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IMPLEMENTATION OF RESERVE AND PAYMENT CALCULATION SYSTEM IN CLAIMS MANAGEMENT WITHIN THE SAP ERP SYSTEM

ORIGINAL SCIENTIFIC PAPER

Summary

This paper presents the implementation of an SAP solution in the insurance sector. It begins with an overview of ERP systems and SAP, with a focus on the FS-CM Claims Management module. The aim of the paper is to introduce an information system for the complex process of claims payments, which is one of the key processes in an insurance company. The implementation encounters numerous challenges: how to automate the entire process and how to integrate all the systems involved. It is necessary to follow the process from the creation of a claim request, through payment calculation and claim processing, to the final payment to the policyholder. The presented solution involves the integration of multiple SAP modules and systems to enable the process, as well as the use of some SAP modules in a different way than their standard application. As an ERP system, SAP has the capability to provide such integration of the entire process from start to finish.

Keywords: *SAP, ERP systems, FS-CM Claims Management, claims management*

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I. Introduction

Every business system can be described through a specific structure and a set of business processes executed within that structure. If these processes are to be automated, it is necessary to develop appropriate information systems that ensure each business process, or its individual activities, is automated to the greatest possible extent.[4] Although information systems create many exciting opportunities for enterprises, they also represent a source of new problems, questions, and challenges for managers. Large software and hardware systems still fail despite rapid advances in information technology.[5]

Increasing efficiency, optimizing costs, and managing resources represent the primary tasks of management. Only those business systems that have ensured a meaningful flow of information and goods within the supply chain, achieved excellent customer relationship management, and implemented e-business can gain a strategic advantage.[6] Integrated software solutions, among which ERP systems stand out, contribute to transforming the industrial landscape.[7] An ERP system encompasses modules for all key areas of business, such as procurement, production, materials management, sales, marketing, finance, and human resources.

SAP was one of the first companies to develop standard software for business solutions and continues to offer leading ERP solutions in the industry.[8] Among the numerous companies that have implemented SAP software solutions, many are insurance companies. The insurance sector requires the management of complex and diverse processes, including policy administration, premium calculation, claims processing, actuarial activities, and risk management. It is necessary to track and record vast amounts of data on clients, contracts, and regulatory reports. Integration with external systems and databases is often required. This is why there is no single ready-made business solution that can meet all the requirements of insurance companies. Instead, it is necessary to integrate multiple SAP modules and solutions and tailor them to the specific needs of each client. This, in turn, represents the greatest challenge in implementing SAP solutions in the insurance sector.

This paper addresses one of the most important processes in claims management – the reserve and payment calculation system. The goal is to support the process entirely, with a high level of automation, to ensure that employees can use

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[4] Bojan Jovičić, Siniša Vlajić, „Evolucija ERP sistema", *ИНФО М* , 22/2007, 18–22.

[5] Chetan S. Sankar, Karl-Heinz Rau, *Implementation Strategies for SAP R/3 in a Multinational Organization: Lessons from a Real-World Case Study*, IGI Global, 2006, 2.

[6] Dragana Rejman Petrović, „ERP sistemi u funkciji unapređenja kvaliteta poslovanja", *Nacionalna konferencija o kvalitetu,* Faculty of Mechanical Engineering, University of Kragujevac, Kragujevac, 2009, A15–A22.

[7] Thomas F. Wallace, Michael H. Krezmar, *ERP: making it happen: the implementers' guide to success with enterprise resource planning,* Hoboken, NJ, USA 2001, 4.

[8] *https://www.sap.com/westbalkans/about/what-is-sap.html***,** accessed on August 21, 2024.

the solutions as easily as possible, thereby simplifying their daily operations and increasing overall business efficiency. This paper provides a detailed presentation of the solution implemented in the project. All system screenshots are original from the project and are therefore shown in Dutch or English.

II. ERP Systems

Enterprise resource planning (ERP) systems have had a profound impact on enterprises and organizations worldwide.[9] In most cases, ERP systems are implemented with the objective of improving a particular aspect of an organization, such as strategic, organizational, operational, managerial, or IT infrastructure capabilities.[10] An ERP system (*Enterprise Resource Planning*) represents a software solution designed to manage all of an enterprise's business functions. It is an integrated system that connects all parts of the organization, enabling their mutual coordination and the flow of information between them. By using an ERP system, an organization manages its entire business through a single software platform and stores all critical information in one centralized location.[11]

In addition to leading proprietary ERP systems such as SAP and *Microsoft Dynamics*, the market has also seen a significant presence of open-source ERP systems. Small and medium-sized enterprises often opt for open-source ERP solutions, primarily due to their lower implementation and maintenance costs.[12]

The structure of an ERP system typically consists of a collection of applications. These are organized into functional areas referred to as modules. Naturally, there are differences among individual ERP systems in terms of module composition, which means that not all ERP systems encompass the same functional areas, nor do they always include identical modules.[13]

1. Advantages of ERP Systems

In her book on modern ERP systems, Bradford discussed the advantages and disadvantages of ERP implementation within an enterprise. Among the primary

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[9] Debra Howcroft, Duane Truex, „A critical analysis of ERP systems: the macro-level", *The Database for Advances in Information Systems,* 4/2001, 13–18.

[10] Jonas Hedman, Andreas Borell, The Impact of Enterpise Resource Planning Systems on Organizational Effectiveness: An Artifact Evaluation. In *Enterprise Resource Planning: Global Opportunities*, Hershey, PA: Idea Group Publishing, 2002, 78–96.

