its information systems in the past.



Which one's the owner?

Fig 4 Broking communication

1. Back in the 18th Century information had to be communicated face to face. Letters, the only alternative, were slow and expensive. Supercargoes representing the cargo owners travelled with the ship to transact business face to face on their behalf (figure 4). The negotiation issues were precisely the same as today, but the input was more limited.
2. This soon gave rise to demands for information about shipping activity from third parties. In 1702 Edward Lloyd published "Lloyd's List". This was a list of ships sailing's compiled for ships insurers, one of the first service sectors to take a real interest in shipping.
3. In 1744 information management took another step forward when the Baltic Exchange started advertising itself as a venue where news could be found and letters left or received (fig 5). This was the first step towards an international market network.



Fig 5 First information exchange

² Cuffley, C.F.H. "Ocean Freights & Chartering" Staples Press, 1972 page 34

4. In 1765 the first Lloyds Register, a book containing a list of ships and their characteristics, was compiled. Once again this was initiated by insurers rather than shipowners, though it soon became the standard reference work for all those interested in the maritime fleet.
5. In 1866 the first Trans Atlantic cables were laid and over the next 10 years the shipping industry went global. Cable traffic grew rapidly (fig 6). Now for the first time the matching of ships and cargoes was not restricted to the port where the ship had arrived. However the cost of sending messages was so high that only very short messages could be sent. Negotiation still had to be carried out face to face and as a result the Baltic Exchange, located at the centre of the cable network, became the international shipping market.

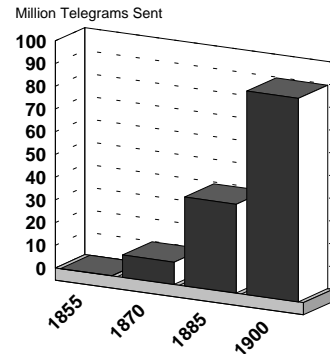


Figure 6 The cable revolution

6. As communications were automated in the 1960's direct dialling phones and telex machines made it possible for negotiation to be carried on remotely. As a result shipping decentralised and split into specialised market networks linked by phone, telex, fax and e-mail (fig 7).

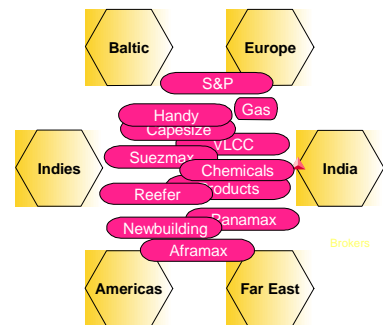


Figure 7 Information specialisation

7. As the cost of short run hard copy publishing fell with electric typewriters, word processors etc there was a proliferation of market reports during the 1970's and 1980's. Most of these brokers reported what had happened, but a few, including Clarksons, invested effort in organising the information into databases and checking it for quality.

This brings us to where we are today in shipping information provision. A prolific information system serving specialist markets, where the decision maker has to sift out knowledge from the torrent of information passing over his desk. Now we need to look more closely at the decisions being made and the type of information that is required.

4. The Shipping Decision Hierarchy

4.1 Freight negotiation - the "sharp end"

The decision hierarchy facing shipowners (and related businesses) in the 1990s is shown in figure 8. At the top of this hierarchy is the spot market. Each year there are 30-40,000 freight negotiations. These negotiations involve substantial sums of money and are very time sensitive. The "must have" information required to be successful in these negotiations involves the ships and cargoes available in the loading plus any information about the circumstances of other "players" that will help in the negotiation ("He has to catch the three o'clock plane, so try an offer").

Shipping Decision Hierarchy

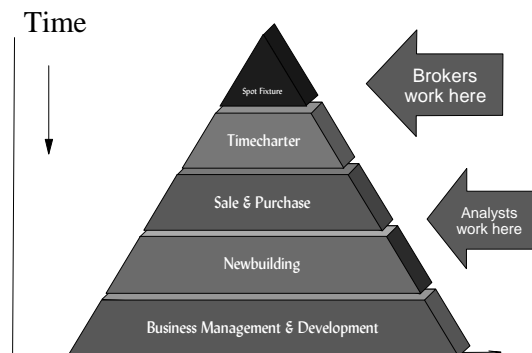


Figure 8 The shipping decision hierarchy

This is highly specialist information, which changes hour by hour. It is mainly provided by brokers specialising in each specific market. Communication is primarily verbal because this remains the channel best suited to this complex and fast changing information. Computers are still in the stone age as far as this sort of communication is concerned. The telephone is the usual link, backed up by e-mail and daily/weekly market reports that provide "context" and of course the Web systems that are now becoming available.

