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THE STATE OF PREPARATION FOR COMPUTERISATION OF INFORMATION FLOW OF ENTERPRISES PARTICIPATING IN LAND-SEA OPERATIONS

Abstract

A significant part of activities of transport enterprises concerns servicing the internal and external information flow. Exchange and processing of information appears in every sphere of activity of enterprises participating in land-sea operations. Results of numerous investigations show that every improvement of data flow has a marked influence on the economical results of enterprises and on improvement of their competitiveness. An important tool supporting this process are electronic techniques of information service, used more and more commonly in trade, transport, cargo handling, operator and other companies engaged in intermodal transport.

Progress in electronic techniques generates a new market, determined not by geographic boundaries but by the reach of computer networks. Modern electronic tools provide for new marketing techniques, new types of access to information, goods and services, and for new forms of realising trade contracts, characterised by higher standard, higher quality and reliability.

These changes are a significant challenge to all Polish enterprises participating in land-sea operations. Political and economical changes started at the beginning of this decade resulted in disintegration of the monopolistic structures of large enterprises and initiated the process of formation of new companies, which forced them to make constant efforts to strengthen their position on the transport market, to increase the effectiveness of their operation, and to improve their competitiveness. The degree of implementation of information techniques in everyday operations of the enterprises is quite diverse. The quickest changes are proceeding in large companies, which were formed on the basis of fixed and financial assets of the previous enterprises, subjected to restructuring processes. Relatively small change occurred in these authorities which remained in the old organisational structures of central state authorities. Taking into account the present situation on the Polish and European transport market, implementation of computerised

information systems serving the transportation and handling of cargo in intermodal transport is the most looked for and profitable investment. Evaluation of the state of equipment in tools and of the degree of preparation of the enterprises to become connected into larger information systems is analysed in detail in this paper.

Decisions taken by the Second Pan-European Transport Conference in 1994, concerning the directions of development of transport policy in the European Union, have been widened to include the Baltic countries which are not members of the EU. An agreement was signed between the EU, represented by the European Commission, and the Ministers of Transport of Baltic countries on the development of a cohesive European transport system.

The Memorandum signed by the Ministers of Transport and the adopted by the Co-ordination Committee programme of activities determined the directions of co-operation of the Baltic region countries, including *inter alia*:

- development of intermodal transport basing on starting competitive, in comparison with land transport, short sea and sea/inland services,
- development of new logistics concepts,
- implementation of communication systems and of electronic data exchange,
- procedures facilitating trade, including customs services and other administrative procedures,
- improvement of safety of water transport and of environmental protection.

The signed Memorandum has been distributed among the managements of all larger sea transport enterprises. The adopted directions of co-operation in the Baltic region are the basis for modernising and improving the efficiency in the fields of activity of the enterprises.

Assessment of the present situation in the service of intermodal transports on the Polish market allows to state that:

— there is a large differentiation in the number of companies offering services, in their size and financial capacities,

— the most important role on the market is played by these companies which originate from large, specialised sea transport enterprises. They are passing through a transformation process, but their floating and fixed assets allowed them to keep their place on the transport market, and to build a new image,

— on the Polish market appeared numerous foreign companies, offering highly specialised services; these firms as a rule are connected with large West European companies. By introducing modern forms of activity into the market, they have initiated the mechanisms of competition, which have been stimulating the transformation processes of Polish enterprises,

— the largest change is observed in services, which are functioning in conditions of competition. Outdated forms of operation and communi-

cation are used in ship and cargo servicing enterprises, which are agencies of state authorities or function in the framework of state administration. They still are of centralised character, and all change is the result of decisions of higher level authorities, or at least requires their approval,

— the management of these enterprises has a significant influence on the change of forms of activity and of the character of information flow to the outside world (which is an important element of managing an enterprise). Changes which are desirable from the point of view of market economy, are introduced by young, well educated managers, free of the load of schemes of centralised economy.

Computerisation of information services in the enterprises is initiated mainly by informatics sections/departments. Informatics specialists, besides presenting specific offers to rationalise information flow, must also spend much time and effort to find support and financing of the propositions. According to the opinion of these services, this situation results from the lack of awareness of the managing staff and from its desire to maintain the prestige of their function, to keep all the dispositions in their hands. Still occur such situations that every document/external documentation must be approved by someone from the management.

