



Tele-K

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Analysis of Infonet/Interpak's International Competitors

1.0 Summary

The recently completed agreement between Televerket, Datema AB and CSC/Infonet forming the Interpak AB subsidiary has strengthened both Televerket's and CSC's position in international X.25 data communications, giving CSC another node with end user support and giving Televerket another option in international communications. In order to make the best use of this added option, Televerket must understand exactly where CSC and Infonet fit into the international communications market and study the competitors to Infonet in this market.

1.1 Overview of Infonet

The best summary of Infonet is to be found in a recent report prepared by LINK Resources Corporation, in October, 1985. The relevant parts of the report are included as an Annex to this paper. To summarize this report, LINK states that Infonet had, at that time, the strongest position in the international private packet switched network marketplace, based on its connectivity and its local support operations in major world markets.

The following listing shows what LINK felt to be the major points in Infonet's favor as a competitor in the market place:

- * Unsurpassed international interconnections, serving 71 countries.
- * Local support available in 24 countries out of the U.S.
- * Direct net access in 11 countries.
- * Background in service bureau products and software development.
- * Direct agreements with several PTT's.
- * IBM protocol support for both SNA and BSC.
- * X.25 network, with X.28 interface for async traffic.
- * IRC interconnect for access from telex and slow data lines.

This is an impressive list of available services and, according to LINK, gives CSC/Infonet a good competitive position. Others must agree, since CSC's debt rating, a measure of investor confidence in a company, was just upgraded to BB+ by Moody's Investments in the U.S., a rating higher than some Bell Operating Companies.

A closer look at CSC/Infonet shows the company can assist us in providing X.25 data networks to Swedish customers who need

features not provided through Datapak or who need assistance in setting up a network outside Sweden. Infonet can also provide on-site service for their network by their own people, always an advantage in selling a network. Finally, they have expressed a willingness to look into the possibility of allowing their personnel around the world to provide services not related to Infonet to our customers. All in all, this seems a valuable addition to our offerings in international communication.

The international market is a competitive one however, and it would be wise to study the different competitors in the marketplace. To do this, we will segment the competition in two groups, those competing from a service orientation and those competing from a network orientation. We will look at current activity and possible future players in each segment.

Infonet itself is currently a network-oriented company, but is moving in the direction of service orientation. Service orientation is the more attractive of the two possibilities and the area with the largest potential, so we will look at it first.

1.2 Service Oriented Competition

Service oriented competitors generally offer an application or service and include the communications network as part of the offering. In other words, they offer to build a cash management system, a document interchange service or an order entry accounts receivable system, and include the network to allow the application to run. "Bundling" is the U.S. marketing term for these offerings. These offerings may be for wholly internal use, for electronic data interchange (EDI) or for trade data interchange (TDI).

An internal application could be an inventory management system which would allow the U.S. subsidiary to directly access the Swedish parent company's computer to find out about product availability. An EDI application would allow the Swedish manufacturer to place an order directly with a supplier's computer system, either in Sweden or elsewhere, handle the cash transfer, track the shipment and so on. A TDI system would allow a Swedish company to place an order for a product through an industry clearing house. That clearing house would then manage payments, order tracking, customs clearance and so on.

CSC currently is almost exclusively in the internal applications part of this market, developing software for IBM hosts and selling that software to users, who tie the applications together with Infonet. Infonet is supposedly looking at the multiple host environment which characterizes the EDI and TDI market and CSC has a service bureau background which is helpful in developing wider applications for this market.

Current competitors to Infonet in this market are:

- * General Electric Information Services Company (GEISCO)
- * McDonnell Douglas Information Systems (MDIS)
- * IBM Information Network System (INS)

GEISCO

The major competitor today is GEISCO in its self-described role of "third party facilitator". In 1984, GEISCO, faced with a decline in its computer service bureau business, started selling its international network as a separate product. They failed in this, as they were unable to compete with the established Value Added Networks (VANS), such as Telenet and Tymnet. In 1985, they began a reorganization which moved them out of their direct competition with the VANS and put them in their current market, building managed data networks for trade data interchange (TDI) and electronic data interchange (EDI).

