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A PROCESS MODEL OF MARITIME INSURANCE

The paper illustrates a proposition for process model of the P&I maritime insurance sale. A specific feature of such a form of insurance relates to the collaboration between an insurance company and P&I clubs, which insure shipping company liability. The paper shows a decomposition diagram of the process of P&I insurance sales, from the aspect of the insurance company. The process of insurance sale is described. For process specification, the following methods are used: Work Flow, Activity Flow and Data Flow Diagram. The first two methods clearly show the position of processes in organizational parts of the insurance company and external business organizations. The Data Flow Diagram shows processes and data flows between them, not depending on where these are performed or who performs them. Such a model is the basis for information system development.

Key words: *business functions, P&I insurance, process model, DFD*

1. INTRODUCTION

Regular ship insurance "Hull" does not entirely cover the risk of collision responsibility. Aside from it, there is also P&I insurance (Protecting and Indemnity) of shipping liability toward third parties as one of maritime insurance forms which cover the risk of collision responsibility. P&I insurance emerged in mid 19th century, i.e. clubs covering the insurance of shipping responsibility were organized (Pavlić, 1994).

There are around 15 such clubs (Sewerd 2008, Club, 2008). Insurance starts by registering a ship to the club. An insurance company can be a mediator between shipping companies and P&I club, and it can also be a coinsurer of the P&I club. The system of shipping responsibility insurance represents a separate entity for the insurance company and has specific business processes. In the scope of P&I insurance, the whole business starts by selling insurance. This paper describes the operation of P&I insurance sales (RIS, 2005). Methodology MIRIS (Pavlić, 1999; Pavlić, 2003) is used for process modeling. Process modeling is just the first step of information system design (Avison, 1995; Sommerville, 2007; Brumec, 1995).

2. DECOMPOSITION OF SYSTEM PROCESES

In P&I insurance, besides the shipping company as the insured, and an insurance company as the insurer, the P&I club plays an important role. P&I club has the role of an insurer, and the role of an insurance company is mediation between shipping company and the P&I club.

The analysis of business processes in P&I insurance which are performed in the insurance company, includes the analysis of task organization that are run on different hierarchy levels of the insurance company (general management, subsidiary, office, agency, agent, etc). Based on the conducted analysis of the business system, a decomposition diagram was created showing business processes of the system, in Figure 1. The process of insurance sales is decomposed in detail.

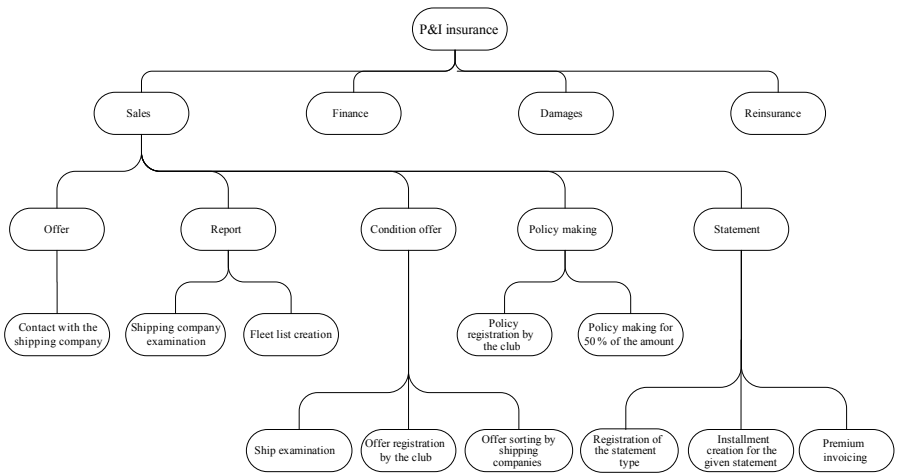

***Figure 1**: P&I Sales decomposition process*

Source: Authors

Figure 1 shows four basic business processes on the top level of hierarchy: sales, finance, reinsurance and damages. Business process Sales is the first phase in the life cycle and the source of information for other business processes. Other three processes are interconnected with data flows running both ways.

3. PROCESS MODEL DIAGRAMS

For modeling P&I insurance processes, the following methods will be used:
- Work flow diagram
- Activity flow diagram
- Data flow diagram (DFD)

Figure 2 shows the work flow diagram in P&I insurance. It illustrates processes which run between various organizational units of the insurance company (finance, damages and technology and development) and external organizations: P&I club, shipping company and reinsurer. The representation of work flows enables analyzing the relationship of processes and organizational units of Croatia insurance and external organizations. Each process is consists of activities. Work flow diagram can be further decomposed to activity flow diagram within each process.

