TALLINN UNIVERSITY OF TECHNOLOGY
SCHOOL OF ENGINEERING
DEPARTMENT OF MECHANICAL AND
INDUSTRIAL ENGINEERING

NEW ERP MODULE BUSINESS PROCESS MAPPING BASED ON CUSTOMER COMPATIBILITY RESEARCH

UUE ERP MOODULI ÄRIPROTSESSIDE ANALÜÜS PÕHINEDES KLIENDI SOBIVUSE UURINGULE

MASTER THESIS

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AUTHOR'S DECLARATION

Hereby I declare, that I have written this thesis independently.
No academic degree has been applied for based on this material. All works, major viewpoints and data of the other authors used in this thesis have been referenced.

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THESIS TASK

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Uue ERP mooduli äriprotsesside analüüs põhinedes kliendi sobivuse uuringule

Thesis main objectives:

1. Performing a fit-gap analysis between customer business processes and ERPLY's existing system
2. Defining of business processes for the new module
3. Guide creation for next implementation projects

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2.	Introduction of company under analysis	29.10.22
3.	Methodology of process mapping and business processes description	6.11.22
4.	Research on existing ERP modules and combability assessment	18.11.22
5.	Definition of the workflows that the new module must support	15.12.22
6.	Estimation of benefits to be gained with new module usage for franchisee and franchisor	23.12.22
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PREFACE

Author's employer is software development and consultancy enterprise ERPLY. ERPLY specializes in ERP development and its implementations consultancy. It's main power includes the support for variations franchise management solutions. As the franchisor business model differs from one franchise to another, each new implementation is a novelty project.

This thesis is initiated by the author's employer's need to understand the scope of the implementation project and an evaluation of the potential development scope. The author was the lead for the project, but special gratitude will go to the colleagues, who supported the author along the project with situation assessments, sharing their previous experiences and deep analytical evaluations of technical feasibilities. Namely mentions for the previously mentioned areas: Kristjan Randma, back office and API team lead; Kristjan Hiiemaa, CEO; Jaak Parik, design director and Heiki Loit, integrations team lead.

Digitalization, ERP, software development, business processes, New ERP module business process mapping based on customer compatibility research

LIST OF ABBREVIATIONS AND SYMBOLS

API – application programmable interface

ERP (system) – (software for) Enterprise resource planning

C-level – high ranking executives in organizations e.g. CEO, CFO, COO

PM – project manager

ROI – return of the investment

UI – user interface

PO – purchase order

PI – purchase invoice

SaaS – software as a service

Franchise – a business model in which an operator(s) pays a mixture of upfront and ongoing fees to the parent company for support and marketing

Franchisee – an operator in a franchise business model

Franchisor – a parent company in a franchise business model

INTRODUCTION

Modern businesses need ERP systems to gain or keep their competitive advantage in the industry. The system can be used across industries, and it brings various benefits such as saving on the cost of having multiple software used in the organization, improving collaboration, and upgrading analytics. ERP systems also help to improve productivity and result in happier customers along with improved inventory monitoring and enhanced production planning and resource management. [1]

The author's employer ERPLY operates as an ERP system provider and handles projects for its implementation. ERPLY takes in projects with multiple levels of complexity. To categorize the different projects into system implementers standards it would divide into the categories of "express", "standard" and "advanced". First two are simplistic onboardings of the new customers and are mostly handled by ERPLY's partners. The advanced projects are usually covering the implementation of a customer's business with multiple entities and/or many locations, currencies and more obstacles forming a long implementation project. These projects are handled within ERPLY. [2]

The thesis is driven by ERPLY's business interest to implement its system to vehicle maintenance franchise. During the sales phase it was already known that the implementation would be an advanced project with a high chance need for a new module within the system. Therefore, the research was biased towards finding processes that the system would not cover. It was done to avoid later reluctance from the entities that will be pushed to the new system during the implementation process.

The thesis will be used as a guide for future advanced implementations, because currently ERPLY does not own its implantation guide for advanced projects. Next implementations following the same workflow through the planning and analysis cycle of the project will lead towards a company implementation standard.