[11] Milena Ristić, „Šta je ERP – Značaj ERP rešenja u poslovanju preduzeća", 2017, *https://beleske.com/sta-je-erp-znacaj-erp-resenja-u-poslovanju-preduzeca/,* accessed on August 10, 2024.

[12] Dragana Maljković, Ognjen Pantelić, „Komparativna analiza ERP sistema otvorenog tipa", *STED Journal,* 5/2019, 9–18.

[13] D. Rejman Petrović, A16-A17.

advantages is data integration. In ERP systems, data is collected once and shared throughout the enterprise, thereby reducing the risk of inaccuracies and redundancies in the data and eliminating time lost on verification, re-verification, and data reconciliation.[14] One of the outcomes of ERP introduction in the context of integration is centralization. By implementing such a system, an enterprise can replace two or more independent applications and eliminate the need for external interfaces that were previously required to link these systems.[15] For organizations that process large volumes of data, data quality is the foundation of organizational success.[16] [17] Poor data quality can cost a company as much as 10% to 20% of its total revenue.[18] Another advantage of ERP systems is real-time access to information, which improves collaboration and communication across the enterprise.

An ERP system also requires the company to share a common process and data model that encompasses complex operational processes from start to finish, such as those found in manufacturing and supply chain management. This standardization improves coordination within the organization and across the organizational network, facilitating interaction with both internal and external stakeholders. ERP vendors design their solutions around processes based on industry best practices.

Finally, ERP systems can reduce operational costs and increase revenue. Companies that implement ERP do so in order to achieve efficiencies such as lower inventory costs, reduced manufacturing expenses, or decreased procurement costs.

2. Disadvantages of ERP Systems

Implementing an ERP system involves far more than simply installing off-the-shelf software. It is a complex, time-consuming undertaking that can involve numerous issues. Many of the issues encountered during implementation relate to the so-called *soft stuff* (human factors) as opposed to *technical stuff* (software/hardware issues). A lack of employee involvement can present a significant obstacle if staff members are not informed about the organization's motivation for investing in an ERP system, or if their opinions and feedback are not taken into account during the implementation process. In some cases, ERP systems face resistance because employees may be quite content with legacy systems they have used for decades.

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[14] Marianne Bradford, *Modern ERP: Select, implement and use today's advanced business systems,* third edition, Morrisville, NC, USA 2015, 6-9.

[15] B. Jovičić, S. Vlajić, 18–20.

[16] Stuart Madnik *et al.,* „Overview and Framework for Data and Information Quality Research", *Journal of Data and Information Quality,* 1/2009, 1–22.

[17] Heinrich Bernd, Marcus Kaiser, Klier Mathias, „Does the EU insurance mediation directive help to improve data quality? A metric-based analysis", *ESCIS Proceedings,* 195/2008, 1871–1882 .

[18] Thomas Redman, „Data: An unfolding quality disaster", *Dm Review*, 14/2004, 21–23.

Another disadvantage of ERP systems is their high cost, particularly for software from well-known, larger ERP vendors such as SAP and Oracle. An ERP system and its implementation process can be the most expensive investment a company will make. Smaller companies generally incur lower implementation costs, but they can experience the same types of implementation issues. An ERP system also requires ongoing maintenance to preserve its stability and compatibility with a broad range of constantly evolving software applications. Furthermore, the standardization of business processes, considered an advantage, can also be a disadvantage if this structure deviates from, or conflicts with, the company's culture or expectations.

For these and many other reasons, companies should not make the decision to implement an ERP system lightly. Successful implementation requires that all employees - from functional users and IT staff to top management - be motivated to work closely together to advance the organization's mission.[19]

3. The Future of ERP Systems

The future of ERP systems lies in delivering efficiency, scalability, and speed to business operations. Conventional ERP systems must evolve by integrating technologies such as sensors and artificial intelligence (AI). Next-generation ERP systems will need to be both adaptable and scalable, leveraging analytics and machine learning. Furthermore, conventional ERP systems were originally designed as *on-premise* solutions, and therefore must transition to *cloud*-based systems. *Cloud* technology enables users to access these resources via the internet, offering numerous advantages, including scalability, accessibility, cost savings, ease of maintenance and updates, and enhanced security. Transition to the *cloud* allows ERP systems to become more agile, more efficient, and better prepared for future challenges.[20] One of the main advantages of *cloud*-based ERP systems is their ability to provide real-time data access and analytics. In a supply chain risk management case study, it was found that real-time monitoring using *cloud*-based ERP systems significantly improves the ability to proactively manage risks.[21]

Supply chain resilience has become increasingly important for manufacturers. The emphasis is on the ability of the supply chain not only to withstand adverse events, but also to adapt to and recover from them, ensuring sustained performance and competitive advantage.[22] In the year when COVID-19 emerged, manufacturers

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[19] M. Bradford, 6–9.

[20] Zahoor Syed *et al.,* (2024) „Enhancing supply chain resilience with cloud-based ERP systems", IRE Journals, 8(2), 106–128.

[21] Wennan Zhang *et al.,* „Digital-Twin Enabled Construction System For Supply Chain Risk Management", 2023 IEEE 19th International Conference on Automation Science and Engineering (CASE), Auckland, New Zealand, 2023, 1–6.

