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Trabalho de Projeto

Mestrado em Engenharia Informática - Sistemas de Informação

Trabalho efetuado sob a orientação de
Professor Doutor Paulo Rogério Perfeito Tomé

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"The biggest part of digital transformation is changing the way we think"
Simeon Preston

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Abstract

Enterprise Resource Planning (ERP) são amplamente utilizados nas empresas, com o objetivo de melhorar a eficiência global, assegurando processos simplificados e promovendo o acesso unificado a dados e relatórios de vários departamentos. No contexto dos Sistemas de Informação de Recursos Humanos (SIRH), esta base partilhada de dados integrados torna-se particularmente crucial. O SIRH, como subconjunto do ERP, é especializado na gestão de dados relacionados com os recursos humanos, facilitando a comunicação entre as diferentes funções de RH e alinhando as estratégias da força de trabalho com os objetivos organizacionais mais amplos.

A gestão de recursos humanos é uma componente essencial de qualquer sector de atividade em todo o mundo. Para as empresas de grande dimensão, dispor de uma plataforma central para executar e aprovar todas as alterações de dados do pessoal permite manter rapidamente os dados actualizados e, ao mesmo tempo, reduzir as despesas, tudo através de uma abordagem padrão global.

Este projeto tem como objetivo a implementação do sistema Sap SuccessFactors, uma solução de gestão de RH, integrando este sistema com o Sap HCM. A investigação desenrola-se através de uma perspetiva metodológica, atendendo aos marcos importantes do projeto que visam a melhoria dos processos organizacionais.

Os resultados pretendidos com este projeto englobam a otimização da eficiência organizacional por meio da simplificação e automação de processos, a padronização dos procedimentos de gestão de recursos humanos para impulsionar a competitividade da empresa e garantir sua eficácia operacional.

Keywords: SAP, ERP, HRIS, HR

Resumo

ERP systems are extensively employed in companies, aiming to enhance overall efficiency by ensuring streamlined processes and fostering unified access to data and reports across various departments. In the context of Human Resource Information Systems (HRIS), this shared foundation of integrated data becomes particularly crucial. HRIS, as a subset of ERP, specializes in managing human resource-related data, facilitating seamless communication between different HR functions, and aligning workforce strategies with broader organizational goals.

Human resource management is an essential component of any business sector worldwide. For large-scale businesses, having a central platform to execute and approve all personnel data changes allows them to quickly keep data up to date while also lowering expenses, all through a global standard approach.

This project aims to implement the Sap SuccessFactors, an HR management solution, integrating this system with Sap HCM. The research is carried out from a methodological perspective, taking into account the important milestones of the project aimed at improving organisational processes.

The intended results of this project include the optimisation of organisational efficiency through the simplification, automation of processes and the standardisation of human resources management procedures to boost the company's competitiveness and guarantee its operational effectiveness.

Palavras-Chave: SAP, ERP, HRIS, HR

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List of Acronyms

ERP	*Enterprise Resource Planning*
ETL	*Extraction, Transformation and Loading*
HCM	*Human Capital Management*
HR	*Human Resources*
HRIS	*Human Resource Information Systems*
IT	*Information Technology*
SF	*SuccessFactors*
TCO	*Total Cost Operation*
UI	*User Interface*
WFM	*Workforce Management*

Chapter 1

Introduction

This chapter's objective is to provide the background context, motivations, foundations and research conducted for this thesis. It defines the problem addressed, establishes the goals and presents the expected results. The chapter is structured in the following way: it begins with a presentation of the motivation behind the project, and it defines the specific problem this project aims to solve. The chapter then proceeds to lay out the goals of the project followed by a discussion of the expected results. Finally, it concludes with an overview of the workplan that outlines the implementation phases of the project.

1.1 Background concepts

Information Technology (IT) is advancing very quickly nowadays, and this constant growth of technologies obliges companies to adjust their strategies to follow the market growth and increase their competitiveness [Dana et al., 2022].

Businesses worldwide realise how important it is to follow this market trend and switch from conventional on-premises IT systems to cloud-based substitutes [Statista, 2023]. The possibilities for scalability, flexibility and cost-effectiveness have become a key driver of innovation and competitiveness.

The new tendency of the market is visible when analyzing the TI investments. According to Gartner-Inc, the Global IT spending forecast for 2024 is more than 5000 million U.S. dollars, with cloud services, growing around 20% by the combination of price and utilisation increases [Gartner, 0 18].

To address the fast growth, all departments within the company must adapt, including Human Resources (HR) Management. The adoption of cloud-based solutions plays a key role in accelerating the digital transformation of HR practices [Al-Rwaidan et al., 2023].

Beyond of custodian of employee records and administrative processes, HR is involved in a strategic partner crucial for the success and sustainability of the organizations. Increasing competitiveness is not feasible by only reducing the operational costs of the system, but also improving quality services.

In response to the increased competitiveness and digital transformation in HR practices driven by the rapid growth of cloud-based solutions, companies are seeking ways to optimize processes, reduce operational costs, and improve service quality. To meet these demands, the emergence of *Human Resource Information Systems* (HRIS) has become crucial. HRIS not only streamlines processes but also contributes to cost reduction, process automation, and faster resolution of HR requests.

1.2 Motivation

In today's context of the business market, characterized by the increasing adoption of cloud-based ERP solutions the motivation becomes even clearer [Forbes, 1 01]. Cloud-based ERP systems provide various benefits, including increased scalability, flexibility, and cost-effectiveness, making them an appealing alternative for firms seeking to remain competitive in a continually changing market.

The motivation behind this project is twofold. Firstly, it stems from the broader trends shaping the business environment, where companies across industries are recognizing the strategic importance of migrating to cloud-based ERP systems. This migration is not merely a matter of keeping pace with technological advancements but is driven by a necessity to align with market trends and maintain competitiveness.

Secondly, the specific client demand catalyzes this project. As a reflection of the market updates and industry best practices, the client wants to explore the migration to ERP systems based on the cloud as a strategic step to follow market tendencies and competitiveness. This demand evidences the importance of leveraging cloud technologies to optimize business operations and enhance efficiency.

This project is driven by a motivation of the business environment, amplified by a specific client's demand. Aligning with these motivations, the aim is to embark on a journey of digital transformation, ensuring that the organization remains agile, innovative and well-positioned in today's competitive landscape.

1.3 Contextualization

Organizations recognize that the effective management of human capital is not only a necessity but a driver for competitive advantage.

The present document focuses on the implementation of one HRIS system, more specifically SAP SuccessFactors, a "Powerful cloud HR software that empowers individuals to reach their full potential at work while strengthening the connection of HR across the business" [SAP, 2023], and the integration of this system with an ERP used to payroll prospectus. The implementation was done by Arago Consulting, an SAP Gold Partner company, a leading player in the HR cloud, dedicated to SuccessFactors solutions.

This initiative was undertaken in a company established in 1960, boasting more than 33,000 employees, though not all directly involved in this project. Renowned for its operations in African natural resources, seeks to streamline and enhance its human resources management practices to ensure optimal utilization of its workforce and maintain its competitive edge in the industry.

1.4 Problem Definition

The focus of this project is the implementation of the HRIS Sap SuccessFactors, a centralized HR solution within the context of a modern business environment.

The customer currently operates with an on-premise HRIS system, which has been in use for over 7 years and serves as the repository for all company and employee data. While this on-premise solution is essential for managing payroll processes, a functionality not currently supported by SAP SuccessFactors, it poses challenges in terms of integration and data synchronization. Therefore, the implementation of SAP SuccessFactors is not only imperative for modernizing the company's HR processes and aligning them with its organizational hierarchy but also requires the configuration of an interface to facilitate seamless data mapping between the two systems.

This project is of paramount importance as it addresses the need for enhanced efficiency, accuracy, and integration in HR management, thereby ensuring optimal utilization of the workforce and bolstering the company's competitiveness in the market.

1.5 Goals

Any business with a respectable staff size must navigate the complicated process of managing people and their data. Workers, supervisors, and administrators require a simple method to carry out HR procedures and agile all bureaucracy.

It's not unusual for a management and an employee to work in separate nations or even cities. Maintaining all the HR processes aligned with the same steps/workflows is not an easy task and could cause some problems for the business with missing data and authorizations. The solution SAP SF is very helpful for companies who want to streamline the HR process across different Legal Entities, automate processes and reduce HR costs. A significant added value for this solution is that is very adaptable and customized to fulfil all the requirements from the business side.

In this project, the primary objective is to implement SAP SuccessFactors (SF) to transform and optimize HR operations. This implementation is particularly significant as it represents a strategic transition from legacy system to a new modern, cloud-based solution, addressing critical inefficiencies in current processes. Additionally, it allows end users, such as managers and employees, by providing direct access to an *Human Resources* (HR) system where they can view and manage their information. This reduces the administrative burden on the HR team, allowing them to focus on strategic tasks rather than solely maintaining and updating employee data. The integration with SAP Human Capital Management (HCM) establishes seamless connectivity between SAP SuccessFactors and the existing SAP *Human Capital Management* (HCM) infrastructure, an on-premise HR system designed to manage employee data, payroll, and time management. Furthermore, the project aims to standardize HR processes across all legal entities, ensuring consistency and alignment with organizational objectives while enhancing operational efficiency by automating manual HR tasks and minimizing the risk of errors.

Leveraging the adaptability and customization capabilities of SAP SuccessFactors, the project aims to tailor HR processes to the specific needs and preferences of the business, fostering greater flexibility and agility in HR operations. Overall, this project focuses on a novel approach to HR transformation by combining technology integration, standardization, automation, and customization to optimize HR operations and drive sustainable business growth.

1.6 Expected Results

The successful execution of this project is driven by the implementation of Sap SF and the integration of this system with SAP HCM.

The expected results of this project are transformative and achievable in the long term. The integration of SAP SuccessFactors with SAP HCM will allow the business to have a centralized system to manage HR data. It will enhance data accuracy with updates in both systems. The result is a single source for HR Data, reducing data discrepancies and improving data quality. The consolidation of HR Data will also allow decision-making to be more supported by data insights. The HR Standardization processes will lead a greater efficiency and alignment with Global HR

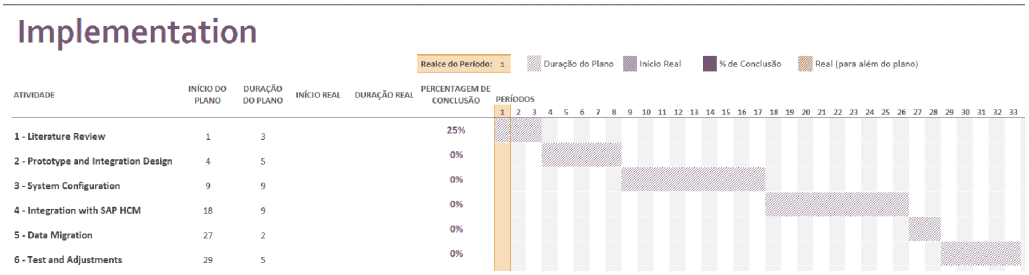

Figure 1.1: Implementation Project- Gantt Chart Diagram

best practices, ensuring regulatory compliance. Efficiency and automation of several processes will reduce manual workload and elimination of redundant administrative tasks.

This approach contributes to significant cost-saving and gives more time to HR to focus on strategic initiatives.

1.7 Work Plan

The work plan for this project aims to implement SAP SuccessFactors (SF) and integrate it with the existing SAP Human Capital Management (HCM) system. To achieve this, the project is divided into 6 different phases. The Gant-Chart diagram in Figure 1.1 shows the different phases across time. Each period represents a one-week duration.

The project involves a literature review and prototyping to define the scope and design the system's architecture. System configuration and integration with SAP HCM are then initiated, configuring modules like Employee Central and Time Off. Interfaces are established to synchronize data between SAP SF and SAP HCM, ensuring compatibility and automation.

The final phases of Data migration and testing are crucial for validating system functionality and reliability, with validation during data migration and user acceptance testing.

1.8 Document Strucuture

This document is divided into 6 chapters that interconnect to meet the objectives of this thesis while adhering to the adopted approach.

The first chapter, Introduction, presents the motivation behind this work, defines the problem, outlines the goals and discusses the expected results.

In the second chapter, the methodology of this project is defined in detail, including the functional and non-functional requirements. The chapter also includes the project steps and how implementation is structured.

Chapter 3, ERP - Theoretical Foundation, reviews the evolution of *Enterprise Resource Planning* (ERP) and HRIS. It delves into Sap SuccessFactors in detail providing a theoretical foundation for the project.

Chapter 4 Implementation, provides an in-depth look at the actual implementation of SAP SuccessFactors. It begins with an overview and then discusses specific aspects such as data hierarchy and the Time Off module, demonstrating how theoretical plans were put into practice.

In Chapter 5, the evaluation of the implemented system is presented. It includes testing phases, analysis of incidents, and SAP system usage. This chapter is essential for assessing the effectiveness of the implementation and identifying any issues that arose during the process.

The final chapter summarizes the results of the project, provides a critical analysis of the outcomes, and discusses future work. It reflects on the achievements of the project, evaluates its success in meeting the initial objectives, and suggests directions for further research and improvements.

Chapter 2

Methodology

This chapter describes the methodical strategy and methodologies used to study, analyze, and derive relevant findings to understand better the complex environment of deploying SAP SuccessFactors in conjunction with SAP HCM integration. The methodology outlined herein explains the systematic framework used to dissect complexities, extract meaningful insights, and contribute to the evolving discourse in this domain. This section explains the research design, data collection methods and procedure for data collection and the analytical tools used.