The main expected benefits of the thesis are customer-validated workflows, which will be the base of the new module system architecture and designing of the application UI and UX. The goal is to achieve the visualized workflows at a detailed level. The presentation of workflows will be used as a part of the standardization of future implementations analysis and will act as guides for the new employees on workflow mappings. The visual workflows enable to see the business graphically, identify inefficiencies and redundant steps within the flow and therefore increase accountability. [3]

For mapping the workflow, author has used an open-source software diagrams.net, which is the most used web-based diagramming software around the world. It holds

two trademarks – diagrams.net and draw.io. The company allows both individual and business users to access the software without any commitments. [4]

The thesis's main body consists of five chapters. The chapters are covering the theoretical part of the ERP implementation process and introduction of the use case. Followed by the customers' compatibility research to the system and the analysis for the coverage. This research is then used for mapping the new module workflows and to secure the module development, a list of estimated benefits is composed for the customer.

The first chapter includes a thorough introduction of the author's employer, ERPLY. Besides ERPLY itself, the chapter gives an overview of its main offering and introduces the thesis use case. The chapter ends with a theoretical overview of the implementation cycle.

The second chapter is covering the theoretical part of business process mapping. In addition to the theory, the chapter offers an overview of the planning activities for forming the research and the structure for the workflow mapping.

The third chapter is the compatibility assessment of the system and the customer. This is done through analysis of the system's current modules and the comparison of the researched processes of the customer. The analysis is done in the coverage matrix to visualize the existing gap fit more efficiently.

The fourth chapter is the result of the compatibility assessment as the system is not completely covering the customer's business processes. The author forms detailed workflows with their description to create a strong development premise internally and seek the validation of the new module workflows from the customer before the development phase.

In the final chapter, the author forms a list of estimated benefits for the franchisor and franchisees of the new module development. The software provider wants to gain the customers' acceptance for the additional budget of the module development, resulting in better coverage of customer processes after the implementation.

1. PRELIMINARY INFORMATION ABOUT THE CASE STUDY

1.1 Introduction of the company performing the study

Authors employer is a software development company, ERPLY. ERPLY's goal is to offer the best point of sale experience for its customers, retailing is the primary business focus. The company offers its solutions to small, medium, and large businesses as the SaaS based ERP platform is built to be scalable. This means that ERPLY believes that every business should have tools that are not going to limit growth. Even more so the offering of the solutions for small companies is often free of charge or with heavy discount as ERPLY knows that it's usage will help the company to grow in its business size and volume. Besides the core system development, ERPLY focuses on its SaaS platform sales, implementation, and support. The name of the company is seen in Figure 1 in its logo. The name illustrates that the company is strongly associated with the ERP system and "ly" is an addition, which was popular in the end of the 00's.

The products SaaS offering covers business flows for managing products, inventory, sales, purchasing and supports reporting on forementioned activities. Besides the main retail-based flows there is possibility to manage the employees, sales and warehouse locations –both physical and eCommerce, and many more features. Due the large stack of business processes the system cover, ERPLY can offer its services for wide range of customers.

Figure 1 ERPLY's logo [5]

1.1.1 Geographical mapping of ERPLY's operations

The company has offices in the continents – the business development and the headquarter is placed in the United States, New York City and the development team core is in Tallinn. The company uses modern practices such as flexible working hours and remote office due to which ERPLY's employees are located around the world not

only in the countries where the offices are located. Globally ERPLY gives work to more than 100 full time workers.

ERPLY considers Estonia as its home country and partners with local enterprises to produce innovative products and digitalized tools. In Estonia ERPLY has a variety of customers placed in multiple business segments. The count of partnerships is around couple hundreds, and larger volume customers include, Alas-Kuul, Realiseerimisekeskus, Haridusministeerium and many others.

The main market is where the company's headquarter is placed – United States. The company uses the knowledge learned from the tech savvy Estonian market and pairs the historical business knowledge of US companies to new ERP solutions. The company has around two thousand customers in the US, and they vary from small to large. The first known customer that ERPLY partnered with was Elisabeth Harden. Soon many flagship brands followed – Garmin, Victorinox, Porsche. These customers are using ERPLY for warehouse management and retail sales.

Besides Estonia and the US, the product is used on all continents, besides Antarctica. Bigger market share is captured in Australia and African countries are listed as next growth markets. Across the Europe ERPLY is in use for global brands, one example is Decathlon, which uses ERPLY as its POS system in countries like Germany, Sweden, Kenya, Chile and in many others.