GEISCO builds these networks using the International Record Carriers (IRCs) and its own private network. They have been quite successful, both within the U.S. and internationally, listing clients such as Apple Computer, for EDI, the Motor Equipment Manufacturers Association and the Society of Motor Manufacturers and Traders, for TDI, and the international banking community, which settles 95% of the international exchange transactions over the GEISCO network.

In Sweden, Volvo and Saab are members of the MOTORNET clearing house network run by GEISCO for the Society of Motor Manufacturers and Traders. These companies compete in selling cars to the world market, but cooperate in using MOTORNET, because using it allows them to reduce their costs of building those cars. GEISCO has the experience to handle the negotiations necessary to set up these types of networks, which is why they call themselves "third party facilitators".

GEISCO also has the resources of its parent company, General Electric, to call on for additional expertise. This is important since GE is generally considered to have the best strategic and business planning abilities in the world. GEISCO can and does use this expertise to solve the non-technical problems of building networks, which are often the greater. The level of difficulty associated with standardizing business practices of different companies is much greater than standardizing their computer systems.

McDonnell Douglas

McDonnell Douglas has entered the EDI/TDI market with its McDonnell Douglas Informations Systems (MDIS) subsidiary, using the networks built and run by its Network Services (MDNS) subsidiary. MDNS includes Tymnet, the largest X.25 network (by number of nodes and circuit miles) in the world, and FTC

Communications, an International Record Carrier (IRC). The MDIS group operates EDI*NET in the U.S. and EDI*NET Ltd. in the UK. This offering specializes in EDI exchange, not TDI, in that they are not working with clearing houses, rather with separate companies wishing to interconnect.

McDonnell Douglas is of course an aerospace company at heart, so other offerings in the MDIS group are a natural extension for them, those offerings being CAD/CAM and industrial database exchange. It is this offering which is now hiring in Stockholm. The high technology background also gives them an advantage in one EDI market, high technology companies, which they see as their primary market. It is interesting to note that their first U.S. customer was a supermarket group.

McDonnell Douglas got into this business by buying Tymshare, which was the owner of Tymnet and FTCC. They bought the company to diversify their business interests and to expand their own in-house expertise in advanced communications technology. Historically, Tymshare was a remote processing company heavily used by Chrysler Corporation and, when Chrysler's fortunes sank, so did Tymshare's. Chrysler's comeback helped rebuilt Tymshare's business, but computer service in general was in decline, so Tymshare was available. MD paid about 305 million dollars for the company in 1984.

Tymshare was reorganized into the MDIS group and began developing EDI systems. They maintained their contacts with Chrysler and now handle Chrysler's EDI needs and dealer network. This, taken together with the Tymnet traffic, which in many cases supports EDI functions, allows MDIS to claim the lead in the EDI marketplace, although, as is often the case in marketing, others would dispute this. In any case, The background of Tymshare and the Tymnet and FTCC networks put MDIS in a good position for the future.

MDIS built its service on its private network in the U.S. and seems to be moving in this direction to the greatest extent possible in international traffic as well. It started its service in the UK in partnership with BT, with BT providing support and MDIS managing the network. One would expect the company to try and follow this plan elsewhere.

IBM INS

IBM announced the Information Network Service in 1982, to provide value-added connections for SNA systems and to offer remote computing services to its customers. The value-added component was, and is, network management and the remote services were, and are, access to IBM's own machines for applications developed by IBM. They have never marketed the service outside of the IBM customer base, but given the size of that base, they don't have any need to.

The next area they will move into is EDI between their customers, according to the LINK report mentioned earlier. This will allow their customer base to exchange data and electronic mail and access custom applications running on distant hosts. They feel this is a good long term market. Currently, INS is supporting an EDI network for insurance brokers in the U.S. and will be expanding this into international insurance as well. INS has stated publicly that the EDI system used for the insurance industry would be applicable to other industries as well.

One must remember that IBM has taken an equity position in MCI, which is interested in getting into the EDI/TDI market, and any other market it can. The current thought is that IBM will expand its position in MCI much as they did with Rolm, until they eventually own the company outright. This would affect Infonet in the U.S. more than internationally, unless IBM becomes more interested in international traffic.

In Europe, IBM has done little with the INS product, although they are now building it up and adding personnel. One area they have moved into is the VAN market in the UK, offering the same sort of services as in the U.S.. It would seem unlikely they will stop using leased lines from national carriers to build this service, since they have good relations with all of them and would like to continue selling into the PTT market.