4.2 Long term decisions

Moving down the decision hierarchy we find the less time dependent decisions, which require a broader view of what is going on in the market. Timecharters, sale and purchase, newbuilding and business development fall into this category. In these areas the speed of information provision is less important than the quality of information provision. These markets are served by

- Publications: which summarise events that have happened recently. These provide trends and an overview on how markets are developing. They are aimed at service businesses as well as shipping company management who are not involved in day to day chartering, but need to know how business is developing.
- Archive information. All sorts of reasons why people need to know what has happened in the past. Market planning, litigation

and training and education all make use of this type of information.

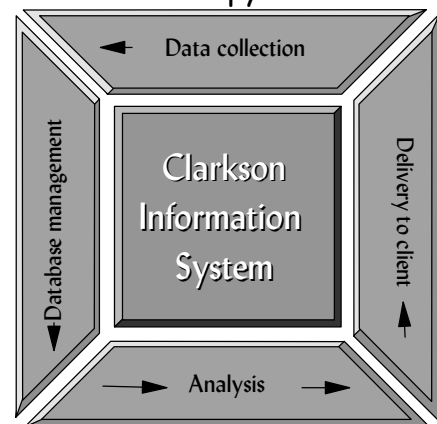
- Finally there are the forecasts that illustrate what will happen in the future, analysing past trends and showing what will happen if they continue in future.

5. Channels For The Provision of Market Information

5.1 The provision of market information today

In the proceeding paragraph I have argued that today's decision makers have several different information needs. The primary task of the information provider is to ensure that the client is able to occupy the high ground at the peak of the *information utility curve*. Let me now run you through how we deal with this challenge at Clarkson Research.

There are 4 separate activities we undertake in Clarkson Research, shown in the figure opposite. The first is data collection, the second is database management, to ensure that the information is thoroughly checked coded and stored in databases that allows it to be used quickly and efficiently. Thirdly there is information analysis. In its raw state most of the information we collect is an unusable jumble of facts. Our job is to sort, analyse and present it so that it conveys a simple and clear message. The final stage is the delivery to the customer.



5.2 The Data Collection System & Database Management

Data collection is crucial and is one area where the web has been a real benefit. Over the last 10 years we have systematically built a database that is relationally linked and which covers all aspects of the shipping business including technical data, commercial information and other information, most importantly times series data that tracks developments over time. The database includes information about ships, shipbuilding markets and timeseries to show trends.

The Clarkson Fleet Database

The centrepiece of our information system is the fleet database. The objective here is to maintain a database which is flexible and which allows all aspects of a ship's commercial life to be recorded and analysed. Unlike Lloyds Register, which specialises in technical data, we are primarily concerned with the commercial and market related aspects of each ship.

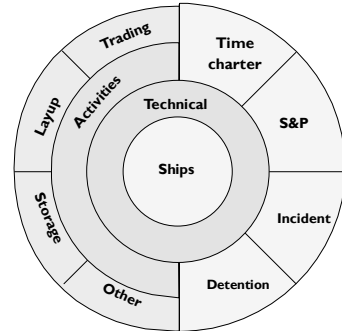


Figure 9 CRS fleet database

The vessel is first logged as it becomes an order and it is tracked through its life until it is finally sold for scrap. During this time we record technical details, but also commercial details such as the activities of the ship (chartering, layup, S&P, storage etc), time charter, sale and purchase, incidents, detentions, name changes etc, as shown in Figure 9. The fleet we track covers the 27,000 ships in the deep sea commercial fleet. Data collection is carried out to established provenance using systems maintained to ISO9002 standards.