1.1.2 Customers segmentation

The customers are segmented in two ways, based on business volume and customizability as seen in Figure 2. The business volumes are important to estimate the system usage as bigger volume means more records to store for the system provider and more computing resource availability. The level of customizability is important as the system provider must be prepared for customized development, more resources for the implementation and maintenance of customized solutions. The proper preliminary evaluation is a tool that helps sales teams to correctly evaluate the onboarding and consider that in the implementation offer and SaaS agreement.

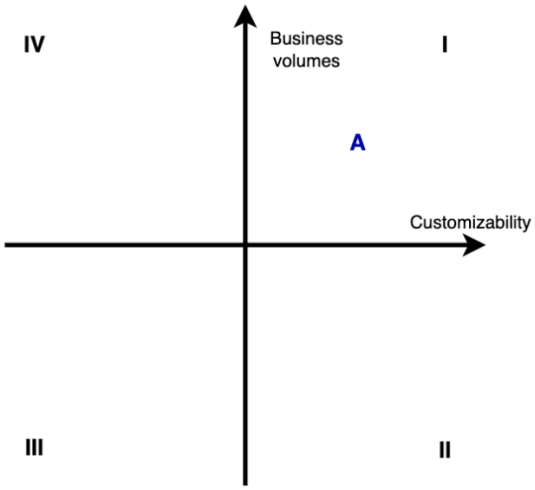

Figure 2 Customer segmentation

The graph above illustrates the customer segmentation in four groups. Group I is representation of large enterprises, which have poor fit ratio with ERPLY's offering. The partnership with customers in this group will result in custom development, new module development or intensive implementation to change the company's processes fitting to ERPLY's. Furthermore, it can be combination of these 3 activities.

Group II represents the companies, whose processes do not align with ERPLY's, and their business volumes are small. These are usually small-scale companies, which will require intensive implementation to adjust with ERPLY's processes. Custom development is not the desired approach as it will require custom maintenance for the entire SaaS period.

Group III is a collection of small companies, whose business processes align with ERPLY's system. Those are easy implementation projects, and the sales team needs to consider only the business volumes for the agreement offering. This group is good for raising the community but lacks in volume, which is not covering the payroll cost of the R&D department.

Group IV is the ideal customer group. This represents large companies or franchise chains, whose processes align with ERPLY's. This will enable the sales team to offer a smaller implementation fee and offer the SaaS agreement for large volumes. ERPLY's goal is to find the suiting enterprises and convince them to join the ERPLY users' community. Raising the number of potential companies in this group requires a thought-out strategic development of new standardized modules. The custom developments within the implementation are not raising the number of potential companies, therefore companies' strategic goal must be to launch new standard modules, which would raise the platform standard coverage.

This research is focusing on one phase in a new franchise chain implementation. The customer is represented with an "A" in the Figure 2. This indicates the customer has big business volume, but assumably its processes are not aligned or do not exist within ERPLY. Therefore, the sales team does the background research of the customer to make the decision process easier for ERPLY's management for the "bid or no bid" decision.

The management board realizes that besides retailing flow, the customer serves their end-customers on their orders. This is a workflow which is probably not covered with the existing modules. On the other side, ERPLY's offering for the franchises is something that the standard service management systems cannot offer. Based on the known information, the management chooses to proceed with the bid for offering the SaaS platform together with the implementation processes. The management announces to the sales team and the customer that during the first phases of the implementation the compatibility of the system needs to be reviewed and potentially a new module development is needed to start successfully implementing the franchisees within the chain.

The forementioned activity mitigates the implementation project risks for the software vendor and its customer. Both companies' managements need to know the extent of the system coverage and the existing gap. The existing gap can be defined as part of the implementation requirements as it will reduce the risks for the franchisees not adopting the system. Without considering the process coverage within the implementation, the roll-out (store-by-store implementation of the new franchise wide ERP software) will be held with a huge risk of timeline delays due to the counteractions or refusal of implementation by franchisees.

1.2 ERP's purpose

ERP, enterprise resource planning, can be defined in many ways. To some it is a complicated software for bureaucracy only and to others it is a system that generates various sets of reports. Some say that it is a modern tool that does not generate any value but is needed due to legislations. On the other hand, there are organizations, which claim that their decision to start utilizing their selected ERP is the core reason they are successful in their respective industry. The definition may vary dependant on the specific industry point of view.