[22] Timothy J. Pettit, Keely L. Croxton, Joseph Fiksel, „The Evolution of Resilience in Supply Chain Management: A Retrospective on Ensuring Supply Chain Resilience", *Journal of Business Logistics,* br.40/2019, 56–65.

faced significant disruptions in supply chains and were compelled to develop rapid production responses. This crisis highlighted the need to enhance supply chain resilience so that industrial organizations can effectively adapt to potential disruptions, mitigating risks associated with supply chain failures. This includes, for example, collecting and analyzing data on various factors that can affect supply, such as natural disasters, geopolitical events, transport delays, and supplier risks. For this purpose, ERP systems can collect real-time data from multiple sources, including sensors, IoT (*Internet of Things*) devices, and external data providers. Analysis of such data can provide early warning signals and enable proactive decision-making.[23]

III. SAP ERP SYSTEM

SAP was founded nearly 40 years ago in Mannheim, Germany, by a group of former IBM engineers. The idea was to assist companies in replacing 10 to 15 different business applications, such as financial systems (managing accounts payable and accounts receivable), warehouse applications, production planning solutions, plant maintenance systems, and others, with a single integrated system. This vision became a reality when *Systems, Applications, and Products in Data Processing* (SAP) opened its doors in 1972. Today, SAP is utilized by more than one million business users working for over 100,000 clients across more than 120 countries.

It is important to understand the distinctions between SAP components, modules, and transactions. SAP uses the term *component* interchangeably with *business application*, the latter often abbreviated simply as *application*. In contrast, SAP modules provide specific functionality within a component. Examples such as the Financial module, Production Planning module, and Materials Management module are easily explained. These individual SAP modules combine to form an SAP ERP component. Within a given module, the company's business processes are configured and assembled. Business processes are also referred to as business scenarios. A business process may require transactions to be executed across several different modules, possibly even from multiple components,[24] as illustrated in Figure 1.

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[23] *https://www.itexchangeweb.com/blog/the-future-of-erp-systems/*, accessed on August 13, 2024.
[24] George Anderson, *Sams teach yourself SAP in 24 hours,* fourth edition, Carmel, IN, USA 2011, 8–10.
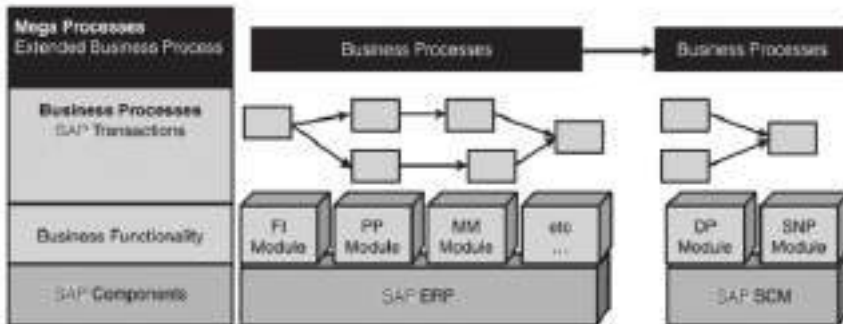
Figure 1. SAP Components, Modules, and Transactions.[25]

IV. SAP For Insurance

SAP for Insurance is a comprehensive package covering the functionalities required to support insurance-specific processes. This package can be integrated with both SAP and non-SAP *front-office* and *back-office* solutions and consists of various modules:

- FS-PRO *Product Lifecycle Management for Insurance* module is responsible for modeling product structures and maintaining all actuarial calculations, rating rules, and formulas to be applied.
- FS-QUO SAP *Quotation and Underwriting for Insurance* is used for creating insurance quotations. FS-PQM refers to the combination of FS-PRO and FS-QUO.
- FS-PM *Policy Management* component is used for the administration of insurance policies from inception throughout the entire policy lifecycle. It is the central SAP component for insurance.
- FS-CM *Claims Management* is responsible for managing claims from registration to settlement. It is directly integrated with payment systems to enable claims processing through to client disbursement.
- FS-CD *Collections & Disbursements* module handles all incoming and outgoing payments of the insurance company. Premiums or claim payments are automatically tracked, and the module is fully integrated with banking interfaces for payment reconciliation.
- FS-ICM *Incentive and Commission Management* manages all data related to intermediaries and agents and calculates the corresponding commissions earned by intermediaries.

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[25] G. Anderson, 8–10.

• FS-RI *Reinsurance Management* manages all reinsurance processes and is fully integrated with the aforementioned insurance modules.

Each module can be purchased and used individually, although best practice is to use them together as a fully integrated SAP insurance solution,[26] as illustrated in Figure 2.
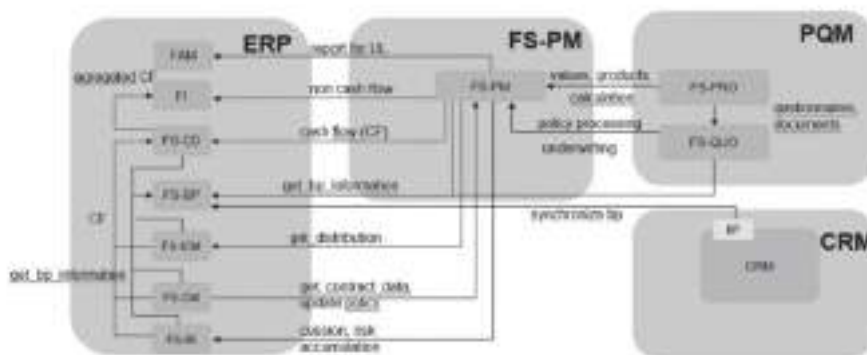
Figure 2. Integration of modules.[27]

V. Claims Management Module

FS-CM *Claims Management* is used for managing claims from the moment of notification through to claim settlement. The primary processes within claims management are:
• *Claim Notification*
• *Claim Handling*
• *Claim Fulfillment*
• *Claim Recovery*.