Taking into account the above conditions, it may be nevertheless stated that in the structure of enterprises involved in intermodal transport, significant modernisation of decision making processes and of information flow services is taking place. There is only a very small number of enterprises to which effective and quick methods of communication have yet to come. If these methods are still not utilised, than at least programmes of their implementation are being realised. Much advanced is the process of computerisation of information flow. For the time being, it is concentrated mainly on rationalising internal activities of the enterprises. The most often functioning computerised systems include: finances and bookkeeping, office work, personnel/workforce management, listing and realisation of orders.

Computerisation of the financial and bookkeeping system is the basis for improving the effectiveness of these enterprises. Generally, these systems are designed to:

- calculate a competitive offer of own services,
- look for weak points in the enterprises operation in the aspect of locating points at which excessive, unjustified costs are generated,
- supply necessary information to the management.

Systems aiding the quantity, range and quality of offered services are most often implemented in the second stage of computerisation of the enterprises. Databases are formed to facilitate the process of generating documents and other carriers of external information.

These changes are directed at attaining the necessary ability for connecting to larger systems, allowing co-ordination and co-operation with all the participants of the sea transport processes. This is confirmed by the fact that the investigated enterprises invest in such modern hardware and software, which ensures these

possibilities. One may often hear that the hardware/software equipment of Polish companies is even more modern than of other similar companies in Europe.

In the past, introduction of modern information flow methods and communication techniques was initiated by ship-operator and port companies. This resulted from the wider than in the case of other enterprises co-operation with foreign partners, and from their position on the transport market. These were large enterprises, with good financial results obtained due to the effect of scale of offered services. They belonged to the first to implement computerised information systems.

A factor which significantly slows down the implementation of modern concepts of modernisation and of improvement of operation of Polish ports, is the lack of an Act which would regulate the process of port restructuring. While waiting for this solution, work is concentrated on solving day-to-day problems. The progress of computerisation of information flow has visibly slowed down. Attention is focused on realising systems increasing the efficiency of internal procedures in ports, often basing on own informatics services. This is the stage of preparation for larger changes in, especially external, document and information flow.

Information/document flow in relations with Polish sea ports concerns three basic areas of their activity:

- servicing the physical presence of the customer (ship, cargo),
- handling and storage services,
- procedures of document flow and account settlement.

The most outdated forms of information flow are used by port dispatcher services. The code of conduct of 1963 is still in force; it determines the procedures and principles of co-operation of the dispatcher with other cells in the port, and with co-operating institutions and enterprises. The port dispatcher, basing on a teleconference agrees upon the conditions of servicing and physical receiving/dispatching a ship and cargo. During one day, with more intense traffic, there are hundreds of telephone connections to be realised and dozens of fax (and telex) messages to be sent off.

The cargo and ship handling services are most advanced in information flow rationalisation. However, problems of document flow and account settlement still require solving. Traditional external information flow systems still operate in ports. The use of e-mail has allowed for some improvement, but e-mail is not accessible at all the more important work stands.

Computerisation was first introduced at the Baltic Container Terminal in Gdynia. This was due to the increase of the container stream and the resulting difficulties in dealing with the flow of a large volume of diversified information. However, the presently owned by BCT hardware and software is becoming a bottleneck in the further development of computerisation.

It was decided to buy new equipment and informatics system based on EDI technology. In principle, this system will serve the whole holding and the port community in general. It should contain two logical subsystems: the internal and the external subsystem. At the implementation stage, a pilot system will be started in

which will participate the general cargo terminal, C.Hartwig, Terramar, Sea Agency in Gdynia, Pol-America and Pol-Levant. In the next stage the BCT will be included in the system. Finally, it will be used for 90% of cargo passing through the port in Gdynia.

In the consecutive stages of computerising external information flow, the following will be included into the system:

— transmission of invoices,

— sending standard communications of the type:

→ manifest,

→ bayplan,

→ loading lists,

→ discharge lists, etc.

Each of the terminals should have its on operational subsystem, serving the following relations:

— loading,

— discharge,

— transportation by road transport,

— transportation by rail.