The Clarkson Time Series Database

A major aspect of our activity is the generation of time series information, showing how events have changed over time. This covers a whole range of activities including freight rate information, shipbuilding, prices, earnings, time charters, trade etc. (fig 10). We currently keep in excess of 10,000 time series, mostly in a structured database. These series are update daily, weekly, monthly or annually. The main focus is on efficiency in data management. For example the 3000 graphs available in Shipping Intelligence Network (SIN) are updated automatically each week. For most purposes we find weekly or monthly updates are adequate.

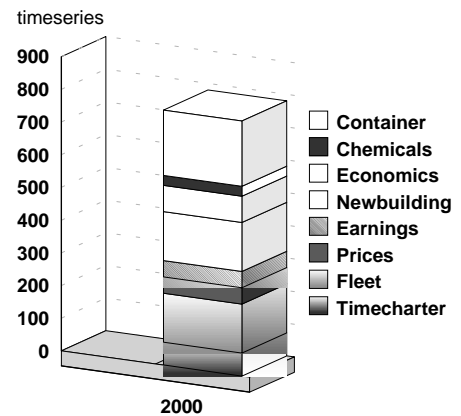


Figure 10 CRS timeseries database

5.3 Information Analysis & Reports



Presenting information in a user friendly format is the most important part of the process. There is not much point sending busy executives lists of ships or spreadsheets. The challenge is to find out what they are interested in and provide summary reports that allow users to locate what they want very quickly. To this end we have developed our "Shipping Intelligence" series of reports, of which the most widely used is Shipping Intelligence Weekly. These reports are delivered weekly or monthly and provide a quick update on markets, a view of trends, and an archive for finding the number you want quickly and easy.

5.4 Information Delivery

Currently we distribute information in hard copy, fax, e-mail diskette, CD-Rom and Web.

6. Information Services & E-Business

6.1 The decision to use web technology

Now we come to the practical issue of aligning shipping information systems with e-commerce. I would like to deal with this by describing how Clarkson Research has developed its information system in the last few years to take advantage of the web technology to provide shipping information to its 6,000 shipping clients worldwide.

We first started looking at the web as a possible distribution system in 1995. At that time we commissioned a trial system that allowed users to access Shipping Intelligence Weekly on line. The system was programmed in Macromedia and worked quite well. However the web at the time was not widely available in shipping offices and connections were still unreliable, so we decided to wait a little longer.

6.2 The aims of Shipping Intelligence Network (SIN)

Three years later in the summer of 1998 we started to develop Shipping Intelligence Network. The aim was to provide our clients with access to the same market information services we provided in other media, but to use the information management resources available on the web to widen the service and allow users to tailor the system to their specific requirements. To achieve this we decided to build the system around the Autonomy Dynamic Reasoning Engine. We also programmed the system in ASP so that it could be tailored to individual clients and employed a sophisticated search engine that allowed clients to develop

their own agents to quick access the information that they specifically needed. The great advantage of this technology is that it allows the user to train agents to deliver the precise information flow they need.

Working with Autonomy, which has now become the UK's most successful internet company, the system was designed to incorporate a three-tier information system providing

1. Spot market intelligence to prospective clients
2. Market reports filtered to user preferences
3. A total capacity to tailor the site to the client's preferences

The site was planned in the fall of 1998, detailed designs were completed in Christmas 1998 and programming was carried out during 1999. The prototype went live as an Intranet in H Clarksons & Co in January 2000 and was launched as a web system in March 2000.