2.1 Customer Description

Founded in the '60s, is an agro-industrial group focused on African Economy focused on the production and commercialization of natural resources such as oil palm, cane sugar and natural rubber.

The company is present in six countries by 10 different Legal Entities and has more than 33000 employees. The company's organizational complexity requires advanced systems to streamline human resources (HR) operations, enhance decision-making, and ensure efficient management across all legal entities. As the company grows, modernizing its HR processes has become a strategic priority to maintain operational excellence and improve employee experiences.

The project consists of the Implementation of the Employee Central module for intelligent management of employee files and the employee integrated with SAP ERP HCM.

2.2 Project Outlines

In the context of deploying SAP SuccessFactors, is critical to precise the capabilities and features that the system must have to satisfy the organizational objectives. This step is critical for meeting client expectations and ensuring that conceptualizations are consistent from the start of the project. It offers the groundwork for diligently creating precise and complete project plans.

2.2.1 Functional Requirements

The Functional Requirements are the key building pieces that specify what the system should do, containing the core capabilities required for successful human resource management. These requirements were determined in collaboration with stakeholders, HR professionals and IT direction. This entails conducting some conversations/discussions, and seminars to gain insight into the specific needs and expectations for the SAP SuccessFactors implementation. After all these steps the Functional Requirements identified were:

1. Employee Central Implemention: This includes the implementation of the Employee Central module. It entails the appropriate management of employee data, such as personal information, job descriptions, and organizational data structure. To do that it was important to understand how is the internal hierarchy of the company, to be possible to define what objects should be created and the association between them. Then this data structure will be followed for all other modules that can be implemented in the future, so it's a crucial point that needs to be carefully built.

Inside the Employee Central module, it is important to configure the position management. This functionality enables the business to systematically establish and manage positions (jobs), capturing full information while preserving past data. It provides a structured framework for the continuing development and tracking of positions inside the system. This functionality allows the company to not only capture real-time data but also keep a historical record, which provides insights into the evolution and changes within the organizational structure or position over time.

2. Time Off Implementation: The Time Off module is crucial for managing and tracking employee leaves and absences. This need calls for the smooth deployment of elements that enable employees to seek time off, managers to approve or refuse requests, and the system to keep correct records.

- Leave Requests: Employees should be able to request time off through the system.

- Approval Workflow: Managers should receive and approve leave requests through a streamlined approval process.

- Leave Balances: The system should accurately track and display an employee's remaining leave balance.

3. Interface between SAP SF and SAP HCM: This goal focuses on linking SAP SuccessFactors and SAP Human Capital Management (HCM). The integration should allow for the continuous data flow between the two systems, assuring consistency and correctness.

- Data Synchronization: Implement a mechanism for synchronization of employee data synchronization between SAP SuccessFactors and SAP HCM.

- Cross-Module Integration: Allow for interaction between SAP SuccessFactors and SAP HCM modules, resulting in a more unified HR experience.

- Implement and use Inforporter for data recovery

2.2.2 Non Functional Requirements

Non-functional requirements are also important, as they regulate the SAP SuccessFactors platform's security and usability. This subsection examines the critical non-functional needs specific to the SAP SuccessFactors implementation project.

1. Security: All sensitive employee data, including personal and financial information, should not be accessible by unauthorized persons, preserving data privacy. The password to log in to the instance should follow some login policies as having a minimum length of 2 and 18 maximum, sensitive to upper characters. The login should be defined in the first login.

2. Compliance: Ensure that the system complies with relevant data protection and privacy regulations, such as GDPR or other applicable laws.

3. Documentation: Provide detailed technical documentation for system administrators and IT personnel to aid in system maintenance and troubleshooting.

2.3 Project Steps

The process of implementing Sap SuccessFactors unfolds through a series of project steps. Each step represents a strategic milestone, moving the project toward successful Implementation.

The Figure 1.1 of section 1.7 shows the outlines of all projects. This section will explain in detail all the periods of this project.

2.3.1 Literature Review

This initial phase begins with a Literature Review, which entails a thorough examination of existing research and best practices on SAP SF implementation and human capital management. This step is important for learning about industry trends, recognizing organizational issues, and discovering effective solutions used by others.

2.3.2 Prototype and Integration Design

Following the literature reviews, the second step moves on to the Prototype and Integration Design phase. In this step, a basic model of the SAP SuccessFactors system is created, giving stakeholders a visual depiction of the proposed solution. Simultaneously, the integration design is rigorously prepared, defining how SAP SuccessFactors will work seamlessly with other systems, particularly SAP HCM. This phase guarantees alignment with the organization's goals and user requirements.

2.3.3 System Configuration Phase

In that stage, the project moves on to the system configuration, guided by the prototype defined in the previous step. The SAP SuccessFactors solution is customized to comply with business structures, regulations, and customer requirements. System configurations cover everything from personnel data fields to performance management routines.

2.3.4 Integration to SAP HCM

The main goal of this stage is to establish communication between the two systems. It involves building the necessary interfaces and connections to synchronized data and ensuring consistency between two systems. The goal is to establish a single, interconnected human capital management ecosystem.

2.3.5 Data Migration

This is a critical step in the transition for SAP SF. In this step is necessary to extract, transform and load (ETL process) the data. This step has risk envolved, due to the data inconsistency in the previous system, so the validation process is crucial. Data migration comprises employee records, time off history, and other important information, ensuring the integrity of critical HR data throughout the process.

2.3.6 Test and Adjustments Phase

After all configurations, the system is tested, since the data quality, integration test and user acceptance testing. Any issues in that phase are solved to ensure

the system works as intended. This iterative approach continues until the system achieves predetermined dependability, usability, and effectiveness standards.

Each of these project steps plays a pivotal role in the successful implementation of SAP SuccessFactors, ensuring that the system aligns seamlessly with organizational objectives and elevates human capital management practices.

Chapter 3

ERP: Concepts and Applications

The transformation of Human Resources management within organizations has undergone significant evolution in the past years. HRIS have emerged as solutions for managing and accessing all the HR information needed in just one place.

3.1 Evoution of ERPs

ERP is a concept and a technological framework that has deeply influenced the landscape and the way that modern business management works. ERP is a system that manages the flow of different data and activities throughout the company. This technology was born due to the necessity to combine and optimize different business processes. Figure 3.1 shows an overview of ERP evolution.

The ERP started to be developed in the 1960s, at this time was used to identify inventory, define targets or monitor item usage. The difficulties found at this time were the large technical staff required to support mainframe computers.

In 70 a new version appeared with more powerful tools that allowed to move towards target market strategies and schedule production processes. However, this caused a system difficult to operate, with high-cost implementation.

Figure 3.1: ERP Evolution

In 1980 the system used was for manufacturing resource planning with a focus on manufacturing strategies, and sales, inventory transactions.

During 1990 ERP providers expanded their functionalities to include customer Relationship Management and supply chain Management (SCM). They also added analytics and business intelligence services.

This paradigm shift, introduced in the 2000s, encompasses three service models: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS):

SaaS: is a cloud computing service model that delivers software applications over the internet. Is not necessary for any installation or maintenance, and the software is centrally hosted and managed by a third-party provider.

Paas: is a cloud computing service model that provides a platform allowing customers to develop, run and manage applications without dealing with infrastructure complexity [Katuu, 2020].

Iaas: This technology offers virtualized computing resources over the Internet (virtual machines, storage)

3.1.1 Evolution of HRIS

HRIS has undergone significant evolution over the decades, beginning as traditional transaction processing systems that were first developed in the 1950s and 1960s to the actual cloud-based solutions [Johnson et al., 2016].

The first versions of HR systems (pre-1980s) were focused on automating payroll and employee records. The 1980s were the emergence of client-server HR systems offering improved data stores and allowing HR data to be accessed on personal workstations. In 1990-2000 the integration of HR Systems into ERP solutions, allowed the data to flow through the different departments of the company. The early 2000s witnessed the transition to web-based HRIS, offering greater accessibility and self-service options for employees and managers. In the 2010s, advanced analytics functionality allowed organizations to leverage data for predictive HR and talent management. From this date the implementation of cloud-based software, big data analytics to support HR management. Mobile HRIS systems were also developed.

The prediction of future trends emerging are chatbots, virtual assistants and the integration of AI for enhanced recruitment and employee engagement.

3.2 State of the Art in HRIS Solutions

Information systems for human resources are very dynamic. Due to the huge demand for this type of system, HRIS solutions have emerged in response to that necessity in the market. Given that this project is focused on implementing one solution like that, it is crucial to understand and be aware of other solutions in the market.

With the expansive HRIS market, organizations encounter a wide range of options in the HRIS market. These solutions are intended to improve HR operations and provide insights to decision-makers.

3.2.1 Oracle Human Capital Management

Oracle Corporation [Oracle, 2023] is a multinational technology company with 50 billion dollars in revenue per year. Oracle Corporation was founded in 1977 in California and it's currently the third-largest software company in the world according to Forbes. This company has an offer "Oracle Fusion Cloud HCM" that includes customer experience, enterprise performance management, finance, sales, service and supply chain and manufacturing management.

The **strengths** of this solution are:

1. Talent Management: offers advanced features as a digital assistant for job discovery and personalized workflows

2. Employee Experience: with Oracle Grow, this solution has a centralized system for learning, talent marketplace and mobility

3. Employee Experience: use AI to improve employee experiences, like AI-driven skills management and nudges for personalized journeys.

The **caution** of this solution are:

1. Payroll localizations: at the moment, Oracle's payroll system is localized for 12 countries. Organizations in areas without localization support are not appropriate.

2. Improvements: Oracle has made improvements, but mostly in the healthcare sector. Qualities need to be improved also for other sectors than healthcare.

3.2.2 Workday

Workday is a Global technology company with an annual revenue of 6.13 billion dollars [Workday, 2 27]. Workday Human Capital Management suite has products

such as planning, finance procurement and professional service automation. Workday HCM has more than 4650 customers worldwide.

The strengths of this solution are:

1. Employee Experience: According to Gartner [Gartner, 2023] is the best-performing provider for this feature. With a large library prebuilt EXtech templates for Workday Journeys, are some of the elements that enhance employee experience.

2. Analytics: Workday Core Reporting and Workday People Analytics offer extensive analytics capabilities for Talent, DEI, organizational structure and skills.

3. AI: The Workday technology stack, which is built on Workday Extend, Workday Studio, and Workday Integration Cloud, is regarded highly in terms of both technology and generative AI. Shortly, work will focus on utilizing an in-house developed LLM to enhance skills management, create job descriptions, write knowledge articles, and integrate generative AI features into the conversational user interface.

The cautions of this solution are:

1. Payroll localization: Currently, Workday provides payroll locations for four nations: the United States, Canada, the United Kingdom and France which is less than the localizations provided by the rivals. Germany's payroll is now in development and Australia's payroll is expected to launch at the end of 2023.

2. Sales: Service-oriented companies continue to be Workday's biggest customers. They have provided *Workforce Management* (WFM) capabilities that consider the demands unique to this retail. This could be improved to expand the product market.

3. Operating cost and value: As Workday offers a range of advanced features, its licence fees are typically higher than the competitors. This makes Workday a secondary choice in *Total Cost Operation* (TCO) HCM initiatives

3.2.3 Sap Successfactors

SAP is a multinational commercial software vendor with 30,87 billion dollars in review in 20222 according to the SAP financial results [News, 1 13]. According to Gartner, more than 11000 customers use SAP Succeessfactors and more than half have Employee Central Module. Sap *SuccessFactors* (SF) fixed and improved some functional gaps focused on product advancement: dynamic teams to achieve nontraditional reporting structures, People Analytics that aggregates employee data from external sources and SAP Talent Intelligence Hub a platform to manage skill libraries.

The strengths of this solution are:

1. Product Development: Due to the last releases, SAP had grown compared to the direct competitors with the improvements in integrations, internal talent marketplace.

2. Partnerships: Sap SF HXM has a strong network of more than 500 partners who collaborate to provide added value to the product offering. There are more than 300 apps created by outside developers for SAP SF.

3. Geographic Coverage: SAP is localized for core HR in 104 countries. Employee Central Payroll Solutions has the most localizations (49).

The cautions of this solution are:

1. Payroll Modernizations: SAP SF Employee Central Payroll has so lacks so this solution could fit all functional requirements of the consumer. Clients should validate if this functionality is complete enough to meet their needs.

2. Analytics: The Sap Analytics Cloud has lower adoption than other applications: even though it is a powerful platform, it is less intuitive to use and more challenging to implement than market standards.

The table 3.1 highlights key aspects, strengths and cautions of both Oracle HCM, Workday and SAP SF, providing insights for decision-making in the choice of human resource technology.

The analysis of HRIS gives inputs regarding the advantages and cautions that are important to keep in mind when adopting an HRIS solution. SAP SuccessFactors stands out for its extensive geographic coverage and strong partnerships. The substantial customer base for this solution highlights its market strength, demonstrating both its reliability and suitability as a recommended choice.

3.3 SAP SuccessFactors

The goal of implementing SAP SuccessFactors is to create a new model for HR process optimization, as previously said. This section will focus on Sap SuccessFactors and their submodules.

Numerous modules of the SAP SuccessFactors suite are intended to face all aspects of HR Management, such as learning and development, performance management, talent acquisition and others. The section focuses on an overview of the most important Sap SF modules, the ecosystem and the difference between them.

The image 3.2 provides a multi-layered representation of the Sap SF ecosystem, with a visual insight into the structure of this HXM solution.