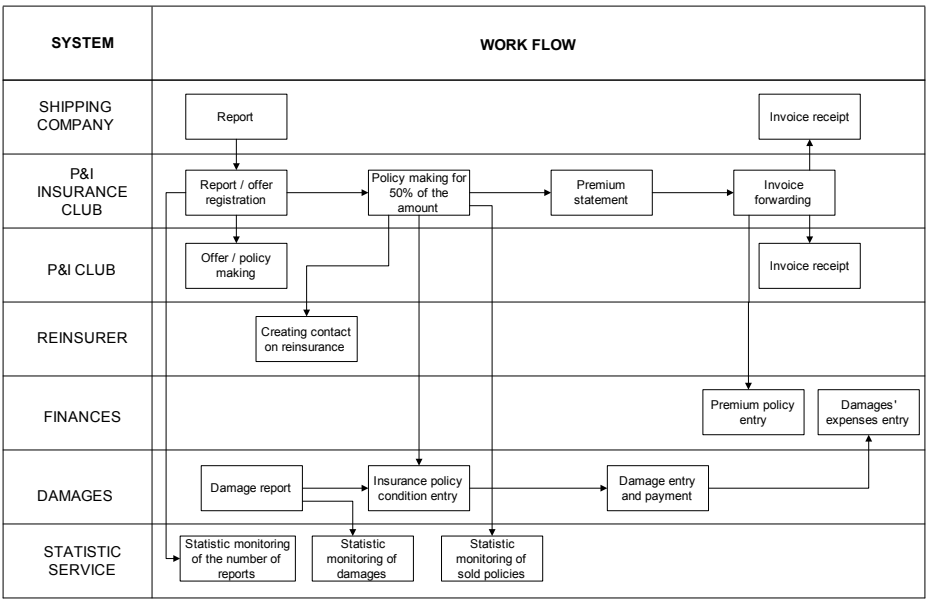

Figure 2: *Work Flow Diagram for P&I insurance*

Source: Authors

Figure 3 and 4 show the communication within the insurance company.

Figure 3 illustrates a detailed activity flow for the process of P&I insurance sales, which includes: Processes of report, offer and policy making for P&I insurance. In more detail, the activities are decomposed into activities which are performed on the level of the whole company and the activities which are performed in subsidiaries. The shipping company and the P&I club are not decomposed in detail. One can observe the communication within the insurance company, as well as between the insurance company and the environment.

Figure 4 shows a detailed activity flow for the process of premium statement, which includes: statement, invoicing and reporting on modifications. For each policy, the P&I club sends the document "Debit note" with the premium installment amount that the shipping company is to pay. In the insurance company's subsidiary, the premium statement is created depending on the insurance risk distribution between the insurance company and the P&I club. Data modification is possible in the case of insurance cancellation or paying a fine. Then additional statements are created. P&I club sends the "Credit note" by which it informs on premium refund to the shipping company or sends a new "Debit note" with the installment amounts for premium surcharge.