ERP is a collection of business processes that will hold balance between demand and supply. Its set of workflows will reveal the connection of the end-customer and the supplier – forming the complete supply chain. It will enable a decision-making process based on the actual data from the company's operations avoiding human bottlenecks in inter-department communication. Existence of an ERP within the organization will give the indication for the customers that its counterpart is performing process based. [6]

The ERP on its own is not generating any value, as it needs human interaction. This is the reason why there are many interpretations of it, see Table 1. A classification is done into four groups. It will later help to understand the reasons for success or failure of the ERP usage.

Table 1 ABCD classification of enterprises ERP usage impact (Wallace, 2001)

Class	**Usage description**	**Impact**
Class A	Efficiently used company-wide	Significant improvements in customer service, productivity and costs
Class B	Supported by the top and middle management	Measurable quality improvements
Class C	Only purchasing department (processes)	Improved purchasing and inventory management
Class D	Used with effort in some departments within the company	Little or no help and cost is exceeding benefits

To gain maximum amount of benefits the enterprise must focus on the wide and correct usage of the system. These two things can be achieved if the company's business processes are aligned with their ERP processes and the tool is comfortable to use and generating value for every user. The workers (human interaction mentioned earlier) are more willing to use the system if it is reflecting their actual actions and if the work put into the system is converted back.

Understanding the human component as the key success factor for the ERP implementation will define the system as – collection of digitalized workflows. Understanding and not understanding this is the difference between success and failure.

1.3 Implementation success factors

Digitalizing the entire enterprise must be considered as a complex and time-consuming project, which lasts for a long period. It usually runs in parallel of the company's *day-to-day* activities. The key factors to consider before undertaking the project – people, time, scope.

1.3.1 People

Implementation project includes people from at least two companies. One side is the company implementing the software and the other side is the company whose software is being implemented. Both sides may use external consultants and bring in key experts to evaluate/develop specific workflows. There are many roles that are needed for efficient and successful implementation. That said, one person can fill many roles, and this varies based on the time and scope of the implementation.

Good practice for the company implementing new software is to have following roles in their project team:

- Project owner
- Project manager
- Super user
- Functional team members
- Report writer

Project owner is usually a representation of a C-level decision making, either a person or a collection of decision makers. Their support is vital to the project. Usual tasks include final decision making on the scope and budget. They might not be part of the implementation day-to-day tasks, but maintain the role in steering committee, which handles risk management, milestone progress, unforeseen issues/decisions.

Project manager has the role of overall organization. The person might not be the actual user of the system but ensures that the implementation is going according to the plan. Main tasks are creating the scope/requirements, creating and maintaining project plan, inter-department communication, lifting blockers, assuring presence of stakeholders at specific times, setting internal and external milestones, reporting to the project owner, consultations with internal team members and external consultants etc.

Super user is a role, which represents as the name says the person with the most detailed and profonde understanding of the system or a module. This depends on the scope and the persons availability to handle the role. Best super users understand the

workflows behind the system or module, not only the functioning of it. Responsibilities usually are helping the PM (project manager) with requirement creation, studying, and mastering the new system, teaching others before and after the implementation.

Functional team members are the representation of different roles. They are experts in specific areas e.g., purchasing. They are used for requirements generation and consultations. In addition to that they are used for pre implementation software validation to get the "green light" as they will be at least to some extent the day-to-day users of the system.

Report writer is role that helps to personalize the software. As each business is individual and their owners do not have same understanding of relevant business metrics then most of the software is built configurable. The report writer will help to customize all reporting as per company is used to or creation of new ones due to business evolvement. [7]

Company whose software is implemented can be presented in the project either as a direct representation or via external consultants. External consultants are used, if company itself wants to focus on product(s) development and leaves the customer management to other companies. Usually, this setup is present for larger ERP builders such as NetSuite and SAP. Smaller companies are directly represented in implementation projects. In both cases the following roles are represented:

- Project manager
- Consultants/experts
- Development unit

Project manager in the software company holds the same role and responsibilities as does its counterpart in the other company.