1. Core HR - Employee Central: Employee Central is the primary hub for handling employee data at the most fundamental data level. In this layer, all the

HRIS Comparation			
Product Suite	**Oracle HCM**	**WorkDay**	**Sap SF**
Company Revenue	50	6.13	30.87
Number of Costumers	3 850	4 650	11 000
Geographic Coverage	12	4	49
Strong Points	-Talent Management -AI for employee experiences	- Employee Experience -Analytics Capabilities	-Product Development -Geographic Coverage -Partnerships
Weaknesses Points	-Limited Payroll localizations (12) -Focus only HealthCare sector	-Limited Payroll Locations(4 countries) -Operating Costs	-Payroll -Analytics

Table 3.1: Strategic Evaluation of Human Capital Management Solutions: A Comparative Analysis of Oracle HCM and SAP SuccessFactors

Figure 3.2: SAP SF Overview

foundation objects for employee data and organizational structures are defined to be used for all the layers above. Employee Records It includes employment history, personal information, Job history, and organization affiliations. The organizational structure layer on the Employee Central server is the foundation data for procedures related to people planning and development, enabling the management of the company's hierarchy.

2- Competencies and Skills Layer: This llayeris used for defining and evaluating the skills and competencies to be used for the talent modules in the upper layer.

3- Different Modules: This Layer shows the different modules available in Sap SF: Recruiting, OnBoarding, Learning, Performance and Goals, Compensation and Succession and Development.

4- Analytics Layer: The analytics component provides data-driven decision-making capabilities at the highest level. It enables businesses to get insights from HR Data, which supports workforce optimization, performance review and strategic planning.

3.3.1 Data Models

Data Models describe how data elements are structured in a database. They also define the properties these elements possess and their relationships to each other [SAP, 2024b]. The SAP SF data models user XML. these data affect every application module as well as the system's stored company and staff data. These data models serve to define how the Employee Data and Organization Data are built. For that, there are 4 types of Data Models:

1- Corporate Data Model: Corporate Data Model defines the organization-related data in XML [SAP, 2024a]. This data model is used to specify how the system will represent the organization, pay and job structures that characterize the business.

2- Country/Region Specific Corporate Data Model: The foundation data from the Corporate Data Model that needs to be localized based on country/region are configured in this data model

3- Succession Data Model: This Data Model is the basis for People Profile and Employee Central. Fields needed to define employee data are configured in this data model [SAP, 2024b]. The fields defined here are also used in modules such as Performance Management, Compensation, Recruiting and user management.

4- Country/Region Specific Succession Data Model: Fields from the Succession Data Model that need to be localized based on country/region are configured in this data model.

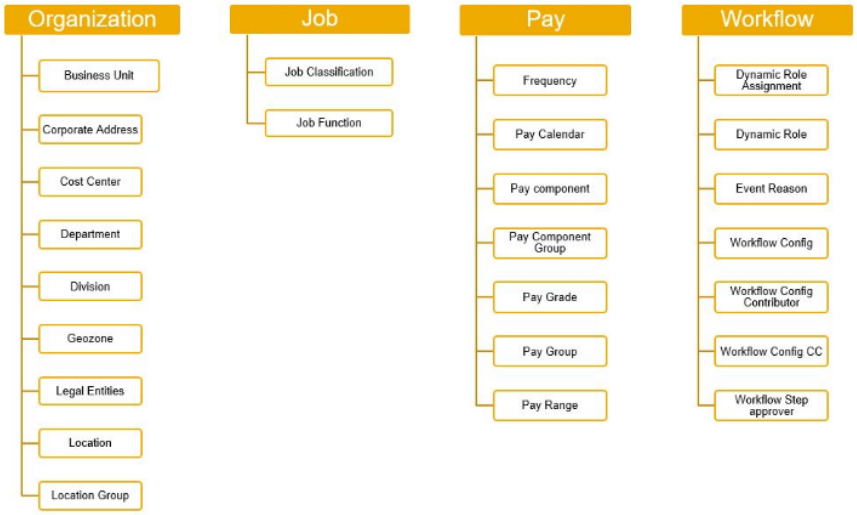

Figure 3.3: SAP SF Foundation Objects

3.3.2 Foundation Objects

Foundation objects serve as the cornerstone of SAP SuccessFactors, providing a centralized framework for data that can be shared across the entire organization [SAP, 2024c].

These objects are categorized into key areas, including employee data, organizational structures, and workflow-related information. These are the key entities fundamental to HR operations together, they support the establishment of clear hierarchies, enhance data integrity, and ensure that HR processes operate seamlessly. Figure 3.3 shows the different Foundation objects and how they are divided through the categories.

All these objects then are used to define the data hierarchy and the way that HR processes can be automated.

3.3.3 Generic Objects

In SAP SuccessFactors, generic objects are designed to address the need for customization when standard legacy and MDF foundation objects are insufficient to model an organization's unique business requirements. These objects enable organizations to incorporate additional information and attributes beyond what is provided in the default framework. [SAP, 2024d].

Generic objects can be created using the Metadata Framework (MDF), a powerful tool that allows administrators to define objects with custom fields, relationships, and workflows. This flexibility empowers organizations to design solutions tailored to their operational requirements. Additionally, for more advanced customization needs, XML code in data models can be edited to define generic objects, offering

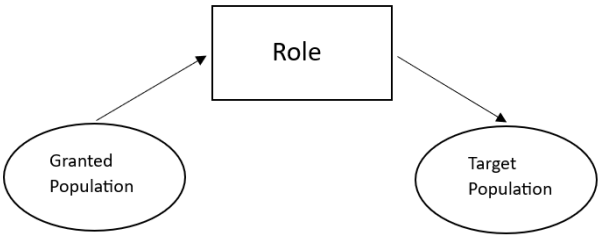

Figure 3.4: Role Based Permissions

a higher level of control over how these objects are structured and used within the system.

By leveraging these objects, organizations can enhance their HRIS implementation, ensuring all relevant business data is captured and utilized effectively.

3.3.4 Role Based Permissions

Role-Based Permissions (RBP) is a security model that allows the restriction and grant access to SAP SuccessFactors [SAP, 2024f]. RBPs control the access to the application and define which information employees, managers, HR and other roles in the organization can view or edit.

Figure 3.4 shows how role-based permissions are built. There are two different groups: the granted and target group. The Granted population are the one that will have access to some role/permission to access some information of the target population. This structure is fundamental to manage access to and control within the system.

3.3.5 Business Rules

Business rules are used to add application logic to determine the outcome of a change made to particular data in the system [SAP, 2024e]. The Business Rules follow the logic that if something changes in the system then the system will react in the way defined.

These rules allow businesses to enforce policies, standardize procedures and adjust business requirements. Business Rules offer a scalable and adaptable approach for handling personal data, setting approval processes as workflows and guaranteeing compliance.

Chapter 4

Implementation

The implementation phase is a critical component of this project, where theoretical plans and designs are translated into practical, operational systems. This chapter details the step-by-step process of development and implementation of the different modules in SAP SuccessFactors and how the information flow integrates with SAP HCM. It outlines the key activities undertaken, challenges encountered, and solutions devised to ensure a seamless transition and effective deployment of the HRIS system.

4.1 Overview

The diagram 4.1 represents a high-level visualization of different steps of the implementation project. The image illustrates the integration process between SAP SuccessFactors and SAP ERP HCM, specifically focusing on how data flows. SAP SuccessFactors was developed in this process to manage objects, employee data and time off data.

In order to maintain correct and consistent employee records, this data is integrated and sent to SAP ERC HCM, where it is utilized to update infotypes. After that, this information will be used for payroll processing based on up-to-date employee data.

By synchronizing the on-premise SAP ERP HCM system with the cloud-based SuccessFactors platform, this connectivity preserves data accuracy across multiple HR.

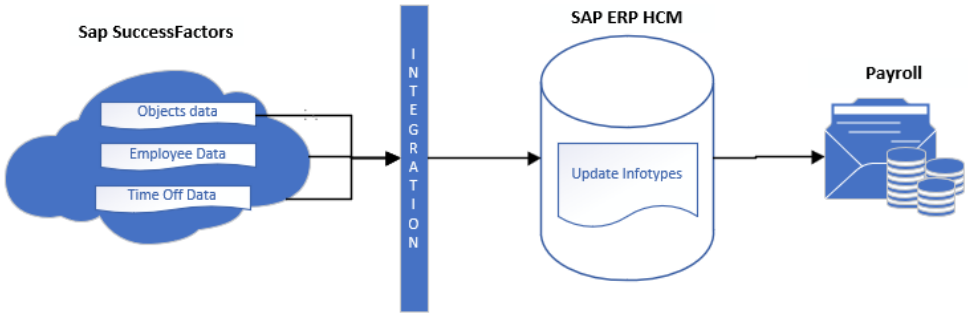

Figure 4.1: Implementation Overview: Data Flow

4.2 SAP SuccessFactors

With the implementation of this project, SAP SuccessFactors will become the primary HR system. All current data must be transferred from the old HR system to SAP SuccessFactors to complete this transformation. It was necessary to extract, validate and import the data from the legacy system into the new cloud-based platform.

Before the data migration took place, it was essential to build the foundational structure. This includes building the company's organizational structure and job hierarchy. These structures were also designed to incorporate improvements and additional functionalities that were lacking before. In parallel, new modules such as Time Off implementation were implemented such as Time Off improving the capabilities for managing employee absences and following the company policies and regulations.

The following subsections provide a detailed overview of the key steps in this implementation including configuring the Organizational Structure and establishing the Data Hierarchy, setting job structures to reflect roles and positions, implementing time off management and finally the critical process of Data Migration.

4.2.1 Organizational Structure - Data Hierarchy

Any HRIS must have a clearly defined organizational structure. In SAP SuccessFactors organizational objects are set up to precisely represent the company hierarchy. Each object type was defined to meet the specific requirements of the organization, including the necessary fields, associations and data flow. This structured hierarchy not only supports day-to-day HR functions but also plays a vital role in integrations, reporting and overall system performance.

The image 4.2 illustrates the hierarchical structure and entity relationships of foundation objects, highlighting the relationships and dependencies between different organizational units.

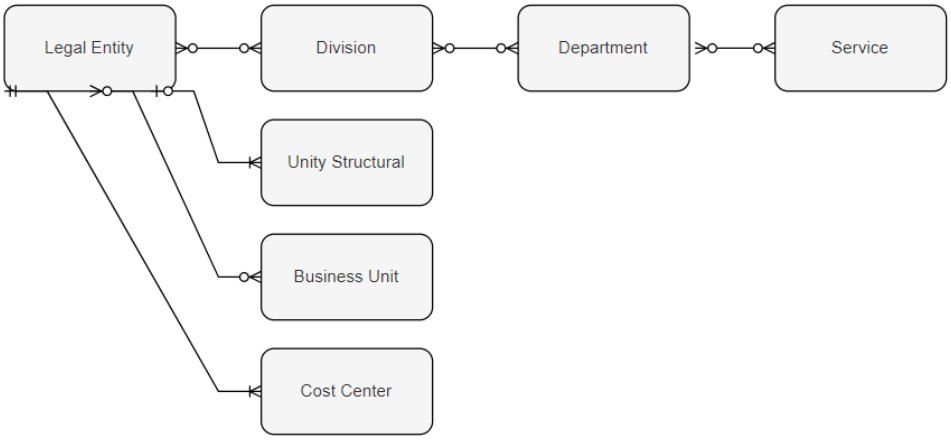

Figure 4.2: Organizational Structure in SAP SuccessFactors

The Legal Entity represents the highest level in the organizational hierarchy. It corresponds to the overall company or corporation. Each Legal Entity can be associated with multiple Divisions, Structural Units, Business Units and Cost Centers.

A Division represents a major segment or business unit within the organization. Divisions are connected to multiple Departments, as indicated by the arrow linking them. Within each Division, several Departments focus on specific business or operational functions.

Departments are smaller units that focus on specific functional areas under the division. Each Department is associated with one or more Services, which represent specific activities.

Services are specific activities or support functions that exist within Departments. They represent the most granular level in this hierarchical structure.

Business Units are specialized segments of the organization tied directly to the Legal Entity. They are designed to handle distinct operational functions.

Structural Units are organizational components designed to align business requirements with operational frameworks. They are directly associated with the Legal Entity.

Cost Centers are financial tracking entities, tied to the Legal Entity, providing a way to monitor expenses associated with specific areas of the business.

This hierarchical structure ensures that all components, from the Legal Entity to the Service level, are interconnected, allowing for efficient management of operations.

The table 4.1 provides all the details of each field used to build this Organizational Hierarchies, as mandatory and optional fields for each object and the association between them.

Organisational Structure Objects			
Object	**Mandatory Fields**	**Non-Mandatory Fields**	**Association**
Company	Code; Name; Effective Date;Status; Standard Weekly Hours; Currency; Country of Registration	Official Language	-
Division	Code; Name; Effective Date; Status	Parent Division	Legal Entity (one-to-many)
Department	Code; Name; Effective Date; Status	-	Division (one-to-many)
Service	Code; Name; Effective Date; Status	-	Department (one-to-many)
Structural Unity	Code; Name; Effective Date; Status	Cost center; Structural Unity Parent Company	Company (one-to-one)
Business Unit	Code; Name; Effective Date; Status	Head of Unit; Description	Legal Entity (one-to-many)
Cost Center	Code; Name; Effective Date; Status	CostCenter External Object Id	Company (one-to-one)

Table 4.1: Overview of Mandatory, Optional Fields, and Object Associations of Organisational Structure

Job Structure Objects			
Object	**Mandatory Fields**	**Non-Mandatory Fields**	**Association**
Job Function	Code; Name; Effective Date;Status;	-	-
Job Code	Code; Name; Effective Date; Status ; Job Title	Standard Weekly Hours; Is Full Time Employee	-
Employee Class	Code; Name; Effective Date; Status	-	-
Employee Level	Code; Name; Effective Date; Status	-	Employee Class

Table 4.2: Overview of Mandatory, Optional Fields, and Object Associations of Job Structure

4.2.2 Job Structure

In an HR system, Job Structures and Position Management are crucial to define the roles and responsibilities that exist in the organization. These components were defined to ensure that job classifications, roles and reporting relationships are clearly defined and managed.