The Policy Management module (FS-PM) aggregates data relevant for commissions and sends it to the Incentive and Commission Management module (FS-ICM). FS-ICM then triggers the Collections & Disbursements module (FS-CD) to generate a commission payment. The same principle applies to the interface between FS-PM and FS-CD, where FS-PM creates all cash flows and transmits them to FS-CD. In the event of a claim, the Claims Management module (FS-CM) will call FS-PM to request policy data, known as the policy *snapshot*. In this case, FS-CM invokes the built-in

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functionality within FS-PM to collect the relevant insurance policy data necessary for claim creation and processing. Upon claim settlement, FS-CM will call FS-CD to generate an outgoing payment to reimburse the insured party for the incurred loss.[28]

VI. Reserve Calculation Process and Payment Execution

The payment process implemented in SAP for an insurance company involves the following modules:
- FS-CM *Claims Management* – claims management system
- HCM *Human Capital Management* – human capital management system
- CD *Collections & Disbursements* – financial services collections and disbursements management
- FICO *Financial Accounting and Controlling* – financial data management system for generating and analyzing financial reports
- IA *Insurance Analyzer* – financial risk management system

1. Creation of a Claim in the SAP System

The process begins with the creation of a *claim* in the SAP system. The transaction ICLCDC01 is the standard SAP transaction used for creating insurance claims. In addition to this standard transaction, custom transactions can also be created. The transaction ZICL_SZ_CDC01 is used for claim creation in the project under consideration, specifically for claims related to the inability to perform work. Figure 3 shows the claim creation screen. The user is required to enter the policy system as well as the insurance policy number. Mandatory fields also include the date the claim request is submitted and the date from which the claim period begins.

For each claim a timeline is maintained, i.e. chronologically recording when the insured party (SAP *business partner*) submitted previous claims for the same cause. It is necessary to enter a percentage value representing the degree to which the insured party is unable to perform work, along with a code indicating the medical reason for this inability. Compensation is calculated based on this percentage. Figure 4 displays the screen showing the timeline and the required fields for claim creation.
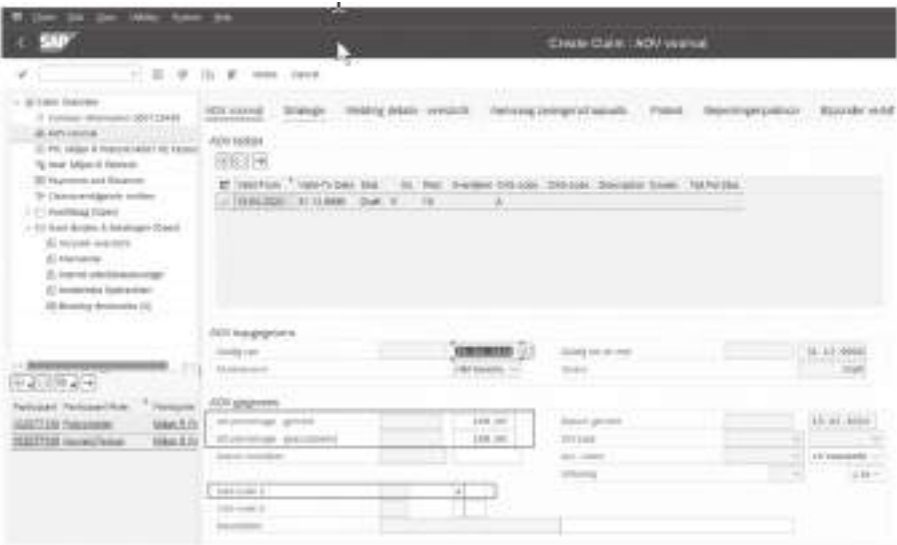
Once the claim is saved, the timeline must be approved by the claims request supervisor.

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[28] S4IC, SAP for Insurance: how do the modules work together?, 2022.

Figure 3. Claim Request Creation.

Figure 4. Timeline Creation.

2. Reserve Calculation for Claims

The creation of reserves within an insurance company is a key risk management practice, ensuring that the company holds sufficient funds to meet future obligations to policyholders. It is necessary to calculate reserves for incurred but not yet paid claims, as well as for future claims. This process relies on complex mathematical and statistical models.

The actuarial reserve consists of the following components:
- reserve for claim liabilities, also known as the reserve for losses or incurred but not reported (IBNR) reserve
- reserve for premium liabilities
- reserve for other liabilities.[29]

In our example, reserve calculation is carried out using a program implemented specifically for the specific project requirements, rather than a predefined SAP package program. SAP programs are accessed via transaction SE38. The desired program is executed after entering the relevant parameters, such as the claim number.

The output of the reserve calculation program is the reserves saved in the user table ZICLD_SZ_KASSTRO, the structure of which is shown in Figure 5. All necessary information is recorded: claim number, calculation *timestamp*, with the fields RES_G_CLAIM and RES_G_EXPERTISE representing the reserve amounts.