Let us conclude this section by looking at how each competitor stands against Infonet.

Financial Resources

All the competitors have more cash resources than Infonet. However, a BB+ rating means CSC/Infonet will have little trouble securing financing if they need it.

Networks

Infonet has the edge in international networks and has as much U.S. network as IBM. MDIS has the largest network in the U.S. and IRC connections. GEISCO leases what it needs to operate.

Support

Infonet has the lead in international technical support, all the others have more business support available.

Experience

In in-house applications all are equal. In EDI in general, GEISCO has the lead, followed by MDIS and IBM. In TDI, GEISCO again is the leader, followed by IBM and MDIS.

Conclusion

In general, Infonet looks to be the leader for in-house applications in international operations, although GEISCO and MDIS will close in on this market. For EDI/TDI applications, Infonet has to ranked behind GEISCO and MDIS, possibly equal to IBM, although IBM has much larger resources. In Sweden, GEISCO is in place and has about 40 clients, Infonet is servicing the Datema clients, MDIS is just opening an office and IBM is offering service bureau functions and database retrieval only.

GM/EDS

We cannot finish off this section without a few words about General Motors/EDS, the company formed in late 1984 when General Motors bought Electronic Data Services, the largest applications and system integration house in the world at the time.

GM bought EDS because they felt they needed the experience of EDS to integrate their computers and communications needs and that EDS was the one company with the ability to do this. They spent 2.5 billion dollars to get that expertise. GM/EDS is involved in developing the MAP local area network protocol for GM, building what will be the largest private communications system in the world, standardizing all of GM's EDI/TDI systems, and running all of GM's data processing and CAD/CAM systems. This accounted for 67% of EDS's business in 1985. As one can see, EDS is big, 950 million dollars worth of business in their 1984 year, before GM bought them.

Exactly what GM/EDS will do other than operate GM's telecommunications and data processing is an open question, but EDS president Ross Perot has indicated he wants GM to account for no more than 50% of EDS's total business. Since he can't turn down GM, he has to expand. He has also said he wants 25% of business from international operations by 1990. In 1985, only 2% of their business was international, so we can see one area he plans to expand.

GM/EDS has also signed a joint marketing agreement with ATT Information Systems. This joint operation just signed a 10 year 4.2 billion dollar contract with the U.S. Government.

The effect of open competition by GM/EDS in the international marketplace is frankly impossible to project. On one hand, they have technical and integrations skills no one can match. On the other, their style of operation is characterized as "aggressive", to put the best face on it. Such a style may not be welcome by Swedish users. In reality, they will probably be looking for clients much larger than any Infonet could hope to serve out of Sweden, so it may not even be relevant.

1.3 Network Oriented Competitors to Infonet

Network orientation means that the company is selling data transport, not applications. There may be some value added functions, such as speed and protocol conversion, but basically, the connectivity of the network is the product. This market has become a "commodity market" in the U.S. and is becoming one internationally as well. A commodity market is one in which there is no distinction between products. Any product can be replaced by another from the same class with no differences apparent to the end user.

In a commodity market, competition is solely on price, since there is no difference between the actual products. This is the reason it is an unattractive market to be in, since competition drives down prices, often to the point where profits are gone. For this reason, all of the network competitors discussed below are attempting to find additional services to offer to take them out of the commodity market. We will discuss some of these offerings in detail below.

The current network competitors to Infonet include:

- * The International Record Carriers
- * U.S.-based value added networks (VANS)
- * ATT International
- * British Telecom International
- * Mercury Ltd and its parent Cable & Wireless Plc

As we mentioned above, Infonet is currently a network competitor, although it is reportedly moving into the applications and EDI/TDI market. Their major offerings in the network market are:

1. Price
2. Protocol support
3. End user service
4. International connections
5. Flexibility

We will analyze Infonet's competitors in these terms, then discuss the area of "one stop shopping" and its effect on Infonet and Televerket.

The IRC's

The IRC's are ineffective competitors because they cannot offer competitive prices and flexibility to customers. By their nature they are locked into pricing and leasing arrangements which keep them from responding rapidly to the market. However, they provide the means for others to compete with Infonet, since they are the transmission paths for international communications.