A structured framework that categorizes jobs and roles within the organization can help in the future on the implementation of future modules, like recruiting that will use this data.

To categorize the jobs they were created for different objects: Job function, Job Code, Employee Class and Employee Level. The area of activity is represented by the job function. It combines roles in Finance, information technology etc. This object helps to classify jobs into larger categories. The job code represents a unique identifier for each specific job in the organization. It stands for a specific job with specific responsibilities. The employee class categorizes the employees based on their employment types, such as full-time, part-time, intern, external staff etc. This classification helps to ensure different employment conditions, for example, the right to vacations. Finally, the employee level refers to the employe's position in the organizations hierarchy, reflecting their degree of seniority and authority. It is split into different levels Senior executives, executives, supervisors, employees and workers,

Table 4.2 shows in detail the fields of these objects and the existing association between them.

```
<hris-field id="position" visibility="both" required="true">
  <label>Position</label>
  <label xml:lang="el-GR">Θέση Εργασίας</label>
  <label xml:lang="en-GB">Position</label>
  <label xml:lang="en-DEBUG">Position_Lbl#5773</label>
  <label xml:lang="en-US">Position</label>
  <trigger-rule event="onChange" rule="EC_SYNC_POS_to_JOBINFO"></trigger-rule>
  <trigger-rule event="onChange" rule="ECPOSTIMEOFF"></trigger-rule>
</hris-field>
<hris-field id="positionEntryDate" visibility="both">
<hris-field id="timeInPosition" max-length="128" visibility="view">
</hris-section>
<hris-section id="orgFieldsList">
<hris-section id="jobFieldsList">
<hris-section id="timeOffRelatedFields">
</hris-element>
```

Figure 4.3: XML configuration for defining Position Object in SAP SuccessFactors

4.2.3 Position Management

Position Management serves as a component that bridges the Organizational Structure and Job Structure. This is a dynamic framework for managing positions within the organization, ensuring that each role is defined concerning both the organizational hierarchy and the job roles within the company.

This object refers to a specific role within the company's hierarchy. A position can denote a single, distinct or multi-seat role where several individuals share the same duties and job specifics.

The organizational structures and job structures defined in subsection 4.2.1 and 4.2.2 respectively are now used to place the position within the specific part of the organization and the characteristics of the job itself.

Figure 4.3 illustrates an example of how objects are defined in XML for SAP SuccessFactors configuration, showcasing the structure and properties of fields within an HRIS section. In this case is the position object.

Figure 4.4 shows how the position object looks for the end users: to improve the user experience, an *User Interface* (UI) was created to create 5 different sections: Position technical data itself, the organizational structure, with all the necessary information to placing the position in the organization, the job structure to define the characteristic of the job, position settings where it is possible to set the FTE of the position (if it is a single position or shared by multiple employees) and if the position is ready to be hired, and finally the matrix relationship, where it is possible to associate an HR responsible for this position and the higher level position, corresponding to the manager of this position.

In the context of position management, this object was implemented to simplify employment position administration and establish a more organized and effective procedure for monitoring position data. It makes it possible to plan succession, manage hierarchies, and keep track of available positions—all of which help to better match personnel management with corporate objectives. With position management

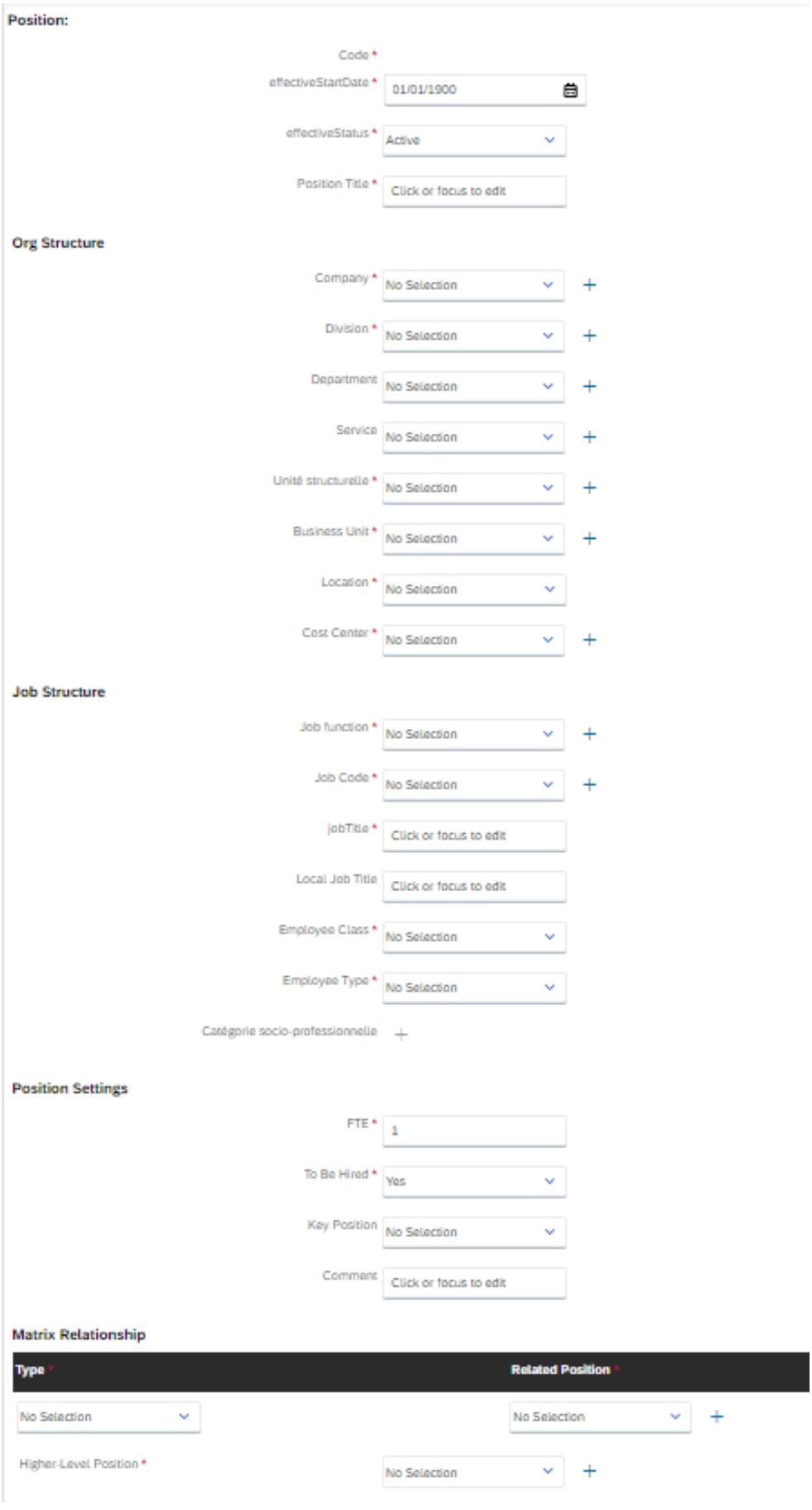

Figure 4.4: MDF Object: Position

Time Management Components		
Object	Function	Association
Holiday Calendar	Defines the Public holidays that aplly to specific regions. Assigned to the Employee based on their location	User
WorkSchdule	Defines the working days, work hours that apply to the employee.	User
Time Type	Specific categories of time off, such as annual leave, sick leave or other custom leave types. It is also possible to configure rules for each time type, to ensure the company's policies are followed.	Time Profile, Time Account Type
Time Profile	Collection of rules, settings and list the time types that the user can use.	User
Time Account Type	Manage the accrual and expiration of leave balances, defining the rules for how much leave employees earn, how often it accrues, and when it can be taken	Time Type

Table 4.3: Overview of Time Management Components and associations

is possible to establish dynamic workflows and use rules. In this particular case, was set a rule, for each time any rule is created, creates a dynamic workflow that will send an approval notification to the HR in charge of that Legal Entity. Also, another rule was created to set the position code of each position based on a sequence, making the process easier, because it is not necessary to check the last used code to create a new one.

4.2.4 Time Off Management

Time off management is one part of handling leave requests from employees and making sure odd balances are accurately tracked. By simplifying the leave application, approval, recording procedure, and automation of key steps, this module can increase organizational efficiency and leave policy compliance.

This implementation involves implementing various components to manage time-off requests, accruals and compliance with organizational policies. The table 4.3 summarises the key time management components used in this implementation. It describes the primary function of each element and the association within the system.

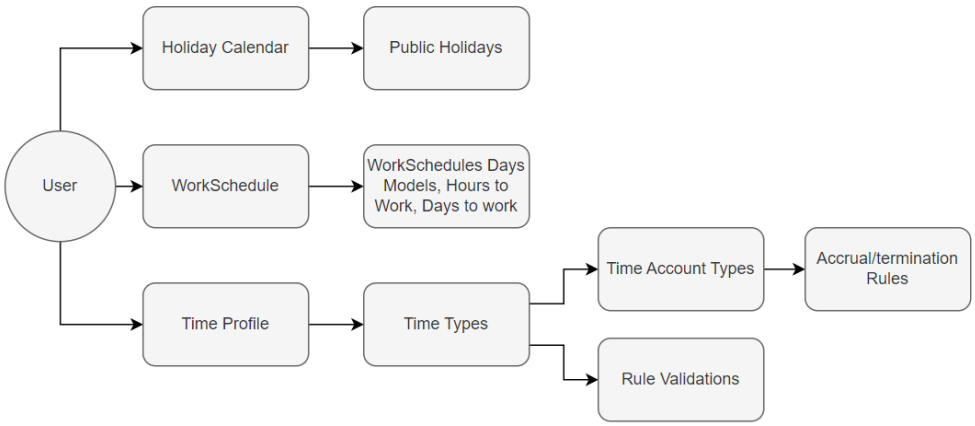

Figure 4.5: Implementation Overview: Time Off Implementation

The diagram in Figure 4.5 provides an overview of the configuration architecture, showing how the multiple components described in the table 4.3 are connected and handle the queue time-off process.

At the centre of this configuration is the user that will interact with the system. Each user has 3 components directly assigned to the Employee Profile: Holiday Calendar, WorkSchedule and Time Profile. The system will use the holiday calendar to verify if the time-off request falls on a public holiday., the work schedule to determine the total hours worked and verify if the time-off request doesn't fall on a non-working day and the time profile will define which absences types (time types) the employees will have access to record their time off. Each time type has a workflow configuration to be triggered every time a user uses this absence type for their time off. It also has validation rules, where it s possible to insert conditions that the employee needs to follow when selecting this type of absence (max duration of booking this type of absence, information messages, making attachment mandatory etc). Each time type is associated to a time account. The time account corresponds to the bucket of days that an employee has to take. In this object are defined the rules for how much leave employees earn, how often it accrues, and when it can be taken. These account types work in conjunction with Accrual and Termination Rules, which manage what happens to unused balances when an employee leaves the organization or when the employee is hired.

For the implementation of Time management for this company, were created 2 time profiles, 28 time types, 6 Time Account Types (Congé, Congé Ancienneté, Congé Enfant, Congé Payé, Méddaille d'honneur and SickLeave) , 58 workschedules and 1 Holiday Calendar (Côte d'Ivoire).

The diagrams in figure 4.6 demonstrate how end users submit time-off requests, how the configuration diagram for that purpose was created, and how data and processes are transferred.

As a summary of this process, via employee TimeOff UI, an employee requests a

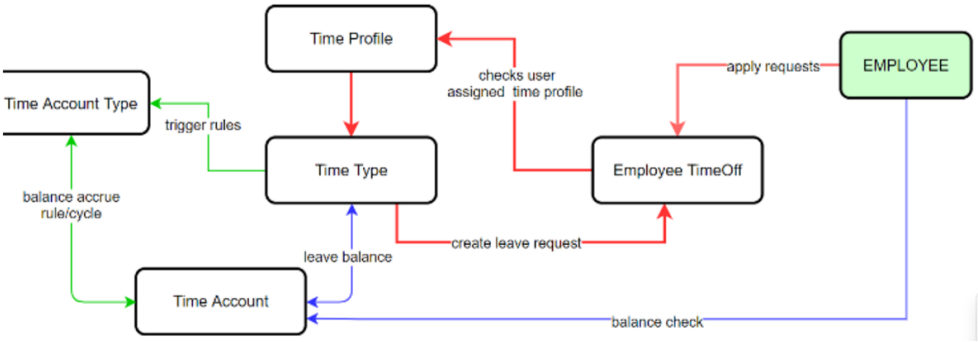

Figure 4.6: Implementation Overview: TimeOff Module Overview

leave of absence. The system evaluates the available amount in the associated Time Account and examines the employee's Time Profile to identify permissible leave kinds, according to all the business rules developed to fit the company's policies. If there is an adequate balance, the request is fulfilled. Following the guidelines previously developed, the system also updates the leave balance regularly.