For the claim numbered QS00624006, Figure 6 displays a monthly breakdown of monetary reserves for all years during which the insured had coverage.

In the example under consideration, reserve calculation has not yet been performed, so the process will start with a reserve amount of 0 EUR.

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[29] *https://www.axxima.ca/blog/actuaries-and-annual-reserving-work-what-you-need-to-know/*, accessed on August 30, 2024.

Figure 5. Reserve Table Structure.

Figure 6. Reserve Example.

3. Payment creation in the SAP system

For a claim with an approved timeline, it is possible to perform the compensation calculation and subsequently execute the payment. Once the timeline is approved, a button for compensation calculation appears on the claim. After the compensation has been calculated, this button is replaced by a payment execution button. In the background, complex functional modules for financial calculations are triggered. As a result, updates occur on the timeline, and a new payment node appears in the navigation tree, as shown in Figure 7.

Figure 7. Compensation Calculation and Payment Creation.

The payment screen records all payments related to the claim, including the payment type (disbursement or refund), the amount, the currency of the payment or refund, and its current status. Based on the refund status, the system tracks whether the payment is still in the claims system, when it was sent to the accounting system, and when it was sent to the payment system. Another important data point recorded here is the document number. This document contains a payment listing by bank accounts on the Finance and Controlling (FICO) system side. The claim shown in Figure 8 has payments for three months.

A custom table, ZCM_RESERVE, has been created in the SAP system to track all changes in payments and reserves related to a specific claim (Figure 9). This table is not a standard SAP table but was developed specifically for the insurance company to monitor all relevant payment data not available in standard SAP tables. This table provides a more detailed view of amounts and cash flow movements. Some key data recorded in this table include:

1. *Reserve type* – different types of reserves are sent to different processing systems
2. *Reserve lot* – batch number for processing
3. *Document ref* – document number in the payment system
4. *Change Reason* – various reasons for amount changes such as payment, amount adjustment, different types of changes depending on refund type, and others.
5. The last three columns relate to specific amounts: the first column represents changes in payments, the second column represents changes in reserve levels, and the last column represents the reserve balance.

Figure 8. Payment Screen.

Figure 9. ZCM_RESERVE Table.

For the three payments made, the total amount is EUR 3.164,70. In the case of this claim, reserve calculation has not been performed, so the reserve balance is zero. Since the initial reserve balance is EUR 0, reserves must be increased to enable payment execution. The first row in the table, with change reason '00', represents the reserve adjustment for the amount required for payment. The second row represents the disbursement of that amount and the reduction of reserves back to zero.

3. Triggers in SAP

Transaction IMP_MANAGER initiates the trigger management program. It is used for manipulating transport objects, where objects are created and modified within one environment (e.g. the claims testing system) and then transported to

another environment (e.g. the financial management system). Triggers represent automated actions that occur during the transport of these objects from one environment to another. They are grouped into application classes according to their functionalities. After the triggers are created, it is necessary to assign the relevant objects, such as a business partner or claim to which they pertain, and subsequently the triggers are executed.

During the creation of claim requests and payments, several triggers are generated:

- 0HIRE trigger – associated with the insured party and during processing in the payment system the insured receives a unique number based on this trigger
- ZRECI – trigger for recovery of the insured party
- ZREILL – trigger for the insured party's medical issue
- 10015 – a separate trigger is created for each payment month; in this case, there are three triggers.

These three payment triggers are generated only after the payments from the claims system are sent to the payment system using a dedicated program. Access to programs in the SAP system is performed via transaction SE38. These triggers do not produce any changes in the claims system but are essential for processing claims in the payment system. Figure 10 shows the triggers related to the claim being processed in this example.

Figure 10. Triggers for Claim QS480637.

4. Net Payment Calculation

HCM (*Human Capital Management*) refers to a set of applications used for recruiting, managing, and developing an organization's workforce. This software pertains to systems that contribute to process optimization and is often referred to as a H*uman Resource Management System* (HRMS).

Some of the key functionalities include:
• employee experience management
• payroll calculation
• human resources analytics and workforce planning.[30]

From the above definition and functionalities, it is evident that HCM is not part of the standard SAP insurance package. The implementation of the HCM module in insurance companies is uncommon. However, for the purposes of insurance and the specific project at hand, this system has been implemented to extend beyond traditional human resource management. Namely, within the payment process, HCM is utilized to calculate the net payment amount.

Triggers created in the previous step of the process are executed by HCM, whereby an ID (*identification number*) is generated for each insured party (SAP *business partner*) within this system. The output of the programs executed in HCM is a net payment specification, which is forwarded to the Claims Management system. Payments for each month are processed individually. Figure 11 shows the net calculation for the month of June. Similar calculations exist for May and July.

The net calculation from the HCM system is then transmitted to the CD (Collections & Disbursements) system, which is responsible for executing the payments.

Figure 11. Net Calculation for the Month of June.

VII. Creation of Refunds in SAP

In the Claims Management system, a refund is generated when there is a change in the percentage indicating the extent to which a person is unable to perform their work. In the example considered, the initial percentage was 100%. If this percentage is reduced to, for instance, 0%, meaning the insured is again capable of performing their work, a refund must be processed for the period during which the percentage was modified. In the illustrated example, the percentage was changed to zero as of June 15, 2024, resulting in refunds being created for two months: June and July. No payments existed for August, so no refund applies for that month. The updated timeline is shown in Figure 12.