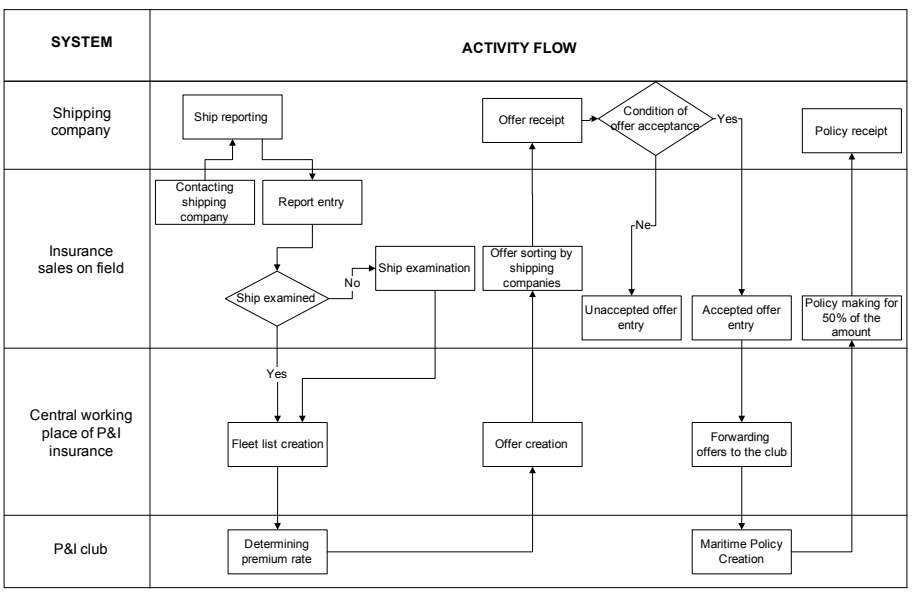

Figure 3: *Activity Flow Diagram of P& I insurance sales*

Source: Authors

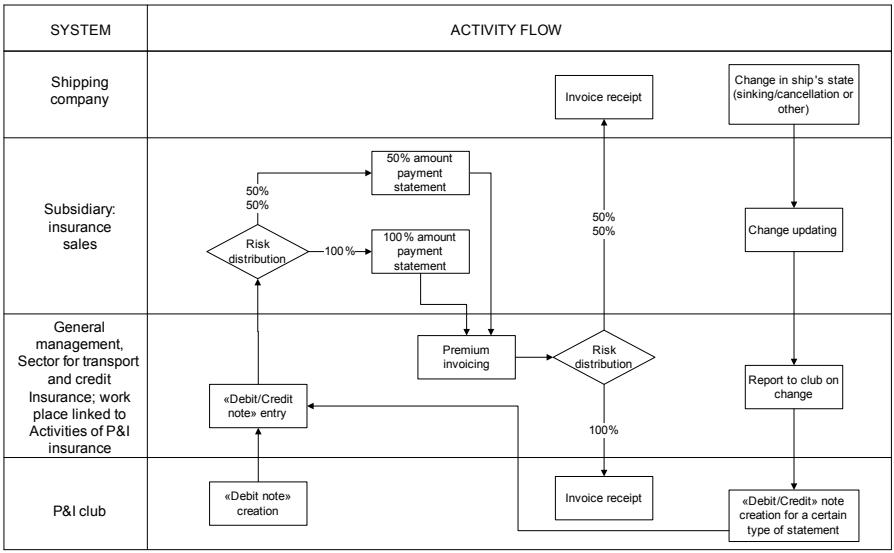

Figure 4: *Activity Flow Diagram for premium statement*

Source: Authors

Data flow diagram in Figure 5 and 6 shows data flows between processes within organizational units of the insurance company and external processes of shipping company and P&I club.