4.2.5 Data Migration

To successfully deploy SAP SuccessFactors, data migration is a crucial step that guarantees the transfer of all the relevant employee and organizational data from the legacy HR system to the new platform. This process involves not only the *Extraction, Transformation and Loading* (ETL) of data but also ensuring its integrity and alignment with the configuration of the new system, such as those in the organization structure and Job structure. A smooth transition and reduction of data inconsistencies facilitate a smooth transition, allowing the new system to operate immediately.

The migration process for the new system involves defining a clear migration scope to ensure that all the data from the previous system is transferred to the new one. The migration scope can be split into two big groups: migrate all the foundation and regular objects mentioned in sections 4.2.1, 4.2.2, 4.2.3 and 4.2.4 such as Organizational structure, Job Structure and Time management object data. The second group consists of loading all the Employee Master Data, importing all the personal data, biographical information, job information, position information and time off balances at the current date. The strategy to keep some historical data was to create a record for all employees inserting their data on the hire date, and another record "as of today" date.

After defining the migration scope, it was necessary to define the migration strategy given that the data necessary to migrate from HCM was from a live system with the data being updated continuously. So, the decision was to fix one day for the data migration and any change made to the employee data after that fixed day

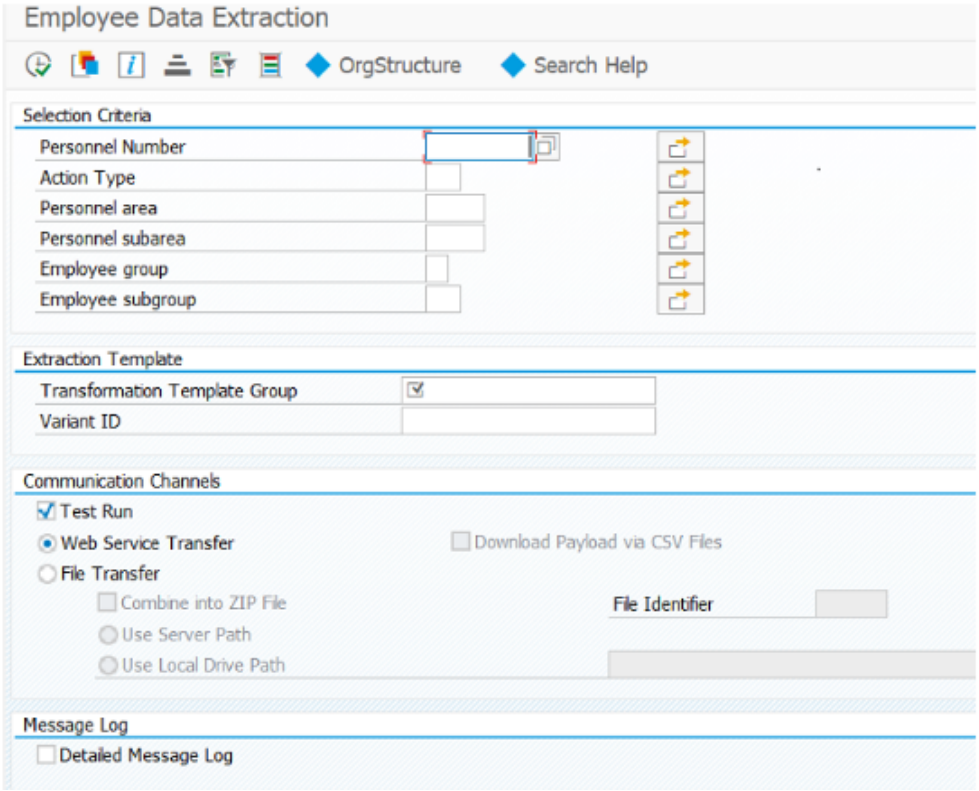

Figure 4.7: SAP HCM Infoporter Screen

had to be analyzed. Some suggestions were given to take note of all the changes done in the system during the gap of time that the data migration took place (about 2/3 weeks), and some HR's did it, however, others did not, which led to significant challenges to check massive the changes done during that period.

After defining the scope and strategy, the next step was the extraction of the data from the legacy system. To facilitate this process I've used SAP Infoporter - a standard tool from SAP HCM that was designed specifically to manage the process of data extraction in SAP systems, minimizing errors. The decision to use this tool was based on one of its key advantages: ensuring proper employee data replication. When the employee data is replicated (From SuccessFactors Employee Central to SAP HCM), there's a risk of creating a new personal number (corresponding to PERNR in SAP HCM). This can lead to discrepancies, as the employee master data could be duplicated under a new PERNR instead of being associated with the existing one. This means that, due to the integration process, that will be analyzed in detail in section 4.3, if the user ID (PERNR on HCM and SF ID on SAP SF) are not aligned, it will create a new user in the system. This causes data corruption and serious impacts on the payroll side. Infoporter ensures that the existing PERNR is reused, preventing this duplication by updating the employee key mapping table during the migration process. The screen of this program is visible in Figure 4.7.

The next task after the extraction phase is transforming the data. In SAP HCM the data is organized in infotypes, which are structured datasets used to store specific types of information, such as personal data, organizational assignment, or time management data. Each info type corresponds to a portlet in Employee Central, which is a self-contained data block where specific employee-related data is stored. Table 4.4 shows the correspondence that was done between the organization of the previous system to the new one to be possible to transform the data accordingly.

To further simplify the migration process and minimize the technical understanding, it was delivered to the client pre-filled templates to follow the logic of SAP SF configurations. These templates were pre-filled with data already exported from SAP HCM, keeping in the blank all the new fields developed in SAP SF that did not exist in SAP HCM. This way, we were able to reduce the potential error and improve efficiency during this phase. On the technical side of the migration side, before importing personal data, the organizational management data must be updated first then the employee data. This is essential because the organizational management data provides the foundational structure of the company, such as divisions, departments, positions etc, that will be linked than to the employee. Without this information in place before the personal data upload, it might not be correctly linked to the appropriate roles, divisions, departments, etc inside the system, which could lead to serious mistakes in reporting and system functionality. To import the OM data, a .csv file was uploaded for all the objects listed in the tables 4.3, 4.2 and 4.1.

Once the OM data has been successfully updated, the next step is to import the employee data. Importing his data follows a specific order to ensure that dependencies between different data sets are maintained. The order to import employee data was: first basic import, which will create the basic user profile in the system; 2 biographical information, which receives data such as birth date, gender, and nationality; Employment Details that includes information such as employee's hire date; fourth Job Information being the most complex portlet to import. This portlet contains all the relevant organizational structure, such as job codes, legal entity, position, time management information, and manager; 5 personal information, that includes details such as marital status, number of dependents and native preferred language; Compensation information, which was not completely used in this case because the client didn't want to share salary details due GDPR and finally the job relationship, that involves importing Matrix Manager and Custom manager for each employee. The missing information, such as National Id, Work Permit (if applicable), Dependents, Emergency Contacts, Address, Phone and Email could be imported in any order.

In Sap SuccessFactors some portlets such as Job Information and Compensation Informations are effective dated. This means that they store historical data and

Comparison of SAP HCM Infotypes and SAP SuccessFactors Portlets				
SAP Infotype	SAP Field	SAP Table	EC Portlet	Field Name
0000	Catégorie de mesure	T529A	Job Info	Event
0000	Motif mesure	T530	Job Info	Event-reason
0001	Company	T001	Job Info	company
0001	Personnel Area	T500P	Job Info	business-unit
0001	Cost Center	CSKS$_{C}ORE$	Job Info	cost-center
0001	Legal Person		Job Info	
0001	Salary Level	T501		Employee-class
0001	Employee Category	T503K	Job Info	employee-type
0001	Counting Bracket	T549A	Job Info	PayGroup
0001	Contract		Comp Info	Custom-string1
0001	Position	T528B	Job Info	position
0001	Function	T513	Job Info	job-classification
0001	Structural Unit	T527X	Job Info	custom-string2
0001	Group		Job Info	
0002	Qualité		Personal Info	suffix
0002	Nom.naiss		Personal Info	birth-name
0002	Prénom		Personal Info	first-name
0002	Nom		Personal Info	last-name
0002	Middle Name		Personal Info	middle-name
0002	Né(e) le		Biographical Info	date-of-birth
0002	Sexe	T522G	Personal Info	Gender
0002	Nationalité	T005T	Personal Info	nationality
0002	Sit. Famille	T502T	Personal Info	marital-status
0002	Nbr. D'enfants		Personal Info	genericNumber5
0006	Catégorie d'adresse		Home Address	address-type
0006	Rue		Home Address	address2
0006	Número de Rue		Home Address	address1
0006	Boite Postal		Home Address	zip-code
0006	Pays/région	T005	Home Address	country
0006	Commune		Home Address	custom-string1
0006	Site du Logement d'entreprise		Home Address	custom-string3
0016	Type de Contract		Job Info	contract-type
0016	Fin Contract		Job Info	contract-end-date
0105	Type		Email Info	email-type
0105	Id de Systeme		Email Info	email-address

Table 4.4: Corresponding Infotypes, Fields, and Portlets Between SAP HCM and SAP SuccessFactors

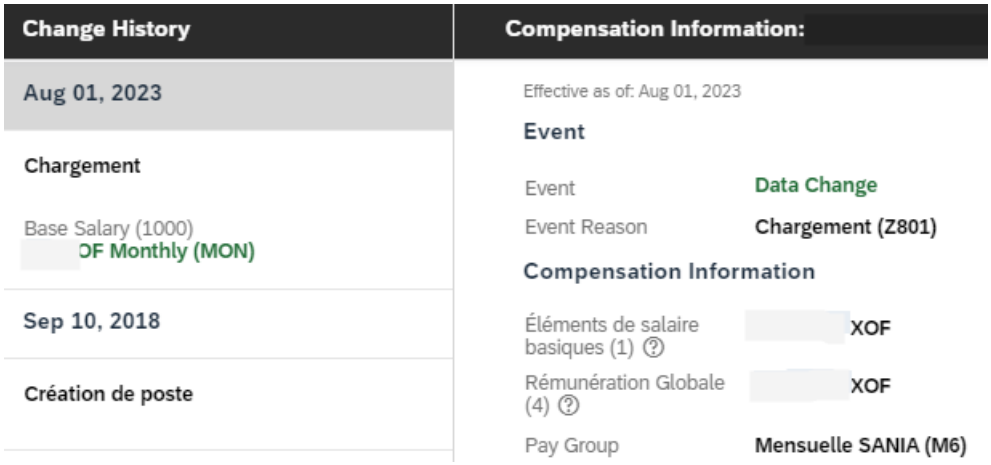

Figure 4.8: Implementation Overview: Compensation History

track changes over time. For these particular cases, I've conducted two separate imports: one with the hire event, storing the information of the employee as of "hire date", and the second for the "as of today" date, reflecting the most up-to-date information. The figure 4.8 illustrates an example of a compensation information of an employee, where is possible to see two different records.

To ensure a smooth migration and minimize risks in the production environment, were executed the data migration process three times. The first two were done in the Test and Development environments to simulate the actual migration. This allows to redefine the process and identify the problematic areas. By performing multiple tests, it became easier adpto new strategies to mitigate them in the next migration cycle. Additionally, the accuracy of the data migration in the production environment is absolutely critical, as any errors could lead to serious consequences. Once the migration is complete, the interface between the systems will run, and it is essential that the data in SAP SuccessFactors (SF) matches exactly with the data in SAP HCM to ensure consistency. This is especially important because, after the migration, SAP SF will become the master system, it means that the employee changes will start to be done in this system and them migrated to the legacy one. If incorrect data were to be migrated, causing a discrepancy between the two systems, it could lead to an overwrite of incorrect information in SAP HCM, that could potentially impact the payroll processes, absolutely overcritical. For this reason, this step was one of the most important in the project, because any error could lead with serious consequences.

4.3 Integration

The integration process between Sap SF and SAP HCM is essential to guaranteeing smooth communication and synchronization of the systems. Integration

allows consistent data change between the two platforms, reducing redundancy and increasing efficiency. Given that SAP SF will act as the master data of maintaining employee data on a day-to-day basis, but the payroll is processed in the SAP HCM part, the integration must be well developed to maintain the integrity of employee information and organizational structures.

The technical aspects of the integration will be examined in this section, focusing on various elements such as the organizational structure, employee master data and the shift in time management data from Sap SF to SAP HCM.

The details of each component will be covered in the ensuing subsections: Time Off Transition" will discuss the integration of time-off balances, Employee Master Data will focus on the synchronization of personal and work-related data, and "Structure" will handle the mapping and integration of organizational data.

4.3.1 Structure

The integration between the SAP SuccessFactors (cloud) and Sap HCM (on-premise) relies on a well-defined technical structure. Framework, middleware and connectivity layers were defined to ensure secure and reliable communication between the two systems.

The foundational framework for the effective integration of SAP SuccessFactors with SAP HCM is the SAP Business Technology Platform (BTP). BTP supports the creation and management of integration instances, enabling data exchange between the two systems.

Within BTP, CPI (Cloud Platform Integration) was the chosen middleware for its ability to reduce the possibility of loss or data corruption during the transmission of data, ensuring that the data is transferred in the proper format, verified and delivered to the intended location. To work within the CPI, Cloud Connector was implemented. It serves as a secure gateway, that guarantees the data transmission and flow between the two systems. In the case of SuccessFactors, it serves as a bridge that enables the transmission of data to HCM. While CPI handles the overall integration process, the Cloud Connector specifically secures and facilitates the communication between these two environments.