U.S. VANS

The U.S. VANS are more direct competitors, especially in the North Atlantic market. These carriers include the MDIS company Tymnet and the merger product of Telenet and Uninet, U.S. Sprint Telecommunications. Both of these companies offer X.25 links to the U.S. and Tymnet has a full line of IBM support. They have the pricing flexibility and configuration flexibility to be competitive as well. They are not as well connected internationally and they do not have local support in as many countries as Infonet, although Tymnet is beginning to open overseas offices, such as the one in Stockholm, and U.S. Sprint may be expected to do the same.

MCI has been mentioned in its connection with IBM. In addition it is now offering X.25 services in the U.S. and may be expected to move into international operation. Its linkage will initially be to the UK and the Far East, using Mercury and Cable & Wireless as a carrier.

ATT

ATT is beginning to offer its services internationally as well, requesting permission to extend its Accunet product, which offers packet switching at up to 56Kb, to Europe. ATT has also announced plans to offer its restructured Net 1000 product in international trade. ATT is going about this by forming joint ventures, such as the network with KDD in Japan and various services in the UK. Exactly what their competitive position will be is unclear, although it seems safe to say they will not have the level of international connectivity of Infonet or the amount of end user support. Their joint marketing agreement with GM/EDS must be watched however, since EDS is operating internationally and can provide any sort of service required.

BTI and Mercury

These two companies are offering X.25 service to the U.S., Europe and to the Far East in competition with Infonet and all the others listed above. More to the point, they offer X.25 service over their own cables and satellite links at a very low cost. This traffic is primarily concentrated in the North Atlantic route to the U.S. and Canada. In addition, they are forming joint ventures, such as the recent one between BTI and McDonnell Douglas/FTCC, which provides X.25 between the UK and New York at speeds up to 9.6 Kb at a significant discount to IRC rates.

Both companies have negotiated bilateral agreements with all major North American VANS to handle data traffic on a hub basis, concentrating data in the UK and U.S. and transmitting it across the Atlantic at a reduced rate. This so-called pass through traffic is significant in that both Mercury and BTI will be landing it in Europe in the future.

BTI has also entered the EDI market through a joint venture with MDIS and its EDI*NET subsidiary, with BTI providing and managing the network and EDI*NET handling the protocol and forms standardization.

These two companies are probably the biggest threats to Infonet in the North Atlantic and Far East, since they have connectivity as good or better than Infonet's and, in the case of BT, an EDI partner as well. As to the rest of Europe and other markets, Infonet can probably compete with them.

In summary, in this segment Infonet is clearly superior to the IRC's in international X.25 traffic. They are currently superior to or equal to the U.S. VANS in non-North American international traffic, and probably well enough situated to deal with them in the U.S. domestic market as well. Infonet is at a disadvantage to BTI and Mercury in the UK/North American and UK/Far East markets because of agreements between these UK carriers and other carriers. In the rest of the international market, Infonet is equal to or better off than they are, because Infonet has the local agreements.

1.4 Total Communications Solutions

We must remember that X.25, while important, is only part of a total communications solution. This is where the concept of "one-stop shopping" comes in. With Datapak and Infonet Televerket can offer a competitive and functional solution for all X.25 communications needs. Other providers are positioning to provide more than this, either in the provision of applications to run over X.25 or through other types of communications services, or both, in the case of BTI.

Televerket cannot develop the years of general business experience necessary to build EDI/TDI systems in the short term, this expertise must come from elsewhere. As mentioned above, Infonet has some of this experience and may be able to "buy" other experience by hiring personnel from GEISCO, GM/EDS or MDIS. We can however, provide assistance in the Swedish market where we do have contacts and experience and work with Infonet to serve this growing market in Sweden.

We have some options in the other areas of communications as well. While using Infonet and Datapak to service the X.25 and IBM protocol market we can follow the example of the UK companies by exploring the area of bilateral agreements for hubbed or city direct services, as well as in the pass through market. If we do this Swedish companies will not be tempted to go to BTI or Mercury to obtain total communications packages at the best price/performance level.