Figure 12. Timeline after modification.

The Payments screen in Figure 13 now displays two new refund entries with the status *Parked*.

Figure 13. Refunds on the Payments screen.

1. Refund Processing

Upon creating a refund, a task is generated which must be completed by the Claims Manager, as shown in Figure 14.

Figure 14. Tasks in SAP.

The concept of *tasks* in SAP is quite simple and corresponds to everyday use: a request for a person to perform an action. Tasks can be created automatically, as in this example, or manually. Task ZSV180 must be completed by the claims manager. By clicking on the *process step*, the user is redirected to the refund screen where the refund process continues. Depending on the refund type selected, the screen fields change accordingly, since different refund types require different data. The subsequent processing follows the same workflow.

The refund types are:
1. maximum calculation – refund of the entire amount
2. instalment calculation – refund in installments
3. direct refund – refund of the entire net amount
4. payment waiver – the insured may be exempted from repaying part or all of the amount.

In this example, the refund will be processed as a direct refund. Selecting option 3 for direct refund results in the screen shown in Figure 15.

Figure 15. Direct refund.

Clicking the button *Berreken Netto bedrag* (calculate net amount) populates the field *Netto vordering naar CD* (net claim to CD). Saving the changes and approving the amount by the claims manager creates a new refund entry on the payments screen with status *Requested*, as shown in Figure 16.

The ZCM_RESERVE table is updated with new rows for each change. When the percentage changed, two refund entries with status *Parked* were created on the payments screen. These are consolidated into a single row with change reason ZT in the ZCM_RESERVE table. Processing the refund creates a new row with change reason ZX. The updated table is shown in Figure 17.

As mentioned in section 5.3 Creation of Payments in SAP System, there are different reserve types. In this table, reserve types S6 and SA are visible. Reserve type S6 is sent to the FICO (*Financial Accounting and Controlling*) system, while reserve type SA is sent to the IA (*Insurance Analyzer*) system.

Figure 16. Direct refund on the Payments screen.

Figure 17. ZCM_RESERVE table after refund.

Rows in the table with change reasons 00 and 03 are processed by the Human Capital Management (HCM) system and sent to the Collections & Disbursements (CD) system, as well as to the Financial Accounting and Controlling (FICO) system. The fields *RESERVELOT* and *DOCUMENTREF* can also be seen for these two rows. For the new rows created during the refund process, transmission is performed manually.

2. Refund Transmission to FICO

SAP FICO (Financial Accounting and Controlling) is an integral module within the SAP ERP set that enables organizations to efficiently manage their financial processes and make informed decisions. SAP FICO plays a key role in helping enterprises streamline financial operations, gain insights, and ensure compliance. It consists of two primary modules – Financial Accounting (FI) and Controlling (CO). SAP FI focuses on accounting and financial reporting, while SAP CO concentrates on cost tracking.

a) Financial Accounting (SAP FI)

The SAP Financial module is dedicated to generating and managing financial statements and reports. The SAP FI module comprises several submodules:

- *General Ledger* - this module serves as the central component for financial reporting. It integrates various accounting transactions recorded in submodules and provides a comprehensive overview of the organization's financial position according to the chart of accounts.[31] In large enterprises, General Ledger transformation focuses on standardizing the use of coding blocks within the ERP FI-GL module employed. This transformation enables the utilization of most available coding blocks in the ERP module, resulting in financial statements produced according to different criteria such as profit centers, products, or accounts.[32]
- *Accounts Payable* - this module handles vendor invoice management, payments, automatic payment programs, reporting, and other supplier-related transactions.
- *Accounts Receivable* - SAP FICO manages the entire receivables process, from invoice creation to payment receipt. This submodule oversees customer accounts and transactions including invoices, credit memos, customer reports, and related functions.
- *Asset Accounting* - this SAP asset accounting module enables organizations to manage fixed assets such as land, equipment, and real estate. It covers transactions related to retirement, depreciation, revaluation, and similar processes.
- *Bank Ledger* - this module manages transactions associated with the company's bank account information, reconciling bank statement transactions with those recorded in SAP submodules.

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[31] *https://webtel.in/Blog/SAP-FICO-Module-and-Sub-Modules/1343*, accessed on 3 September, 2024.
[32] Bhuvnesh Kumar, „Impact and Need for Financial Transformation in the Insurance Industry Using ERP", *Journal of Enterprise Resource Planning Studies,* 2018/2018, 2.

b) Financial Controlling (SAP CO)

The SAP Controlling module focuses on monitoring and reporting business operation costs. The SAP CO module includes several submodules, described below:

- Cost Element Accounting: tracks costs and revenues associated with various business activities, providing detailed insight into cost structures and enabling cost control.
- Cost Center Accounting: allows organizations to allocate costs to specific cost centers, aiding in departmental cost tracking and optimization.
- Profit Center Accounting: enables businesses to analyze profit and loss at the level of individual business units or profit centers, providing granular financial performance views.
- Internal Orders: facilitate tracking and management of internal projects, ensuring costs remain controlled and resources are used efficiently.[33]

Payments from the claims management system are transmitted to FICO in two steps:

1. *Lot creation*
2. *Lot processing* (transmission of the lot to FICO).

c) Lot Creation

The creation of a *payment lot* is performed via transaction ZFCD_CM_RE-SERVE. Within the same transaction, the program for transmitting the lot to FICO is also located. The first screen is used for lot creation, where only the claim number needs to be entered and executed – see Figure 18.