In Figure 4.9 is possible to see how the integration flows between the two systems: on the cloud side (Blue rectangle), the user interacts with the Web app, which communicates through the CPI for data processing. The Cloud Connector is shown as an intermediary between the cloud and on-premise (yellow rectangle) environments. The line "DataBridge" represents the data flow between these components, linking them.

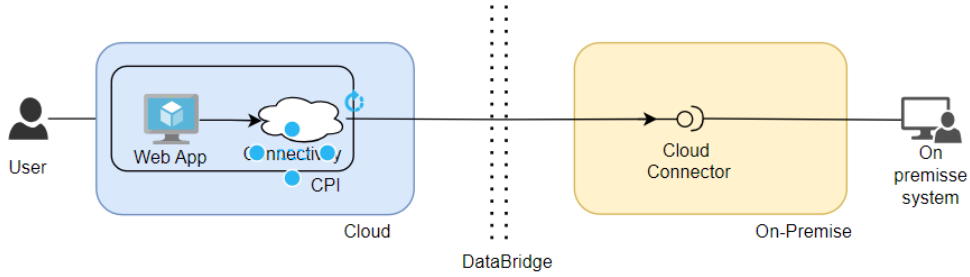

Figure 4.9: Implementation Overview: CPI

4.3.2 Web Services

Web services provide communication between various systems, providing easy data exchange via established protocols. Through web services, the data is delivered securely and in the correct format, supporting various HR operations such as employee data transfers. In the context of SAP SuccessFactors and SAP HCM, web services have a role in ensuring data transfer. With the combination of middleware, CPI and secure data transmission mechanisms, like the Cloud Connector, web services ensure that data flows between systems.

Two main are used: SOAP (Simple Object Access Protocol) and OData (Open Data Protocol). Both protocols rely on the HTTP (Hypertext Transfer Protocol). HTTP acts as the transport layer, facilitating the delivery of messages (in the case of SOAP) or data requests and responses (in the case of OData) across the internet. Their reliance on HTTP means they can be easily used in web applications and services, making them compatible with modern web technologies.

In the SAP context, SAP HCM uses SOAP-based web services, which provide a robust and secure communication channel for exchanging data. On the other hand, SuccessFactors leans on OData web services, offering a more flexible and dynamic way to access data, especially for real-time updates.

The use of SOAP and OData services reflects the strategy to bridge the gap between these two systems. It ensures data consistency is maintained helping to prevent issues with payroll and HR processes. In the following subsections will be possible to view the data flow diagrams where these two services are used.

4.3.3 Employee and Organizational Data

In the context of HR management, employee master data and organizational data serve as a crucial repository of information that supports various human resources processes. Replicating this data enables the employee and organization structure to be managed directly in SAP SuccessFactors Employee Central and also used on SAP ERP.

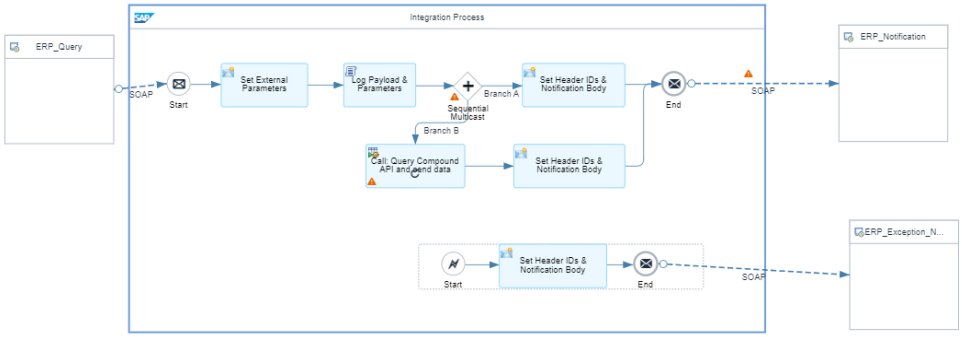

Figure 4.10: Replicate Employee Master Data from SAP SF to SAP ERP - Integration Process

The following diagrams in the figures 4.10 and 4.9 it is possible to visualize the two artefacts used to send the employee master data from SAP SuccessFactors to SAP ERP.

The diagram 4.10 represents the process where the employee data from SAP SuccessFactors is requested via SOAP. The process starts by setting the necessary parameters for the data request and logs the information before it proceeds for processing. Then a sequential multicast appears: branch, A handles the notification about the start of the replication process, containing the headers IDs and information related to the start of the process; Branch B is responsible for querying actual employee data from SuccessFactors using the CompoundEmployee API. This API is used for Sap SuccessFactors to extract employee data out of Employee Central. The flow to retrieve the information from Employee Central is shown in Figure 4.9. In this diagram the employee data is queried from Employee Central using the Compound API, which maps the data to ERP-compatible fields.t sends the data via SOAP to the ERP system. If data is missing or doesn't exist, the process ends without sending data.

After querying, the system sends the actual employee data for further processing. It notifies SAP HCM of the successful completion through the final notification message in the branch, with the END notification. Having these two branches ensures that data querying and transmission follow a sequential flow. This sequence helps monitor and ensure consistency in the data transfer process.

The diagram in figure 4.12 illustrates the replication process of the organizational objects from SF Employee Central to SAP ERP. These objects must be maintained consistently between SAP SuccessFactors (SF) Employee Central and SAP ERP to ensure accurate and synchronized data across systems. The replication process begins by receiving an SOAP request from SAP ERP, initiating the request to replicate the organizational objects. Then external parameters for the request are set to prepare for the following actions. Based on the request, a select clause is generated to define which organizational objects need to be fetched from SuccessFactors. In

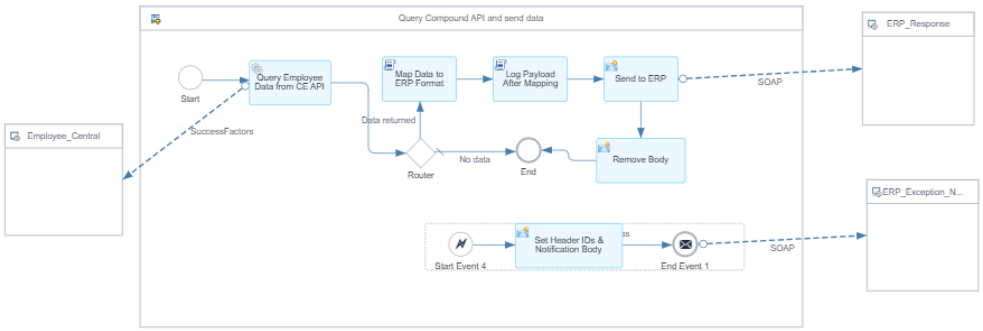

Figure 4.11: Replicate Employee Master Data from SAP SF to SAP ERP-Query Compound API and send Data

this step the select clause is split into 2 different processes, creating smaller requests for more efficient processes. The request is sent to Employee Central to query the relevant data and receive the organizational objects to be replicated. Based on the data received from SuccessFactors. Based on the data received from SuccessFactors, the flow can route on different paths: if no data is found a notification is sent informing that, If data is found, the data from SuccessFactors is mapped to the corresponding fields in SAP ERP. The transformed and mapped data is then sent back to SAP ERP through a SOAP message, completing the replication process. If the process is completed successfully, a notification is generated confirming that the organizational data was replicated without issues. If any errors occur during the replication process, such as missing data or communication issues, a notification is sent detailing the exception, allowing for corrective actions.

This process ensures that organizational objects in SAP SuccessFactors are replicated to SAP ERP, maintaining synchronization between the two systems.

4.3.4 Time Off Transition

The time off management in SAP SuccessFactors makes managing employee absences, leaves and time-off requests easier. This data must be synchronized to the SAP HCM for HR procedures due to the necessity of having this information for payroll purposes.

The diagram of 4.13 shows the replication of the time off data from SuccessFactors EC to SAP HCM. The process starts by setting the necessary parameters for the time off replication, such as system identifiers and time frames for data replication. The "build selected string" constructs a selection query to fetch the relevant data for time off, and evaluate if there are country-specific field checks to be analyzed. The selected elected parameters are logged for future reference and debugging purposes. This log can be useful for tracking what data was requested. After building the selection criteria, the process proceeds to the data processing phase, which handles the main data replication from EC to SAP ERP.

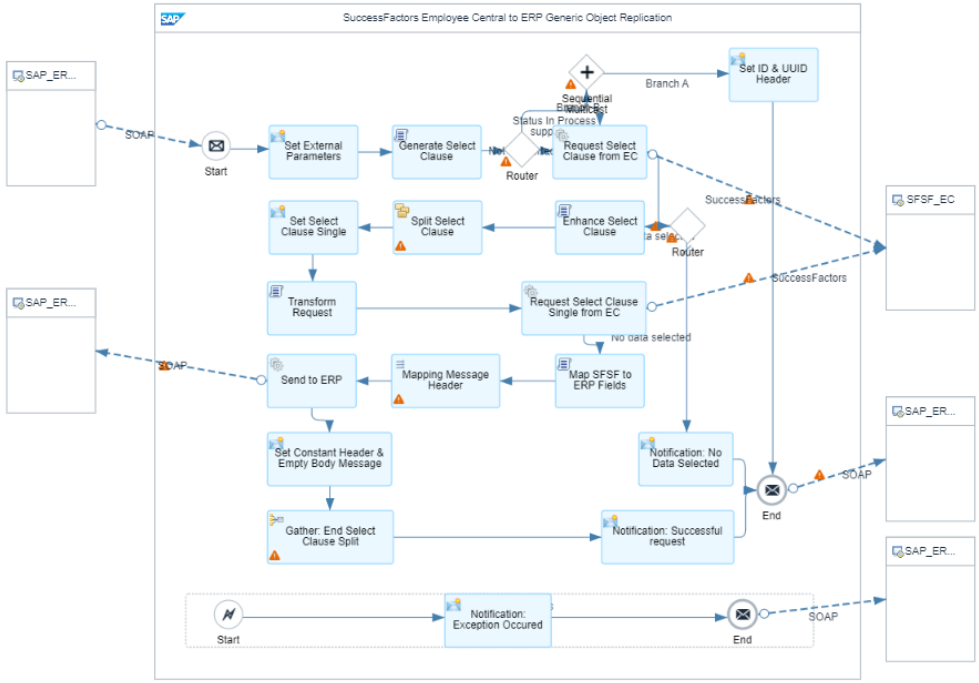

Figure 4.12: Replicate Organizational Objects from SAP SF to SAP ERP

In this phase, the process starts with the interaction of Employee Central, initiating the process to request the new time off data. If the data replication process goes bad, the process ends. Otherwise, if the replication goes well, the process flows to the next steps. If invalid IDs are received, an error is thrown, and the process stops. For valid ID the process continues, and then the country fields are extracted. The next step is the transformation of country-specific fields, ensuring compatibility between SuccessFactors data and SAP ERP formats. After that, the actual mapping occurs, where the SuccessFactors Time Off data is converted to ERP compliant fields. This mapping is visible in the image 4.14, where is possible to view the association of several fields from SAP SF to SAP HCM. Post-mapping, the transformed data is logged and the transformed data is transmitted to SAP EPR through a SOAP message.

This flow ensures the replication of time off data between the two systems, maintaining the employee records aligned between them.

Additional details regarding the monitoring of these interfaces, as well as instructions for executing them individually, can be found in Appendix A.