These are the initial plans for informatisation in the port in Gdynia. Tenders for the development of the system will be invited. It is thought that simple implementation of a ready system, tested with good result in West European ports may not be successful. Difficulties may arise because of the differences in functions and activities between Polish and EU port customers/partners: the forwarders, agents, land carriers, and also of the port itself. It may be expected that because of these differences a special system will have to be developed for the port. It would then have to be worked out under the supervision of the informatics services of the port. Decision on these issues is expected very soon. Some time lag may result from waiting for legal solutions (Act of Parliament) concerning the re-privatisation of ports.

Significant progress of computerisation is observed in **large transportation enterprises**, especially dealing with sea transports and rail transports.

Large scale computerisation have been carried out in the former **Polish Ocean Lines**. Two systems were implemented at that time:

- for manifests (CPU 0),
- for containers (CPU 1),

which are still operating. These systems are open, allowing modification and extension according to growing requirements, resulting from changes in techniques and technology of communication and from changing requirements of the services market. The systems function independently and there is no cohesion between them. Attempts are made at utilising the advantages of both these systems

to develop solutions allowing flow of information between them. However, this objective may be reached some time in the future.

The systems allow co-operation with a network of agents in Europe and USA/Canada. They function basing on two information centres: one in Germany and one in USA. The lead centre is in Germany and is named Unilog. It is connected to a system of communication links: Dakosy in Hamburg, X400 and X25 network. By means of these links, operational companies of the POL can connect with other agents in European countries[1], and with the second centre of GAL (Gdynia America Lines) in the US. These systems communicate with sea ports.

Due to the communication openness of the systems, external information of the POL holding passes through by various techniques:

- by telex with France and Spain,
- by e-mail (basing on own links) mainly with Far East and South American countries,
- computer-computer (with modem terminals) with Hamburg, London and New York (in Wang system).

All external information from communication centres is daily collected, analysed and sent to the centre in Gdynia.

In the information flow the main difficulty is that systems basing on which the bill of lading and the ships manifest are developed are separate and not cohesive. With respect to container carriage realised by Pol-America, the bill of lading system functions on the principle of booking at the Hartwig Gdynia. Hartwig is presently working on improving the book of lading system, and it is expected that electronic flow of this document will become possible before the end of this year. The ships manifest passes through the Sea Agency in Gdynia (which is the agent of ship operators of the POL holding) to sea ports. The Customs Office in Gdynia is interested in extending this link.

The Central Container System functions basing on the same communication links and techniques of external information flow. The system is supervised by the container company Pol-Container.

The system ensures automatic receiving of information from agents, information processing, automatic preparation and sending of communications to selected agents. It also allows automatic checking of the correctness and logic of sent information, checking of the data in the central register. The tasks of the system include:

— tracing the movement of containers supervised by Pol-Container,

— supplying to users information necessary for preparing required for container service documents,

[1] Belgium, Netherlands, Norway, Sweden, Denmark, Switzerland, Austria, Hungary, The Great Britain.

— supplying running information on the size of container reserves,

— producing statistical reports according to arbitrary criterions of grouping.

The input data of the tracking system pass from the agents and container depot/terminal operators by means of computer transmission or by telex. Telex information is only a form of printed information, and cannot be directly computer stored. This is a disadvantage of the system, suggesting that implementation of a more modern application is needed.

The operational companies and POL are interested in further computerisation of the information flow. They have applied to be included in the port community system, which is to be developed in the Port of Gdynia.

The system of internal service of mainly financial and bookkeeping activities of the POL companies and holding is presently being improved. Modernisation is realised in two ways:

— by replacing hardware (in place of Wang computers, PCs are installed),

— by implementing new application systems.

Due to the change of hardware, software tools are also changed. The Oracle 7.3 database server and the SCO Unix systems are installed, including tools of the type:

— Designer 2000,

— Development 2000.

These are one of the most modern solutions available on the world market.

Traffic in relations with Polish ports is served also by other ship operators, in that: Maersk and Happag Lloyd (through Team Line service). These services are equipped with the newest informatics solutions for information distribution, including electronic data exchange of EDIFACT type. The use of these systems is limited by the inadequate equipment of Polish sea transport enterprises, which still is not fit for receiving standard messages. These ship operators are expecting that the port will offer them connections with the system. Their co-operation with the port consists in using computer terminals, provided by the Baltic Container Terminal within the computer-aided system of container traffic services.