We can also explore the satellite delivery option more fully, perhaps in cooperation with some of the competitors to INTELSAT now being licenced in the U.S. or in cooperation with

some of the companies trying to develop VSAT (Very Small Aperature Terminal) networks in Europe. Tele-X could provide VSAT service in its footprint and other satellites will be available in the same time frame from other providers. For a full discussion of VSAT, see the competitive assessment done for Televerket as a whole.

company has lots of processing power, application software and software development capability which it can leverage to become a leading player in the applied communications marketplace.

GEISCO's unbundling of Mark*Net is only one part of its transition effort. The company has sought further enhancements by entering the shared tenant services business when it joined with InteCom, Wang and MCI. GEISCO is the single source provider and integrator of MCI long-distance service, Wang office information processing systems, and InteCom PBXs. It has introduced several new electronic messaging products for PC users. It established for dealers of Apple computers a network which uses the Macintosh as an intelligent workstation linked to Mark*Net. With Bonneville Telecommunications, it signed an agreement to jointly market both companies' services. Bonneville provides broadcast data delivery services using a network of FM stations linked by satellite. While this service is very cost effective for one-way, point-to-multipoint communications, it is impractical for point-to-point communications. GEISCO's Mark*Net provides these services. This marriage of technologies allows GEISCO and Bonneville to offer a full package of options to meet customer needs.

Computer Sciences Corp. Infonet: Unrivaled International Reach

Computer Sciences Corp., one of the largest systems houses, does business through three operating groups. Largest of these, and the company's chief technology base, is the Systems Group. An industry leader, Systems supplies custom-designed computer and communications systems primarily to agencies of the U.S. government. The Industry Services Group serves specific market niches with information processing services such as consumer credit reporting, insurance claims processing and income tax return processing. The Information Network Services Group provides value-added communications, distributed processing and remote computing services. These services are provided via Infonet, a worldwide data communications network.

The company initiated time-sharing services on the Infonet network in 1970. This grew very rapidly until 1981, when the time-sharing industry came under pressure from microcomputers and better cost-performance ratios of mainframes and minis. CSC began to shift Infonet emphasis to communications-based services. Only in 1984 did Infonet shift from a time-sharing company to a VAN specializing in international links.

Infonet has the most extensive international access and support in the data communications industry. The Infonet network has its own nodes in 19 countries outside the U.S. In these 19 countries, Infonet can support public dial access for 2780/3780 and 3270 terminals accessing U.S. hosts. Infonet has gateways into or direct public data network connections in 11 countries. Including countries

reached via the low-speed international record carriers, Infonet reaches 71 countries. There are CSC technical support engineers in 24 countries. CSC has established international business relationships and is in partnership with several foreign regulatory agencies to sell and support Infonet services.

In its latest international activity, in April 1985, CSC announced the formation of a joint venture in France to provide French companies with high-quality international data communications. The two French partners are Transpac, S.A., which operates the French public data network, and French Cables and Radio, S.A., a supplier of telecommunications equipment.

In the U.S., Infonet has 175 nodes serving some 400 cities. Compared to Telenet and Tymnet this does not seem like much, but Infonet's strategy is to target multinational organizations, which either do not need extensive domestic coverage or can get it from other VANs.

Infonet has more than 50 corporate customers including Pan Am, J.C. Penney, Hilton International, the Los Angeles Times, and the Harper Group, an international freight company. CSC counts many of the RBOCs as current customers for time-sharing services and software development, and Infonet is hoping to sign them up for inter-LATA transport services.

Infonet has revenues of \$13 to \$15 million. Of this, 80 percent is external business and the balance supports CSC timesharing business. Less than 40 percent of this is federal government business.

Infonet services include:

- Communications Network Services -- Multiple protocols are supported including asynchronous, 2780/3780 bisynchronous RJE Workstation, 3270 BSC and X.25 support. 2780/3780 RJE applications account for 75 percent of the overall network traffic.
- Enhanced Communications Services -- Current offerings include Notice, an electronic mail service, and telex delivery. The company is looking at providing EDI and other clearinghouse services, proprietary databases, and file transfer and conversion capabilities.
- Host Services -- IBM and CSC proprietary remote computing services. Also includes software development for customized applications, system integration and facilities management.
- Custom Private Network Services -- These are not offered yet, but the company is in the process of negotiating with hardware manufacturers to get into private network sales.