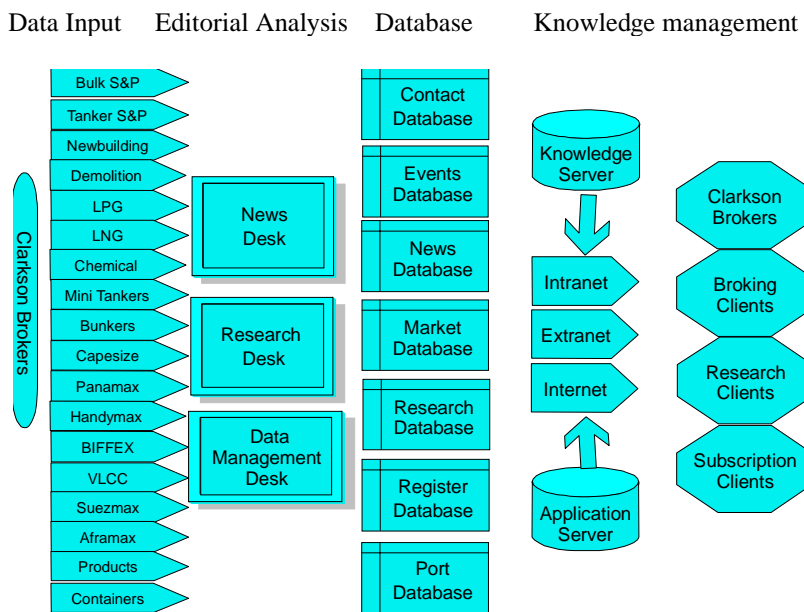


Figure 11 The SIN Informaton Management System

6.3 The SIN Information Management System

Putting together a system which can handle this wide range of information took a lot of effort. We spent most of the 90s building the database and the web delivery system took almost 2 years to complete. The diagram in Figure 11 shows the information management structure we came up with. It is a very powerful system designed to tap into the information flows already available within the Clarkson group, and deliver it to clients in the form that is most convenient to them.

Data Input/Editorial/Analysis: The main contributors are Clarkson brokers and Clarkson Research. Over 200 people whose business is information. We cover all the main shipping markets - about 20 in all. Anybody can submit a report, so we need editorial control. The system has three monitoring desks:

- The News Desk
- The Research Desk
- The Data Desk

When a report is submitted it is automatically tagged and the appropriate editor checks it out for content and, if she thinks it is suitable, publishes it.

The Database System: Data management over the whole process from primary collection through to the automated management of the timeseries database is one of our key strengths. The database system uses SQL 7. It has sections dealing with contacts, time series, news, markets, research and register.

Knowledge Management System: We use the *Autonomy* dynamic reasoning engine. Over the 18 months that we spent building this system, they told us that Shipping Intelligence Network was the biggest job they have undertaken to date! The *Autonomy* DRE provides an intelligent way of managing information offering, in addition to keyword searches, the ability to train agents searching for knowledge content. One of the key aims of the system is to ensure that users only see the information that is of interest to them. Using the DRE we developed a system of pre-tagging. If you are only interested in tanker related news, you tick the tanker box. Users can also train agents. If there is some particular type of information you are looking for, you train an agent to find it for you.

Again this is new technology and we are learning how to use it. However we feel it would be very useful in allowing everyone in this very fragmented industry to receive just the information flows they require.

6.4 Shipping Intelligence Network User Interface

In developing the user interface our aim was to provide a tight web system of pages which packed as much information as possible into a

single view. No fancy graphics and we even took the controversial decision to banish the browser toolbar!

6.4.1 The SIN Home page

The home page provides up-to-date information about the market, the shipping industry and analysis. We are not journalists. Our reports are about markets and the ability to view a wide range of market graphs



Figure 12 The Shipping Intelligence Network user interface

showing very up-to-date trends is important. This is something financial analysts are used to, but in shipping, a much smaller industry, we could never afford it before. Thanks to Web technology we can.

This part of the site is divided into four frames:-

Features : This textbox provides the features selected by the Clarkson News Desk. Users scan the list of features and read the messages they think are important, or just scroll up or down to read previous messages. and the client's own personal selection of news collected by his agents³.

Markets: The client needs to keep in touch with the world and the markets. There are six panels selected by radio buttons. The first

³ The Autonomy "Agents" scan the text information passing through the system and identify reports which match key knowledge concepts that the agent has been programmed to look for.

shows daily shipping market reports including BFI, Tankers, Dry markets, VLCC, Panamax, Handy, Aframax, ship sale etc. The second shows world economic data, \$/£, FTSE, last done. In the box below a graph appears. Users can select the time perspective (daily, weekly, monthly etc). Information management is heavily automated and is a subset of the Market Database discussed above.

Ships: The bottom left frame allows the user to type in the first few letters of a ship's name. Immediately a list of ships will appear, giving the name and dead weight of the vessel. Subscribers can access full details by double clicking. There is a more detailed Register screen for real in depth information.

6.4.2 The SIN Club Room :

Manages contacts. Everyone who joins the club will be registered there. They can also enter events and look up contacts. Again, practical down-to-earth services.