The **Polish State Railways** (PKP - Polskie Koleje Państwowe) are still a monopo-list on the rail transport market in Poland. PKP is one of the largest state-owned enterprises, and as other such enterprises is in the process of restructuring, since its effectiveness and efficiency of management require much improvement. The changes in PKP will go in the direction of transforming from geographical structures into substantial/functional structures. The resultant structures will be similar in character to solutions in West European countries. An important tool for increasing the efficiency and modernising the principles of management is computerisation, which has been systematically introduced in the last years.

It was decided to build up a technical/software base, which is the basis for solving problems concerning the efficiency of operation and management of the PKP. Informatics services of the PKP started work on developing and realising a System

of Transportation Control and Management (System Kierowania Przewozami i Zarządzania - **SKPZ**).

The initial stage of work, connected indirectly with computerisation, was the purchase of a communication network package, based on X.25 standard, including installation of fiber optic links network along the main railroads. The communication network, named Kolpak, is already installed. This will allow to start operation of e-mail. In the first stage it will substitute the telegraph network of the PKP. Teleprinters will no longer be used not only in telegraph offices, but also as terminals in information systems of the Polish Railways.

For the proposed system, Digital computers based on the newest Alpha processors, were purchased. They are installed in about 30 information processing and storage centres. The main centre of the system is fitted with a double set of mutually safeguarding computers. There is also a parallelly functioning centre, the so-called Diseaster Centre. The system is designed for collecting data on magneto-optic disks. Together with the hardware, an Oracle 7.X database system was purchased. It is considered to be one of the most modern and high capacity systems, with high potential for further development. In selecting the hardware and software, the criteria of efficiency, modernity and potential for using EDI technology in the future were considered.

Basing on the purchased equipment and functional software, the System of Transportation Control and Management (SKPZ) is implemented. In the initial stage such applications were taken into account, which can significantly increase the efficiency of the PKP in short term. These are the following subsystems:

- **Umak** (acquisition contracts),
- **List przewozowy** - in English waybill (documentation service of cargo transportation),
- **Śledź** - in English track (monitoring of rail shipments),

which will have a significant influence on the system of external information connections. Besides the above, a financial and bookkeeping subsystem is implemented, which will improve the efficiency of the financial management of the PKP, and which will prepare a basis for extending computerisation, in co-operation with the Railways partners, onto financial settlements. The system will also play an important role in the process of determining the transportation offer, basing on cost calculations.

According to assumptions, the **Umak** subsystem will support the process of drawing up acquisition contracts and monitoring their progress. This application will have the following tasks:

— formulation and recording of offers,

— determining the conditions of contracts,

— monitoring of the realisation of contracts,

— preparation of recompenses,

— analysis of effectiveness of realised contracts,

— service of claims,

— data interchange with customers.

The data needed to fulfil the above tasks will come from permanent databases, such as e.g.: customers, nomenclature of cargoes, record of wagons. They will be used for selecting data needed for the contracts. The application will allow to develop a draft contract, record it as a proposition, and send it to the customer. After accepting the conditions of both sides, the draft contract will become an acquisition contract, and will be recorded in the contract database. Such a contract will be the basis for drawing up a waybill.

The **List przewozowy** (waybill) application will be used in three kinds of communication:

— in-country,

— international, based on the CIM Convention (on international transportation of goods between European countries),

— international, based on the SGMS Agreement (used in carriage of goods with railways of CIS, Estonia, Latvia, Lithuania and Asiatic countries belonging to the Organisation of the Union of Railways of CIP.

The application may be used for servicing all types of shipments (including express shipments in in-country traffic and general cargo in international relations).

The waybill subsystem will provide data for making contracts with the customers, for monitoring their realisation and for costing the realised services along the whole transportation chain. Five tasks have been designed for this application:

- input and control of shipment data,
- preparation of contract for transportation,
- correction and actualisation of data,
- calculation of charges,
- information on conditions of transportation.