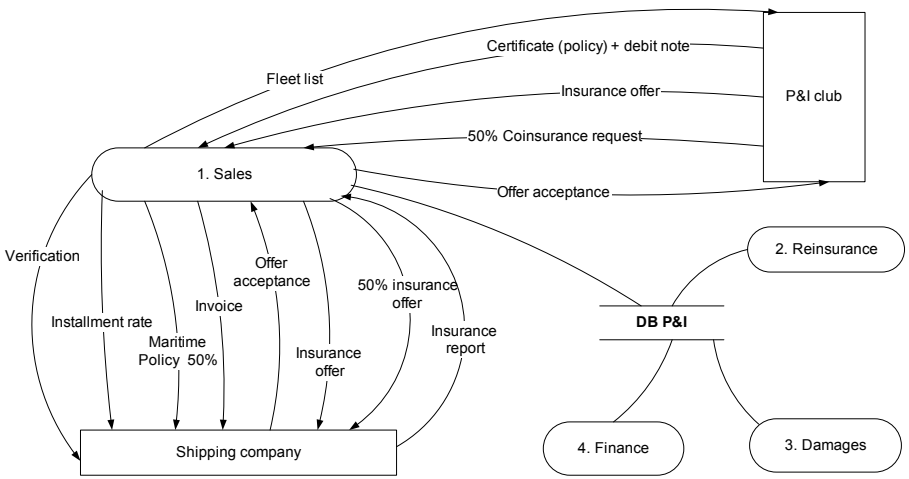

Figure 5: *Context Diagram of P&I insurance*

Source: Authors

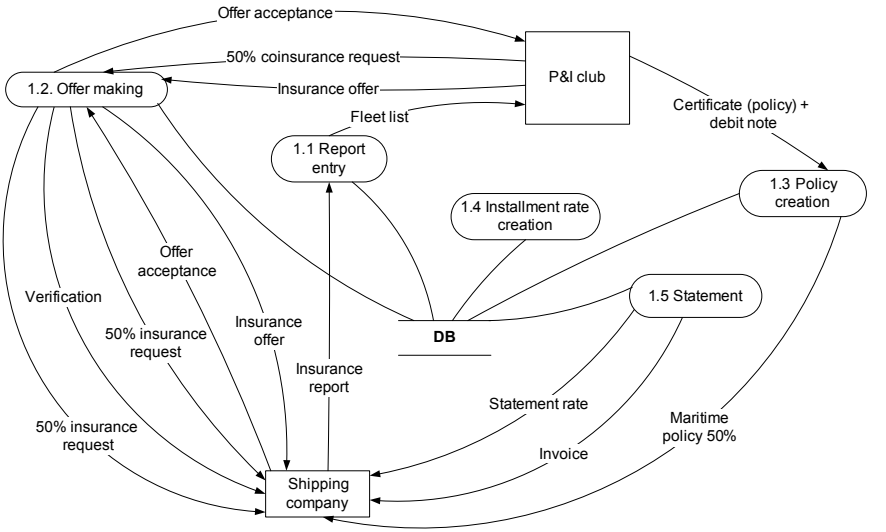

Figure 6: *Data Flow Diagram for process 1. P&I insurance sales*

Source: Authors

Figure 5 shows a context level diagram, which offers a preview of data flows on a higher level. It shows the relationship of reinsurance functions, damage and finance functions, and the database, as well as basic data flowing toward/ from Shipping Company and P&I club.

Figure 6 shows a detailed process decomposition 1. Insurance Sale. Sale consists of five subprocesses, these being: 1. 1. Report entry, 2. Offer creation, 3. Policy creation, 4. Installment rate creationi 5. Premium statement. Insurance registration is taken from the shipping company and delivered to the P&I club via Fleet list.

There are two ways in which a ship can be insured in the club. The first way is that the ship be 100% insured in the club, and the insurance company is the coinsurer to the club at 50% of the total premium amount. The other case occurs when the ship is insured 50% in the club, and 50% in the insurance company. The insurance company can cooperate with two or more P&I clubs, so the shipping company can decide to which of the clubs his ships will be registered.

Insurance starts with the registration of a ship to a P&I club. The shipping company applies to the club through the insurance company. The shipping company is first required to authorize examination of the ship. Specialists from the classification bureau determine the state of the ship and create a corresponding written report. Based on this, the insurance company sends a report for the ship to the P&I insurance at least once a year. The report holds

a set of ship data. P&I club will, based on the report, and especially based on the state of the ship, determine the premium rate, i.e. the premium amount of the insurance. Insurance contract is renewed once annually. The insurance company sends the list of all shipping companies and the ships they want to insure to the P&I club (the fleet list). In return, it receives premium rates for the ships. Based on this, the insurance company forwards ship insurance offers to the shipping companies. If the shipping company accepts the offer fo P&I ship insurance, the P&I club issues the Maritime Policy, and sends the Debit Note, i.e. note containing information on installment rates and due dates.

When the insurance company is the coinsurer, the shipping company pays the premium directly to the club, and then the club pays 50% of the amount to the insurance company. When the ship is insured 50% in the insurance company, the shipping company pays 50% of the premium directly to the insurance company, and the other 50% to the P&I club.

The business documentation consists of: insurance registration, offer, policy, fleet list, premium report.

Based on the accepted offer from the P&I club, an offer is created for the Shipping Company. After the offer is accepted by the Shipping Company, insurance policy is created, installment rates are determined and the Invoice is delivered to the Shipping Company.

CONCLUSION

The paper suggest process modeling of P&I insurance information system using the following methods: decomposition diagram, Work Flow, Activity Flow and Data Flow Diagram. The insurance process is divided into 4 processes: Sales, Finance, Damages and Reinsurance.

The Work Flow Diagram and the Activity Flow diagram show the relationships of different subjects during process performance. The Data Flow Diagram shows decomposition of the business process of P&I insurance sale, and the documentation flowing between processes. In the field of maritime insurance the authors did not find any similar process model propositions. This process model is the basis for information system development.

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Sažetak

MODEL PROCESA POMORSKOG OSIGURANJA

U ovom radu prikazan je prijedlog modela procesa prodaje P&I pomorskog osiguranja. Specifičnost ovakvog oblika osiguranja odnosi se na suradnju osiguravajućeg društva s "P&I klubovima" koji osiguravaju odgovornost brodara. Prikazan je dijagram dekompozicije procesa prodaje P&I osiguranja s aspekta osiguravajućeg društva. Opisan je proces prodaje osiguranja. Za specifikaciju procesa su korištene metode: Work flow, Activity flow i Data flow dijagram. U prve dvije metode vidljivi su smještaj procesa po organizacijskim dijelovima osiguravajućeg društva i vanjskih poslovnih organizacija. Na dijagramu toka podataka prikazani su procesi i tokovi podataka među njima neovisno o tome gdje se i tko ih izvodi. Ovakav model je osnova za izgradnju informacijskog sustava.

Ključne riječi: *poslovne funkcije, P&I osiguranje, model procesna, DFD*

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