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[33] *https://webtel.in/Blog/SAP-FICO-Module-and-Sub-Modules/134,* accessed on 3 September, 2024.

Figure 18. Lot Creation.

d) Lot Transmission to FICO

The transmission of the lot to FICO is performed using the same transaction as the lot creation. The *lot processing* screen is located adjacent to the lot creation screen. The required data to be entered include the lot number and the FICO subsystem to which the lot is being sent. Figure 19 shows the lot number created in the previous step and the target system: HIACLNT400_TRUSTED.

As a result of this process, a new document and its number are generated in the FICO system – see Figure 20.

Figure 19. Lot Transmission to FICO.

Figure 20. FICO Document Creation.

e) Result of Transmission to FICO

The ZCM_RESERVE table is automatically updated by this process: for the entries related to the refund, values for the RESERVELOT and DOCUMENTREF fields now exist, as shown in Figure 21. As stated earlier, only entries with reserve type S6 are transmitted to FICO.

Figure 21. Updated ZCM_RESERVE Table after Transmission to FICO.

The *RFC destination* for this lot is the system HIACLNT400_TRUSTED. When a user logs into the HIA system with client 400, they can access the document. Documents are accessed via transaction FB03, where the document number must be entered, in this case: 2600000904. Figure 22 shows the document providing a detailed overview of cash amounts and the accounts to which they were posted.

Figure 22. FICO Document 1.

3. Refund Transmission to IA

SAP *Insurance Analyzer* and the additional SAP FRDP (*Financial Risk and Data Platform*) components represent the most advanced applications for financial management and risk management in insurance companies, facilitating the implementation of relevant IFRS 4/9/17 and Solvency regulations. SAP *Insurance Analyzer* consists of the components *Accounting for Insurance Contracts* and SAP *Solvency Management for Insurance*.[34]

The transport to IA is not a manual process, it is performed via a scheduled *Job* in SAP. A *Job* is a background task executed in SAP at a scheduled time. Jobs and job steps allow complex tasks to be treated as units. Several programs necessary to complete a task can be scheduled as steps within one job, providing the advantage of having a single logical container for all steps required to complete the task.

Job steps operate partially independently from one another. That is, an abnormal termination of one job step does not roll back the work of the previously completed job step if that previous step has performed a *commit*. However, if any

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[34] *http://www.gwantec.de/en/services-sap-en/sap-insurance-analyzer*,accessed on 30 September, 2024.

job step fails, the entire job fails. No further job steps are executed, and the job status changes to *canceled*.[35]

In the observed example, the *Job* is scheduled to run daily at 18:00. Upon completion, the data becomes available in IA for further processing, and the PUB-SUB_ID value can be seen in the ZCM_RESERVE table within the claims management system. As previously mentioned, if the *reserve type* is S6, data is sent to FICO. The type SA is sent to *Insurance Analyzer*, which is why in Figure 23, PUBSUB_ID has a value of 0 for *reserve type* S6 and a value of 202408311005141 for type SA.

Figure 23. Updated ZCM_RESERVE Table after Transmission to IA.

4. Refund Transmission to CD

Another system involved in this complex process is CD *Collections and Disbursements*. After a payment is created in the claims management system, the further calculation of the net payment is performed in the HCM system, which communicates directly with the CD system and sends the payment for further processing and execution. In the case of a refund, it is transmitted directly from the claims management system to the payment system (CD).

Collections and disbursements are at the core of operations, and most *Legacy systems* simply lack the functionality to create seamless interactions demanded by today's customers. SAP *Collections and Disbursements* (FS-CD) is the primary operational module providing robust functionality for managing receivables, collections, payment processing, and agent/broker commission management.[36]

As a settlement system, CD must be equipped with the necessary settlement data from administrative systems such as Incentive and Commission Management (FS-ICM), Claims Management (FS-CM), Reinsurance Management (FS-RI), and Policy Management (FS-PM). An open interface is available for this purpose.[37] Figure 24 shows the position of CD as a settlement system within a possible system landscape.

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[35] *https://help.sap.com/doc/saphelp_nw73ehp1/7.31.19/en-US/4b/2bc12b4c594ba2e10000000a42189c/content.htm?no_cache=true* , accessed on 30 September, 2024.

[36] *https://www.msg-global.com/solutions/sap-fscd-collections-and-disbursements,* accessed on 2 September, 2024.