6.4.3 The SIN Register :

Provides a wide range of practical details about the ships, taking full advantage of the web's ability to deliver a great deal of detailed information. By clicking radio buttons users can access:-

1. **Register:** a detailed account of the technical, commercial and ownership details about a ship. In addition to the usual physical parameters it includes ex names, fixture history (where available), Sale and purchase history and other related information,. All this data is key word searchable, so you can look for ships with "stainless steel".
2. **Owners:** A full list of ownership details, with contact information,
3. **Orderbook:** Details of the 2000 ships on the orderbook, searchable by size, type³ and shipyard.
4. **Ship Sales:** a sale and purchase database that can be accessed by type, showing ships sold, prices etc.
5. **Rough Values:** allows users to check the value of a ship and compare it with recent sales of ships of that type. A sort of Glasses Guide for shipping.

6.4.5 The SIN Research Department :

Provides access to all the services Clarkson Research traditionally provides. We have used technology to improve the productivity. The research screen provides access to:-

1. Clarkson publications are available at the click of a button. The reports are viewable in the browser or they can be downloaded and printed. That means fast delivery, since subscribers get them at the same time as the printers. It also means access is possible away from the office. As someone who has stretched his right arm carrying around heavy paper reports I appreciate this.
2. Graphs: Over 2000 graphs regularly updated in a searchable format that can be viewed or pasted into the user's Word document or PowerPoint presentation. This is much quicker than preparing the graph yourself and is a real productivity tool. The graphs are updated weekly.
3. Timeseries Database: Over 2000 time series (with many more to follow) which be searched and cut and pasted into the user's application. The searchability of this database means fast access to the information when you need it.

6.4.6 The SIN Library :

Is the repository for reference material. It contains archives of Clarksons publications, downloads and, in this cyber age, hyperlinks to web sites where you can find specialist information. At least that's the way we are developing it at present.

Shipping Intelligence Network (SIN) has got off to a good start and we now have many large shipping companies among our subscribers.

7 The Sin-Intra System - for company intranets

The final element in our strategy was to focus on individual client's needs. The problem with a generic web site is that it provides all clients with the same information. Modern way programming allows you to build in another layer of productivity by adapting the site to fit seamlessly with the companies own information systems.



Figure 13 SIN adapted for a company Intranet- note the different contents

With this in mind we designed Shipping Intelligence Network from the outset so that the information provision from the Clarkson Research

database is tailored to an individual client's needs. The company Sin-Intra site is private to the company, and can contain all the market information that company specifically needs. This brings many advantages:-

1. The web site can be designed with the client's own livery, so that it fits seamlessly with his other information systems.
2. The information selection provided can be geared to the client's particular requirements. For example, a tanker owner would see tanker market reports.
3. Information provided by Clarkson Research can be supplemented by the company's own information. This ability for users to post information is one of the most powerful features of SIN. It means, for example, that the site could have a section reporting the position of the company's ships. Or the company analyst could post his/her own reports about the market.
4. Security levels can be established for access to information.

We have now developed several of these sites and the approach is proving very flexible. An example of a typical Sin-Intra site is shown opposite. The "look" is quite different from SIN and is designed to blend with the company's own Intranet site.

8 Conclusion

In this paper I have discussed the use of information in shipping and described the way research has tried to use the new technology to provide a faster, cheaper and more efficient service to clients.

In the end this is only useful if the web produces productivity. In our experience it has been quite successful in doing this. Our saving in printing and distribution costs is very substantial and we are able to offer the client information at an affordable price.

From the client's point of view I believe the web delivery adds value in four ways-

- Firstly access to information as soon as it is published is a clear benefit, especially when dealing with markets.

- Secondly many of our clients use the information to produce their own reports, so making it available in a digital format that can be transferred to their own word processing and spreadsheet applications improves productivity.
- Thirdly, as Samuel Johnson pointed out, knowledge is knowing where to find information. Quick access to the vast array of information stored in SIN saves time in answering those infrequently asked questions.
- Finally search routines and agents help cut information overload by filtering out the information required by each client (though I admit we are still learning how best to use this technology).

We are pleased that so many of our clients have seen these benefits and have signed up for the Shipping Intelligence Network!

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