At present, data from the waybills are recorded centrally in the Cetar system. Implementation of the **Umak** and **List przewozowy** applications will allow to de-centralise the service and to draw the required documents at the station of sending. A new, fulfilling CIM Convention requirements, standard of the waybill will be introduced on internal relations. One copy of this document, drawn at the station of sending, will be the basis for accepting the shipment for transportation, and the second - at the station of destination - will confirm that the cargo has been received by the consignee. In international relations, the waybill will be drawn up at the border in such form as is required by Conventions or by bilateral agreements. The application provides for two-directional conversion of CIM and SMGS waybills. This feature shows that the PKP is preparing for functioning in international conditions, preparing for implementing the EDIFACT standards.

The subsystem of automated shipment tracking, named **Śledź**, has taken over the task of information service and of monitoring the movements of each shipment from the moment of drawing up the waybill until the contract is terminated, i.e. until the

cargo is passed to the consignee and charges for services are settled. The application will fulfil three important functions, supporting:

— the process of drawing up and of realisation of a contract for transportation, by automatic recording of the facts connected with the sending or receiving the shipment at the cargo cashiers office or at the cargo check-in point,

— dealing with occurrences in the transportation process, especially such as may disturb the process (e.g. breakdown of rolling stock, damage or loss of cargo, damage of infrastructure, etc.),

— electronic data interchange with customers, railway managements and other organisations.

The PKP is prepared for receiving and sending EDIFACT standards and HERMES communications, commonly used in West European countries.

In the final stage, the presented above SKPZ subsystems are designed to process data in accordance with standards used European systems:

- DOCIMEL - the electronic waybill system,
- HIPPS - the system for transportation planning and control,

which use standards required by the electronic data interchange network of rail transport - the HERMES.

Information flow between different railways will be at the level of central management, and with non-Railway partners - using the Railways information system.

The market of road transport services is very disintegrated, and there is no co-ordination aimed at improving the efficiency of co-operation with customers. Better transparency in this respect is in transport enterprises, which specialise in logistics transports between the consignor and consignee. Some of these firms have achieved a good name and high position on the transport market.

Road carriers, employed in the import and export services in relations with ports, often fulfil this function on the principle of utilising free transportation capacities. This is the case with larger road transport enterprises, such as the PKS (Państwowa Komunikacja Samochodowa - State Road Transports). Carriers employed permanently in relations with ports are most often small firms, working for certain shippers, forwarders. Information flow between them and their customers is traditional. They use commonly available means of sending information in direct communication, or indirectly, they use the capabilities of forwarding firms. An increasing number of transport companies functioning also as customs agencies is appearing on the market. However, these firms also use only traditional links for information exchange.

Similarly to the forwarding market, the market of **agency services** is very differentiated, both with respect to the range of offered services and to the degree of modernisation of the information circulation system.

In the structure of supply of agency services, an important role is played by sea agencies, whose activities, based on many years of experience, ensure comprehensive servicing of ships and cargoes in all sea ports. They charter and organise optimum

organisation of bulk (solid and liquid), general (in that unitised), extra-dimensional and heavy cargoes.

Within the scope of activity of sea agencies are also:

— servicing of vessels sailing, built and repaired in Polish shipyards,

— completing of Polish crews for ships of foreign ship-operators,

— representing ship-operators at the insurance companies.

A new form of activity is the representation of shipping lines and ship-operators, involved in carriage of specialised cargo, in the process of finding the best possible solutions of intermodal transport of conventional and containerised cargo.

Similarly to agents operating on the market, the sea agencies must adapt to the requirements of the customers they are representing. The stimulus to change hitherto forms of operation of the agencies are the shipowners, ports and their solutions concerning the forms of servicing cargoes and ships, and the methods of passing information to their partners.

At present the sea agencies are in the process of implementing:

— operational systems: brokerage and agent services,

— specialised systems:

  → container system, allowing to monitor movement of containers of their customers,

  → crew services,

— financial and bookkeeping system, to improve the efficiency of information flow inside the enterprises and to provide a basis for costing agency services , and also to rationalise management.

The sea agencies are at the stage of connecting local networks of separate offices into company networks.

Since a long time, the Sea Agency in Gdynia is connected (by means of a fixed link) with the port in Gdynia and with Euroafrica. This link ensures efficient servicing of container traffic. However, the Agency has no such link with the POL holding, communication with which is realised by means of the standard network offered by TP S.A. (Polish Telecommunication Co.).