Consultants' and experts' roles can vary dependent on their expertise. Some consultants have wide coverage and can handle the entire project on their own as other might be experts to their business area. Consultation is the base for successful implementation project as consultants can lead the customer towards "correct" business processes. The more customer adapts to the selected ERPs processes the easier is the later usage of the system and more benefits can be reaped for using it. The second option would be the configuration of the software to fill the gaps and keep the system as standard as possible. Third option for the consultancy role is a customized development requirements specifications for system. This is the most time consuming and costly option; therefore, a good consultant can have the highest ROI in the project. [8]

Development unit serves as a generic role as it varies from zero to multidepartment resource. The role of the development unit is needed, when either a sale of non-existing functions was made, or the consultants did not manage to agree on the standard usage of the system. Development unit consist of analysists, product owners, developers, and quality engineers.

1.3.2 Time

Time is constraint that defines the period in which the entire cycle of implementation must be completed. Usually the period from the project start until the launch of the new system is defined as the project time, as the support process will be ongoing without predefined end-date. Time can vary project to project significantly due to different management expectations and resource availability. What to consider when planning the timeframe

- Project scope (how many workflows are included)
- People's availability (implementation roles fulfilment takes significant time)
- Flow (slow implementation is spotty and risk for cancellation of the implementation is higher)
- Budget and ROI (expensive resources and thorough planning are cheaper than failed project)

1.3.3 Scope

Scope of the project varies dependant on the set requirements by the agreement between system implementers and the system purchaser. Possible functions and workflows are picked out from selection of financial management, human resources, sales and purchasing, manufacturing, reporting and others. The selection is to be made to consider the adaptiveness of the organizations workflows to the system. Based on the software selection not all of the processes can be handled by that vendor, and it might not be even wanted to digitalize all departments due to their peculiarities. The normal convention is the operate process based then digitalize and then automate.

1.4 Implementation process phases

Implementation of enterprise management software is divided in 6 unique phases, see Figure 3. These phases can overlap during the implementation process as next phase can begin while the last one is still active. A larger scale implementation may be even handled as standalone projects, resulting in a scenario in which one modules implementation can be at the end of the sixth process and the other still in the beginning of the implementation process. The 6 phases of the ERP implementation process are discovery and planning, design, development, testing, deployment, support. [9]

Figure 3 Six stages of ERP Implementation [9]

1.4.1 Discovery and planning

First phase of the project is discovery and planning. This is the most important phase of the project. In this phase changes are the cheapest and all decisions made will be brought over to the next phases.

Team with the help of the consultant(s) will start to map their business processes. During process mapping it is required to collect information about efficiencies and inefficiencies in order to design solutions, which would fix the current problems and would not break existing function. Team must find the operational areas in which there is no processes in place and map them separately. These can be evaluated later amongst different ERP providers to seek if any of them is covering or willing to cover that business operation area.

Team must interact with all departments included to the scope and as a bonus the interaction with their operational partner – both internal and external. The understanding of how one's company functions comes from down to up. People who are involved in day-to-day activities will have the most detailed understanding of how things

function as of now. They may have already ideas for improvements or may be revealing inefficiencies without even knowing so.

After the successful research stage, the ERP vendor can be chosen and acquired. After onboarding the ERP vendor part of the project team, the project plan can be formulated. It will consist of the breakdown of the entire implementation with planned milestone in order assess the project throughout the implementation. [9]

1.4.2 Design

Second phase of the project is the last phase of planning. This phase is used to refine the captured information into precise workflow descriptions and setting the project detailed requirements. The detailed requirements will state how the current inefficiencies will be eliminated and replaced with new processes. It might be needed to visualize the refreshed UI to get validation for its usability.

It will be beneficial to include the key experts once again into requirements and design validation as they have the best and most intimate understanding of the current business processes. It might be that they are not agreeing with the proposed solution as change is something that is off-putting to some people. Nevertheless, it will be even worse not to include the everyday users into this process. [9]

Design phase must end with the agreement between both sides as what will be the detailed list of requirements, the timeframe of delivering the scope and its budget. Moving along in the implementation process without achieving the scope lock-down will be unworthy risk for all involved parties.

1.4.3 Development

Before the design lock-down, there might be a need for prototype development as for proving with the proof of concept that the vendor is equipped to handle the upcoming requirements. After receiving the firm scope the development team can start work. All requirements will be assessed in the following order and after receiving a positive match the actionable task will be created:

1) Does the software support the listed requirement out of the box?