[37] *https://help.sap.com/docs/SAP_ERP/531a600f03624826bdcd98f6f723ef1b/c174cb53f0f67314e-10000000a174cb4.html,* accessed on 2 September, 2024.
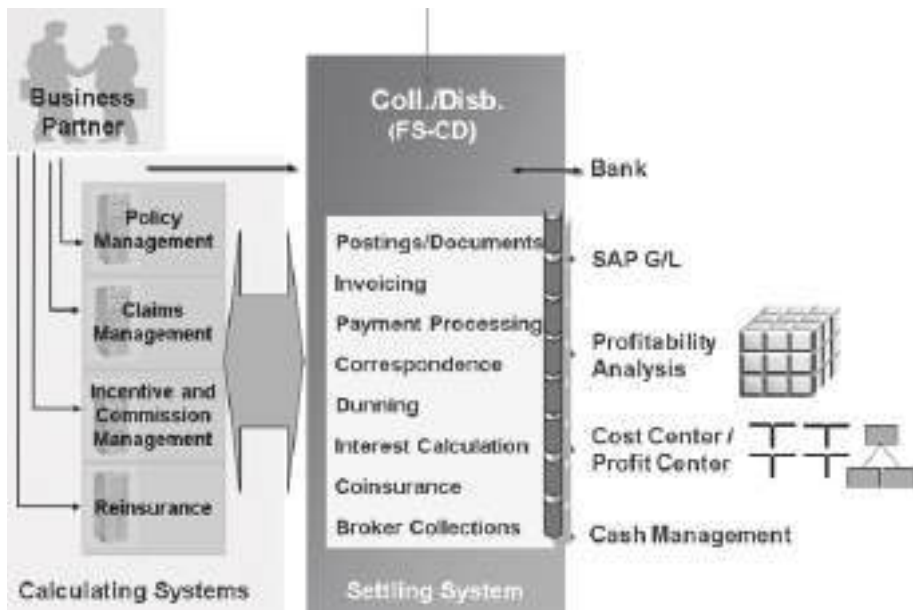
Figure 24. Integration of CD with other systems.[38]

Communication between the claims management system and CD occurs in two steps:

1. Creation of payment and transmission to CD – *payment lot*
2. Transmission of the *info container* from CD to CM.

a) Payment Creation and Transmission to CD

In the claims management system, transaction FP05 is used to create a payment lot and send that lot to the payment system (FS-CD). The screen for creating a new payment lot is very simple: only a unique ID number must be entered and the create button clicked. Two important buttons are *close* and *post*. A lot can contain multiple payments, and as long as the user does not close it, new payments can be added. Clicking *close* locks the lot for new payments, and clicking *post* sends the lot to CD.

Before closing and sending, payments must be added to the lot. Figure 25 shows a new payment lot. Some fields are automatically filled based on system

configuration, while others must be entered by the user. *Currency*, *Bank clearing account*, and *Company code* are user inputs. Clicking the *New items* button opens the screen for adding payments.

Figure 25. Creating a New Payment Lot for CD.

To add a payment, the amount and document number linked to that payment must be entered on the FS-CM payments screen (Figure 26). Full payments can be processed at once, or the amount can be split into multiple parts within one lot, or even sent in different payment lots. After closing the lot with the *close* button, it can be sent to FS-CD by clicking the *post* button.

Figure 26. Adding Payments to the Lot.

b) Transmission of Info Container from CD to CM

From the claims management system side, a request is sent to the FS-CD system to transmit the so-called *info container*. The information container functionality in the CD domain is a key business process in SAP Insurance, where info containers store data that can be sent to external systems at a later time. This is a very useful SAP feature enabling interaction with external systems without extensive coding. Activities involved in this process include:
- information type (category)
- confirmation
- storing confirmation in the info container
- forwarding and reading confirmations
- display of info containers.[39]

The transaction for creating info containers is FPINFCO1. It requires entering an ID composed of a date and a six-character identification number, as well as the *Contract* – the claim number. Additional technical settings are available on a secondary screen, along with a screen for reviewing executed programs – *Logs*. Once the parameters are saved, the *Schedule Program Run* button can be clicked to execute the program immediately or schedule it for a future time.

Several outcomes result from this process:

1. The refund status on the payments screen changes from *Requested* to *Received* (Figure 27),

Figure 27. Refund Status Changed to Received.

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2. The ZCM_RESERVE table is updated with a new entry for reason code ZU (Figure 28),

Figure 28. ZCM_RESERVE Table Update after Received Refund.

3. An XML file is sent from the FS-CD system to the FS-CM system (Figure 29).

Figure 29. XML File.

5. Final Refund Processing in FICO, IA, and HCM

To finalize the process, the last modification in the ZCM_RESERVE table must be transmitted to both FICO and IA, specifically by sending the row with the change reason code ZU. The series creation and series transport to FICO process is repeated. The *job* responsible for transport to IA completes automatically. On the FICO side, a new document is generated, shown in Figure 30. The last two lines of the document pertain to the refund processed in this example.

The HCM system re-triggers the *business partner*-related processes and re-calculates the net payment amount for the three months in which payments exist. At

the end of the process, HCM sends a letter containing the net payment specification to the insured party (Figure 31).

Figure 30. FICO Document 2.

Figure 31. Net Specification Letter to the Insured.

The claims management system also reflects that the process has been fully completed (Figure 32). The refund status on the payments screen changes to *Completed*.

Figure 32. Refund Status Changed to Completed.

VIII. Conclusion

The analysis of the payment process within the SAP ERP system clearly demonstrates the significance of ERP systems in modern business environments. The SAP ERP system is capable of providing organizations with full integration of all necessary systems required to execute complex processes. This paper presented a single example of such a process involving five integrated systems. The process is fully supported with a high degree of automation, and the demonstrated solution facilitates employees in performing daily operations. This example highlights the efficiency of SAP both as an ERP system and as a solution for companies seeking ways to improve their market position. For companies, centralizing the payment process is crucial to ensure better control and monitoring of costs.

In the future, further development of SAP systems follows advanced technologies such as AI and machine learning, which have the potential to enhance numerous processes and enable SAP to continuously provide organizations with high-quality management solutions.

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