Apart of the traditional forms of external communication: radio, telex, fax, telephone, shortly an Internet system and e-mail will become operative. This will improve significantly processes of communication with customers.

The large ship-operators, with which the agencies co-operate, offer implementation of own solutions of information flow. Such a form of information interchange is most suitable for both sides. At the Sea Agency in Gdynia, the Happag Lloyd information system is being installed to such extent as is necessary for both sides for two-directional communication. Happag Lloyd has an open electronic data interchange system. This system operates in two divisions in Hamburg and at offices of the representatives of this ship-operator in Singapore and USA.

The Sea Agency in Gdynia has its own (fixed) link with Hamburg and with the Happag-Lloyd division in Warsaw. The access to the network, and the already implemented operational systems of this ship-operator, significantly increase the capabilities of the agency. The system is adapted for electronic data interchange. It will ensure efficient servicing of container transports and preparation of documents connected with transportation (e.g. making stowage plans).

Besides the sea agencies, there are also many other agencies. Their scopes of activity are diversified and as a rule include affreightment, clearing, or are limited to one type of cargo or one line, e.g. Eurocargo, Rolimpex Marine, Uniconsult, PolAgent, Baltic Shipping Agency, Polfracht S.A. Capabilities of these firms are very limited as far as external information flow is concerned. They base on traditional forms of communication, with a tendency to utilise Internet and based on it e-mail. Of all the agents, only the Sea Agency in Gdynia stated its preparedness to be included in the port system in Gdynia.

Attention should also be given to the forwarding/agency enterprise Cargo Service in Szczecin, which has obtained an ISO quality certificate. However, the range of external information exchange technologies used by CS does not extend outside what is considered as basic for this group of enterprises. CS uses Internet technology and e-mail.

Much has changed in the structure of **forwarding services** in Poland. The disintegration of the C.Hartwig monopoly at the beginning of the 90ties resulted in the appearance of numerous small and medium businesses, with scopes of activity often limited to the service of a given cargo, border pass, depot/terminal, a given mode of transport etc. Such businesses often carry out both forwarding and transportation functions. It rather cannot be expected that they will try to implement state-of-art information/documentation techniques, since their basic problem is to stay on the market.

The initiators of change on the forwarding service market are:

— shippers, which are strengthening their position or are increasing their range of activities basing on support of foreign capital,

— foreign forwarding enterprises, which in growing numbers are represented on the Polish market. Most often, they are divisions of large forwarding companies, which enter the Polish market backed by the experience and equipment of their wealthy centres.

In between the numerous participants in the sea/land traffic, the largest number of documents is generated at the forwarding enterprises. Larger forwarders, such as Hartwig, MultiSped, Terramar, Spedrapid, implement internal systems resulting in improved efficiency of forwarding activities, better effectiveness of services and more efficient production of documents.

Generally, software operating in large forwarding enterprises includes the following systems:

- uniform SAD document for all types of procedures (including printouts on special forms),

- customs tariffs, allowing tarrification of cargoes in accordance with updated customs rates,
- invoicing, including foreign and correcting invoices. The system allows to calculate the invoices in any currency,
- financial, in the part concerning sales, and including the following subsystems:
  - payments,
  - VAT records with respect to sales,
  - vindication of charges,
  - recording of obtained pre-payments,
  - recording of sent invoices in the invoicing system.

Some forwarders can also procure waybills for land carriers.

The subsystems are compatible, in effect once an information is input into one of the subsystems it is used in the other procedures. This eliminates the need to key in data separately for each procedure. The information systems use a common fixed data base, such as e.g. record of customers/partners, forwarding tariff, customs tariff, rates of currency exchange, record of forwarding operations.

Besides, telex/fax computer systems are installed, basing on a dedicated communication processor. This significantly improves the efficiency of correspondence with customers. The developed standard sheets allow to shorten the time of writing a cable and eliminate mistakes.