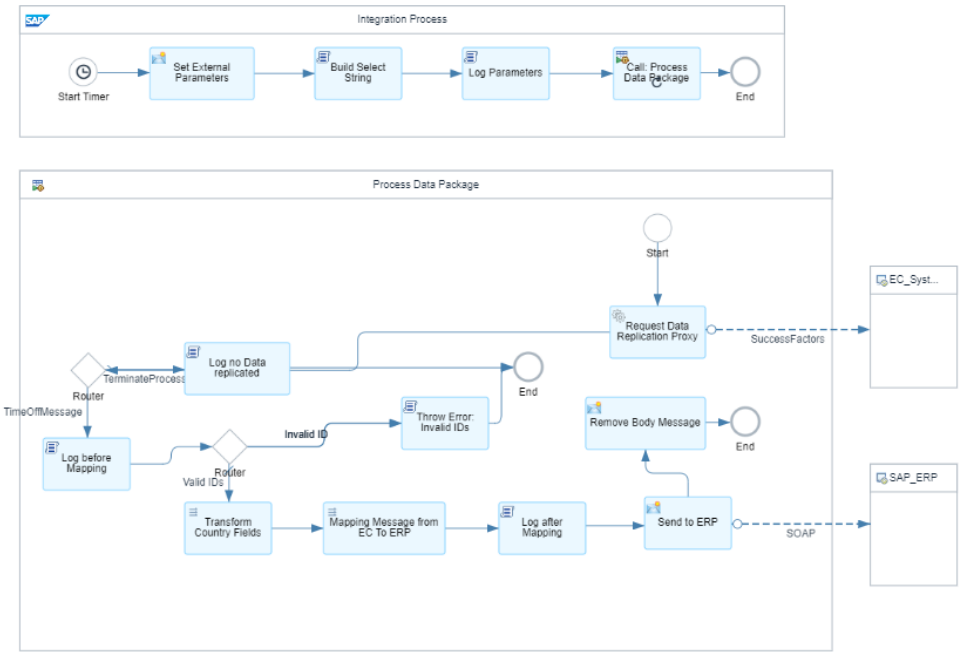

Figure 4.13: Replicate Time Off Data from SAP SF to SAP ERP

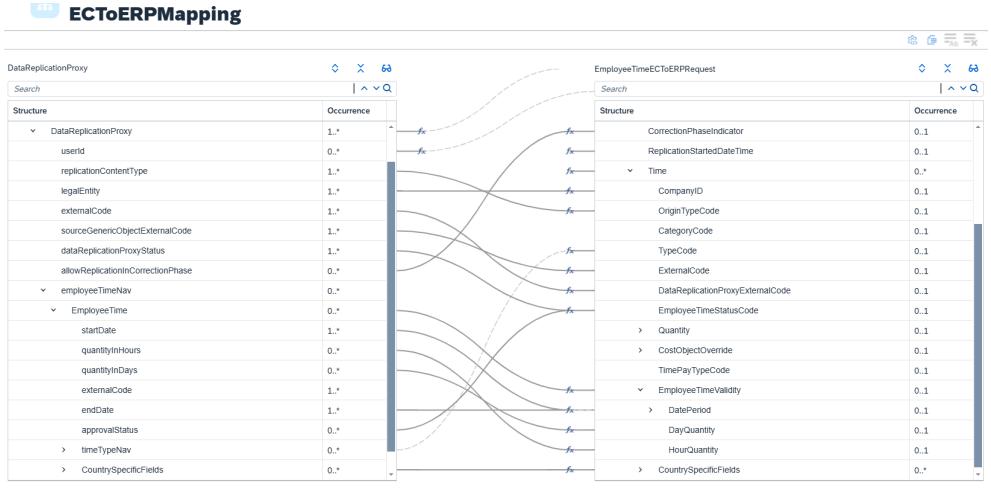

Figure 4.14: EC to ERP Mapping for Time Off data Replication in SAP SuccessFactors

Chapter 5

Evaluation

In this chapter will review the implementation of SAP SuccessFactors and its integration with HCM to determine its efficacy and alignment with the project goals.

It will focus on three main areas: testing phases, which cover the different development and testing phases; incident analysis, which will examine the number of issues and errors encountered during the implementation processes and relate them according to each phase of the project; and finalizing the number of SAP usage systems to evaluate the success of this project.

Together these evaluations provide an overview of the implementation effectiveness, identifying strengths and areas for improvement.

5.1 Project Interactions

To successfully complete this project, it was necessary to define a strategy that balanced ongoing client engagement and also focused on work on technical requirements. This subsection will examine the main 5 phases of the project and the testing flow.

The outline of the project is visible in Figure 5.1, where all five phases of the project are visible: Interaction 0 which started with the Audit and Design of the solution, Interaction 1 and 2. Each interaction involved technical development, testing, and client feedback, allowing early issue resolution and incremental refinement

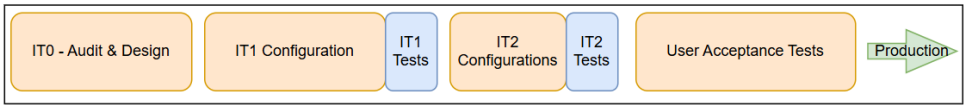

Figure 5.1: Project Phases and Testing Flow from Design to Production

of configurations. The User Acceptance tests were the final phase of testing and finally, the Go-Live (move to production), where all the configurations were migrated to the production environment.

The first interaction (Interaction 0) involved auditing and scoping the existing Sap HCM solution, including pre-configurations and global template setup. The second interaction involved configuring the global Employee Central (EC) solution and migration tools. Interface setup for EC to SAP HCM integration began with a representative data sample for testing and validation, ending in iteration validation. The duration of this interaction was about 9 weeks: 6 weeks to technical configuration and 3 weeks of testing phase. On the third interaction, continue the configuration adjustments, according to the feedback received in the last interaction and the new requirements that were received during the testing phases. This interaction was shorter because the majority of the configuration was done in the previous interaction and the goal of this one was to do some technical adjustments and lasted about 6 weeks: 2.5 weeks for technical adjustments and 3.5 for testings. At the end of each interaction, there was a place for workbook sign-off. This means the client was required to confirm and sign all new system configurations, ensuring a documented record for future projects or system adjustments. Also for the testing phase of the interaction were provided test scripts that helped the client to have a step-by-step document showing what was important to test, and this way guiding them and saving time. The subsequence phase was the User Acceptance phase Testing (UAT), which was the final validation with configuration adjustments, training and testing to ensure alignment with business requirements and prepare the final step.

The Go-Live was the final step of this project, where all the configurations and data migration were moved to the production instance to complete the transition.

5.1.1 Project Validations

The goal of the project planning was to ensure a smooth transition to the production environment, allowing ample time for technical adjustments and a gradual preparation of the users to get used to the new system.

However, several challenges complicated this process. The internal IT and HR team saw a project planning with several interactions and didn't give all the effort

from the beginning to follow the process from the beginning. They were not fully aware of the difference that this project would cause in the day-to-day work and the client only noticed that in the final phases of the project. In the first interaction (IT1), the client was responsible for providing the organizational and employee data, however, the data quality provided by the client caused many dependency errors, as the data's integrity across various objects was often compromised. This problem delayed the data migration, a crucial phase in this project as already discussed, because it was necessary to have many email changes with the client to be possible to have the right information to proceed with the loads.

Installing the cloud connector was also a complex topic. To install the cloud connector it was necessary to work together with the internal IT Team, because only they had access to the servers, and the differences in the work culture also created barriers. Even with all the mentioned difficulties and problems during the configuration phase, when the testing phase of IT1 took place, only a few errors were reported and just a few change requests were asked, which was not expected.

In IT2, the client was advised of the difficulties of the last interaction, and a different approach to the sensitive topics was done. The client's feedback improved a little but still not enough to ensure a smooth move to production. The data quality is still insufficient for good data migration. In the testing phase of this interaction, a few more errors were reported and the number of changes requested increased, which was expected.

On the final tests in the UAT phase, it was when the client was completely involved, where multiple problems were reported and many problems with employees' data were identified. Identifying such problems in the final phase of the project, when only a few cases ideally should be identified caused many problems because the client was not comfortable with the solution and it obliged to postpone the go-live date.

The client's inconsistent commitment to testing phases and last-minute task handling created challenges in configuration and project management. Greater engagement during early iterations could have resolved issues sooner and reduced the risk of go-live delays.

5.2 Incidents Analysing

During the project's testing phases, the client had access to an internal tracking ticket toll, Redmine, where they could submit tickets for any problems encountered or change requests that they wanted to apply. This subsection analyses the progression of incident volumes according to each project phase.

The graph in Figure 5.2 shows how many incidents and change requests were reported during each phase of the project phases: Iteration 1 (IT1), Iteration 2 (IT2),

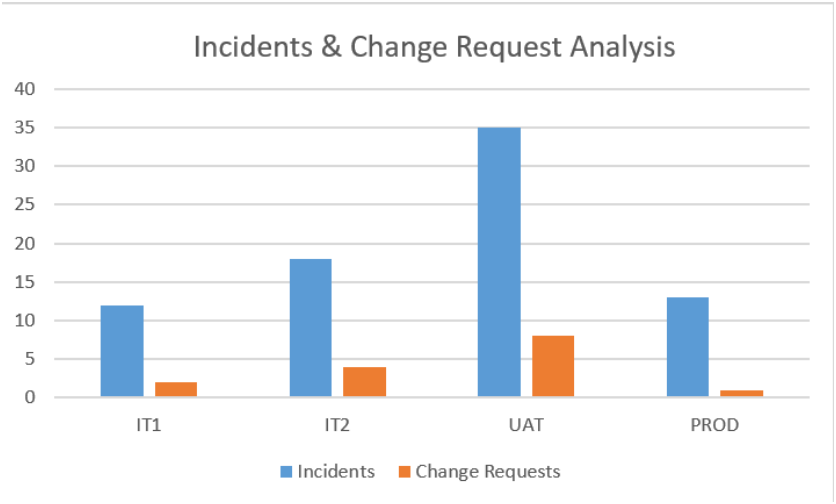

Figure 5.2: Incident and Change Requests Analysis

User Acceptance Testing (UAT) and Production (PROD). To analyze this number were considered the tickets raised on Redmine and emails that the client sent reporting issues or change requests because the client in some cases didn't follow the process to raise an incident for each problem identified. Ideally, the trend should show a higher volume of change requests in the first phases of the projects and gradually decrease by the UAT phase to indicate the problems were being fixed earlier and the solution was becoming more stable to advance to production. However, the opposite trend is observed. During the first phases of the project, the number of incidents and change requests was very low and during the UAT phase, many problems were identified, which caused many problems and shook the customer's confidence in the solution and postponed the go-live.

Two different reasons can be pointed out for this factor: the client became more familiar with the SAP SuccessFactors solution over time, allowing them to identify more problems that reflected the higher volume of incidents on the UAT phase, or as the Go-Live date approached, they intensified testing under pressure leading to a surge in reported incidents and change requests.

This analysis highlights how important it is to involve the clients completely in the early stages of testing. A more consistent testing approach from the start could have reduced the volume of incidents in later stages, ensuring a smoother and more reliable transition to production.

5.3 SAP System Usage

In order to evaluate the client's engagement with the new solution, I've analyzed the new SAP system utilization, reporting the number of users using the system and the number of logins made in the system.

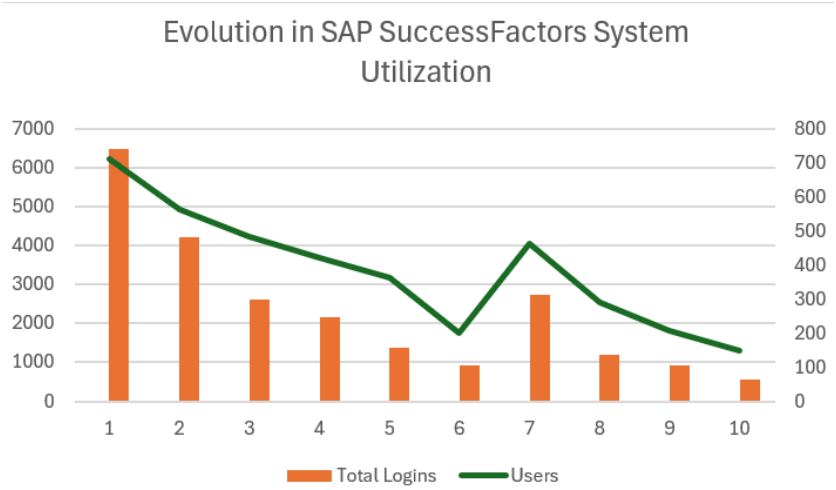

Figure 5.3: Progression in SAP SuccessFactors System Utilization

The graphic in Figure 5.3 shows the evolution of logins and the number of users using the system. The left Y-axis represent the number of logins (0-7000), the right Y-axis represents the number of different users using the system (0-800) and the X-axis represents the first ten months of 2024 (January to October). The attached graphic shows a decline in logins from the beginning of the year, with an increase in July followed by a period of stabilization.

The initial peak in logins at the beginning of the year coincides with the move of the solution to the production environment. In this phase, the client did massive tests of the solution to ensure that the system met all the business requirements before the contract conclusion. This period was critical, as legacy SAP HCM data was being replaced with SuccessFactors data, as discussed in the Data Migration chapter, and it is reflected in the number of logins in the system and the number of users that logged in the system. The July login rise is probably the result of a seasonal increase in vacation requests, prompting more employees to access the system.

Compared to the normal user accesses, the number of employees involved in the data migration was substantially higher. The reason for this case is that a big part of this population are blue collars, and these workers lack of technological resources to use the system as end users. For those cases, all the processes are done by the representative HR, which proxies on employee's profile and keeps all the data updated.

Additionally, the system adoption after the go-live might be impacted by the lack of a post-go-live support contract. Without dedicated technical support, users lacked guidance for troubleshooting which would discourage frequent use. Although training sessions were provided, user engagement was limited, suggesting that many may not have fully understood all functionalities. As a result, users may have found

it difficult to resolve problems on their own without internal knowledge to turn to, which could have eventually led to a decrease in the system's use.

Even though some employee segments are less engaged or with restricted access, this information indicates that SAP SuccessFactors is progressively becoming an essential component of the client's HR procedures.

Chapter 6

Summary

This chapter contains the main conclusions, difficulties, and possible directions for improving this project focused on implementing and Integrating SAP SuccessFactors with SAP HCM.

The results subsection analyzes the system alignment with the client's HR needs, the critical analysis will focus on identifying the primary obstacles encountered in this project and finally, the future work subsection will provide some recommendations and opportunities to further improve this project and system,

This summary serves as a reflection on the current project and as a guide for future projects.

6.1 Results

This section presents the project's results, with special attention to the extent to which the initial objectives were met, even on the technical and client engagement side.

The main goals of this project were centred on optimizing HR operations through the implementation of SAP SuccessFactors and integrating it with the existing SAP HCM infrastructure, standardizing the HR procedures across various legal entities, automating jobs to increase productivity and decrease manual involvement, decreasing consequently the possibility of errors. By transforming the HR procedures, these goals aim to promote flexibility and agility in HR Operations, while guaranteeing that they match business requirements.

Technically speaking, the project was successful. The SAP SuccessFactors was successfully implemented and integrated with SAP HCM. Numerous procedures were standardized and automated through the successful integration of these 2 systems. This project has given the business a strong platform on which to greatly enhance HR operations. However, client engagement could have been more stronger and robust, particularly in the early stages of the process, when a lack of participation resulted in some knowledge gaps.

In conclusion, while the technical aspects of the project were executed successfully, the project goals would have been well achieved by more client involvement.

6.2 Critical Analysis

This section provides a review of the challenges and difficulties faced during the project. It explores areas where collaboration could have been improved and the project's missed opportunities.

During all the time that the project occurred, there was a noticeable distance from the client, which became evident in the incident analysis subsection. There reason for this distance is that the client was simultaneously engaged in an S/4Hana migration project that took away a relevant workforce that was needed on this project. This dual focus led to delays in responses, minimal support, and at times, a lack of interest in progressing the project. This lack of interest became evident in the participation in the testing phases, requiring substantial effort to keep the project moving forward.

In my opinion, there was potential to go further on the automation of HR processes, however, these decisions and configurations rely on client interest and engagement. Due to the limited interest and involvement of the client, was not possible to expand the project scope. The absence of a support contract after the go-live also hampered the long-term success. The internal IT team was unprepared to solve all the issues and questions raised by the HR's and employees.

The client was not fully prepared and aware of the day-to-day changes that this project would introduce to their daily activities. Overall, since it's not controllable customer engagement, I consider that the project goals were achieved.

6.3 Future Work

To be possible to enhance the system's security and efficiency, some improvements can be applied.

Implementing the Identity Authentication Service (IAS) provides an extra degree of security for user logins. Users now use basic authentication to access the system,

which has limited security features. With IAS, a secure, centralized authentication method could be introduced, protecting sensitive HR data.

Another suggested improvement would be to implement the Employee Central Payroll (ECP) module. This addition allows payroll processing to occur directly within the cloud environment, without the necessity for on-premises SAP HCM hardware. This also allows the client to reduce the infrastructure because the interface would not be needed anymore, reducing possible sources of technical issues.

In conclusion, these improvements would support a more robust, secure and efficient HR system guaranteeing a smooth user experience and setting a strong foundation for the company's long-term HR management requirements.

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Appendix A

User Guide

A.1 Run Interface

To run the interface manually, there's a four-step process: Query the Organizational Objects and place them in a staging table; Process the Staging Table; Query the changes in the Employee Master Data in SuccessFactors and Process the staging table for the employee assignments to the position.

A.1.1 Replicate Organizational Objects

This report creates and sends a query to replicate Objects from SAP SuccessFactors Employee Central to the SAP ERP system. The program is RH-SFIOM-ORG-OBJ-REPL-QUERY and the transaction is SFIOM-QRY-ORG-OBJ. The screen of this program is visible in Figure A.1. The query runs and places the information in a staging table.

After the query for Organizational Objects is done, it is necessary to process them, to insert the records in SAP HCM. To do that, run the program: RH-SFIOM-VIEW-ORG-STRUC-RPRQ and transaction SFIOM-VIEW-ORG-REQS. The screen of this program is shown in Figure A.2.

A.1.2 Replicate Employee Master Data

This report creates and sends a query to replicate employee master data from SAP SuccessFactors Employee Central to the SAP ERP system. The query runs for

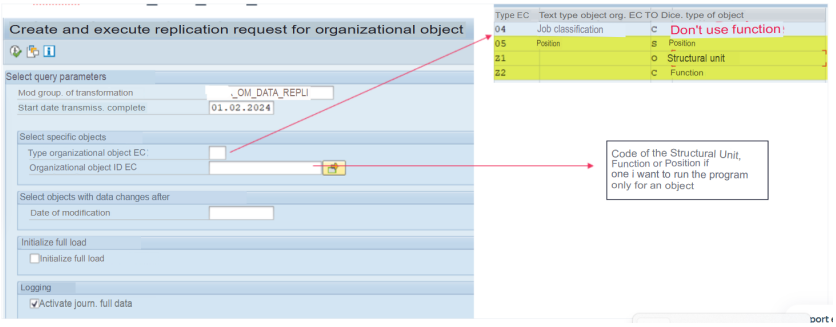

Figure A.1: Make the query for Organizational Objects in SAP HCM

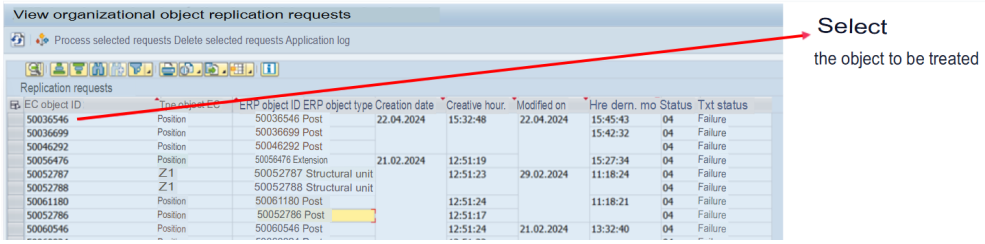

Figure A.2: Replicate Organizational Objects – Process the Objects in the staging table manually

all employees specified by the selection criteria, based on the transformation template group. The program is ECPAO-EE-ORG-REPL-QUERY and the transaction code is ECPAO-EE-ORG-QUERY. This program is visible in Figure A.3.

Subsequently, it is necessary to process the data generated by the previous program. This involves executing the program RH-SFIOM-VIEW-EE-ORG-ASS-RPRQ using the transaction code SFIOM-VIEW-REQUESTS. The interface of this program is illustrated in Figure A.4.

A.1.3 Time Off Replication

This section outlines the process of manually running the integration job in Cloud Platform Integration to replicate Time Off data from SAP SuccessFactors to SAP

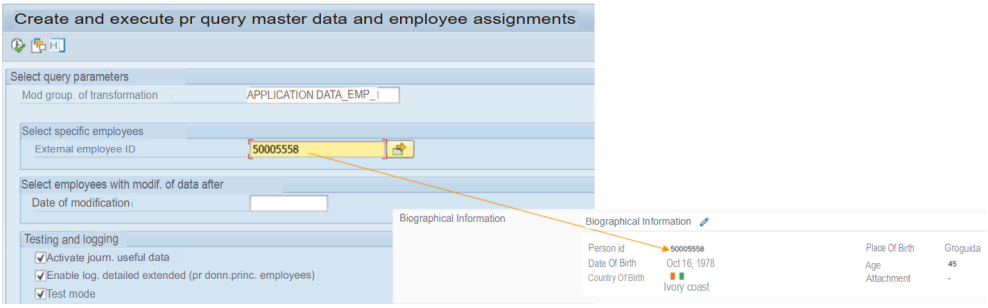

Figure A.3: Replicate Employee Master Data and place assignment in the staging table

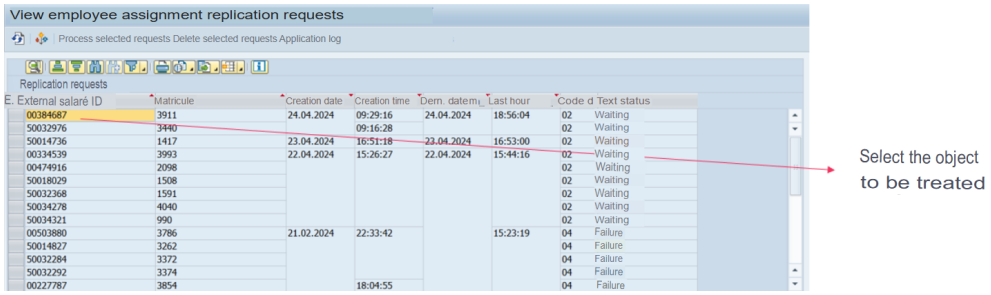

Figure A.4: Process staging table of Assignment to Position

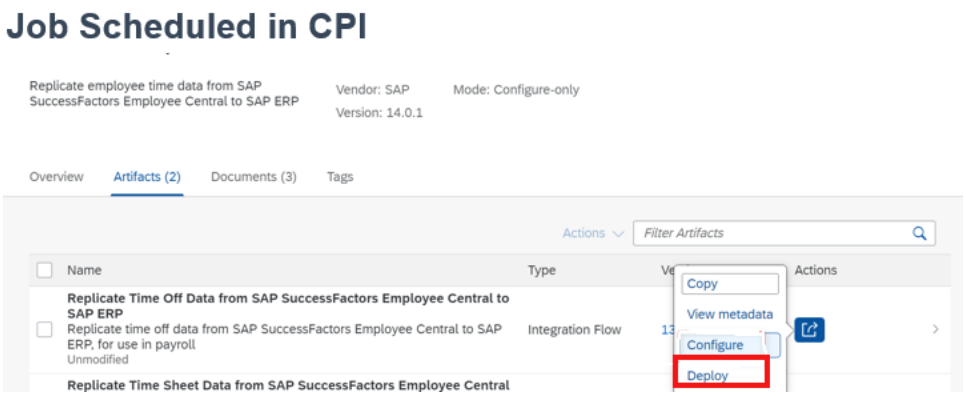

Figure A.5: Time off Replication - CPI

Human Capital Management (HCM).

To run the job responsible for replicating the data on SAP HCM is run in CPI. Then, through the action button, there's the option "Deploy" and the data will be replicated. The screen is visible in Figure A.5.

A.2 Monitoring Interface

The monitoring process is an important aspect of ensuring the proper functioning of the integration between SAP SuccessFactors and SAP HCM. It involves reviewing the replication logs and identifying potential errors or inconsistencies in the data transfer. The table A.1 provides a detailed step-by-step guide for accessing and analyzing the application log in SAP HCM visible in Figure A.6, which serves as the primary interface for monitoring organizational and employee data replication.

It is also possible to view the replication errors in SAP SF on Data Replication Monitor which gives the same information as SLG1, in a user-friendly view visible in Figure A.7.

Monitoring interface			
Step	Test Step Name	Instruction	Expected Result
1	Log on	Log on to the HCM ERP system.	The SAP Easy Access page appears
2	Go to Analyze Application Log	Access the SAP Easy Access Menu and navigate in the menu bar to Human Resources; Payroll; International; Tools; Analyze Application Log	The Analyze Application Log page appears
3	Enter Search Criteria	In the Object field choose ECPAO-IN	The Analyze Application Log page appears
4	Execute Report	Choose Execute.	The Display logs page appears.
5	Check Report Output	Check the log for errors. In case the navigation tree contains a line with a red icon, a problem classified as very important has occurred. By double-clicking the red icon, a message text shows up, giving more information about the error. Choose the Details button to investigate further. Drill down with the Glasses button for more technical information. Solve the issue.	The Application Log to analyze the Replication of Organizational and Employee Data has been checked.

Table A.1: Steps for Monitoring Interface in SAP HCM

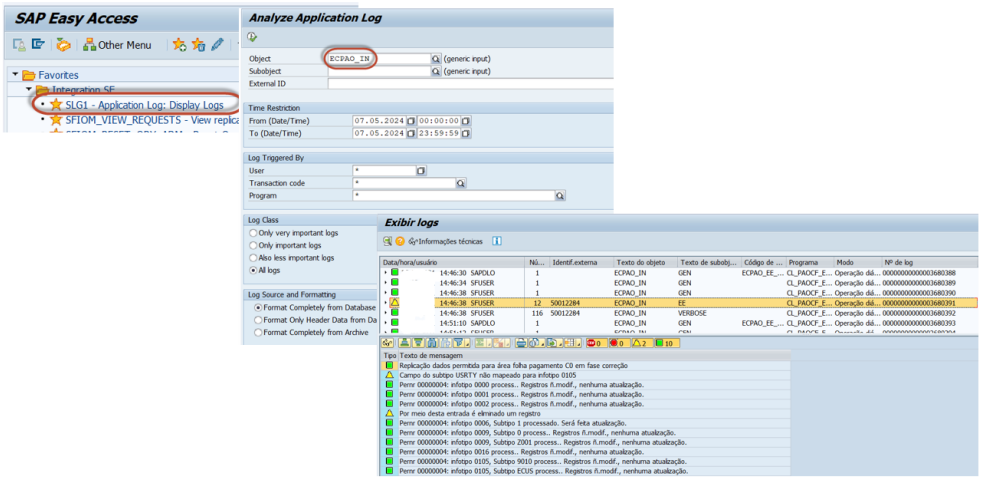

Figure A.6: Monitoring Interface in SAP HCM

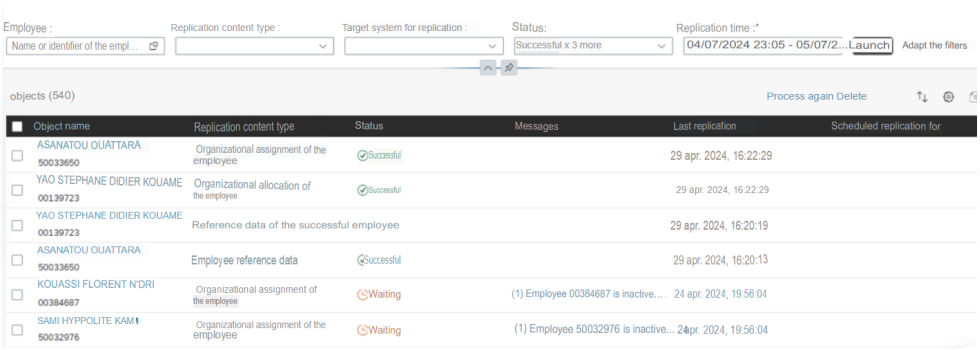

Figure A.7: Monitoring Interface in SAP SF - Data Replication Monitor