Though electronic data interchange systems are still not implemented, it should be stressed that the larger forwarding enterprises have equipment allowing internal information exchange and enabling further development of communication functions. The applications function basing on UNIX, and the main computers include IBM AS 400, Compaq Proliant 1500/166 MHz. These are the most often used hardware platforms for information systems of medium and large enterprises in West Europe. They can serve a large number of terminals, located at the central office and also at the local divisions. Linking of the central unit with terminals at the divisions is not fully realised due to the lack of access to an appropriate telecommunication network. This concerns e.g. the C.Hartwig in Gdańsk-Nowy Port. Insufficient means for installing an own line forces Hartwig to wait until proper cables will be installed by TP S.A.

Besides the forwarding enterprises located close to the port, external connections has C.Hartwig S.A. in Gdynia, linking the company with:

- the Baltic Container Terminal,
- the POL holding, with access for the shipping line.

The exchange of external information concerns:

- releasing cargo in import and export relations (BCT),
- starting/drawing up bills of lading (Pol-America).

C.Hartwig S.A. and Terramar want to be in the planned port of Gdynia community information system. It is assumed that the system will function on the basis of EDIFACT.

In most cases, larger forwarding enterprises have access to Internet and e-mail. However, use of these tools is diverse; in some of them they are used only by higher levels of management.

Some forwarders are considering connecting their information systems to Internet. This would allow to use e-mail at each terminal of the system, and to put permanent information about the firm on WWW pages.

Another group of participants, directly involved in land/sea traffic, consists mainly of authorities/offices which still have not been included in the process of restructurisation. These are mainly offices subjected to the central State organs. All changes in these offices are implemented under the direction and supervision of higher level units.

For a long time public information media have been informing about the computerisation of the **customs service sector** under the supervision of GUC (Main Customs Office). The effect of these changes is minimal. Implementation was directed mainly at problems of internal improvement of work of these offices. The purchased software for recording and settling customs and tax dues, servicing the reimbursement of import customs duties, servicing border passes, customs tariffs etc. is not used. In most cases the customs offices have withdrawn the applications and are waiting for new system solutions. In this situation, assessment of external information connections is quite clear. Nearly in full scope the traditional system, based on fax, telephone, telex and traditional document flow is functioning. An exception is the release of import containers, forced by BCT on the Customs Office in Gdynia. The earlier prepared procedures of releasing export cargoes may become operative in this year.

A similar situation is in organs of the **Border Guard.** They are not engaged in implementing modern methods of external communication.

The **Maritime Offices**, which are responsible for supervision and control of safety of navigation (and of maritime structures), also use traditional methods of external information flow, especially in contact with sea ports. Basic information concerning safety of traffic control are transmitted by radio. The remaining information is circulated in the form of paper documents through telex or fax, or by telephone.

The Maritime Office in Gdynia obtains hydrographic data from the Hydrographic Office of the Navy. Hydrologic data are supplied by the Institute of Meteorology and Water Management in Gdynia, and they are transmitted by traditional channels. The Maritime Office in Gdynia has not yet started e-mail, and the use of Internet is limited to a WWW server.

At present an internal information computer network is being built to connect all the units in the Office. When these works will be finished, it will be possible to implement an information system supporting the statutory activities of the Maritime Office. Plans for the future include installing a Vessel Traffic Management System.

In spite of the rather small progress in rationalising information flow between the Maritime Offices and the ports, it should be pointed out that the Maritime Office in Szczecin is presently implementing a VTM System, which will fulfil many functions, including such main ones as:

- determining the position of vessels, their course and speed,
- identification of vessels,
- observing and marking the state of environment (e.g. investigations of oil spills),
- remote pilotage,
- prevention in case of accidents at sea,
- recording of navigation situation,
- monitoring of anchorages,
- monitoring of navigation aids,
- management of vessel traffic,
- service of services and internal administration,
- distribution of navigation information,
- preparation of statistics and reports.

In order to implement the system, a information trunk line is being installed, which probably will become operative before the end of 1998. Along the line connection boxes will be installed for all potential users. This is an investment with a view to the future, taking into account the needs of the users of cargo handling services of the West Pomeranian port system.

The VTM system will include the Świnoujście- Szczecin navigation channel. The channel is characterised by difficult conditions of navigation. In the first stage of implementation, the system will allow direct information flow between the Maritime Office in Szczecin and the Customs and Border Guard offices.

In the final stage, the system will be extended over the whole Szczecin-Świnoujście port community, and vessel traffic services and management will be one of its components.