2) Is it possible to configure it to fit the requirements?

3) Is it possible to develop the support for the requirements in a standardized fashion?

As seen from the logical thinking path, the aim is to utilize the existing functionalities to save cost on the development side, be more standardized to ease the support

process. After the option of using the existing functionality is no longer viable, the team will consider the configuration. The reasoning will be the same as for previous option. If the project requires actual development a functionality increase to enable digitalization of the entire workflow, it must be planned to make a standardized option. The benefit would arise from the scalability as other existing and new system users could enjoy the same functions. The worst option is custom development as it will require most resources and will make the support function later more difficult.

Besides software configuration and development, the development phase includes the creation or collection of training materials and transforming them to a client specific format. As each client has its own processes, the materials may differ as well. And final component of this phase is data migration.

There are three options for the data migration: full migration of historical data, partial migration of historical data and fresh start. The approach will depend on the set requirements either by the company or country and industry specific regulations and legislations. The selection of the migration package will depend mostly on the analysis what data is needed and later usable within the new system. If the data is not needed, then its inexistence in the new system will be a bonus. [9]

1.4.4 Testing

Although testing is a present process during the development process, it must be considered as a separate step. Testing modules or features on their own and in different time frames are accepted and encouraged as there is no such thing as too much testing. But the testing phase as a dedicated process will consist of internal and external testing. Internal testing will be done before the customer can proceed with their testing.

Internal testing includes feature testing – ensuring the feature on its own functions correctly, regression testing – ensuring the full module functions correctly and new features have not broken the existing ones, system testing – ensuring the whole system function correctly unaffected of the configurations and new development.

External testing is meant for getting the validation from customer side that the delivered system fulfils the set business requirements. The testing should be done by the actual end user for a longer period to ensure the working of regular operations. The external testing should include the testing with migrated data to get the validation for correct imports. [9]

External testing is a good phase to correct the training material and capture real user feedback to make small adjustments if needed to avoid bad initial user experience. The

testing phase must conclude with and approval from the customer side for the UAT – user acceptance testing.

1.4.5 Deployment

The deployment is the culmination of the project. The phase itself is quick, but the tension is the highest. Team must be ready for abnormalities, user questions, data errors and regular push back of the new system. All of the previous work has led to this moment and probably something will still go wrong. There are options to mitigate the risks replate to the deployment.

As with new ERP there will be a lot of new processes and operations, it might be overwhelming to deploy and handover all modules at once. This can be spread for a longer period as per users' ability to consume the training or their need for the processes.

The second mitigation opportunity is keeping the legacy system running in parallel, but this approach should be avoided if possible as it raises more doubt in the new system. The best deployment is quick and seamless. Even if small errors occur, there will be quick support to avoid launch scares. [9]

1.4.6 Support and updates

For ERP implementation process the support is always something that is overlooked. The support areas responsibilities must be defined in the design phase as building and configuring the system is just the beginning. After successful launch there will be years of user questions, training needs, upgrade orders and other change management processes along the way. [9]

Both teams must be confident in their roles which can divided into three tiers. Tier zero is basic user questions and retraining. Tier 1 is basic troubleshooting and more extensive system knowledge. Tier 2 is thorough understanding of the system and capabilities to define new business process requirements. There must be enough resources depending of the organization size to man all tiers. The arrangement is agreed before the deployment as the success of the project will depend on the way the system is used.

1.5 Case study: the customer's profile

A good implementation project's design phase will end with thorough understanding of the customer's business along with the customer's validation of the correct analysis. The first operation will be analysis of the customer profile.

Customer profile will indicate what is its main revenue stream. The revenue stream is an indication of the end-customer facing processes. The revenue stream can be identified by reviewing the company's offering for its end-customers. The second option would data-based analysis, but this is usually not an option in the beginning of the process. The understanding of the business's sales process will give the indication of what its supply chain process is like. These two processes are interconnected and in a smart business truly dependant of one another.

1.5.1 Operating business model

The customer is international franchise, governor of the project e.g., project owner is the corporate side. As franchising consist of two parties: franchisor and franchisee, it must be understood what their operational model is and what is their business problem. This customer's franchise operation is more a business format franchising as they are offering besides the brand/product the operational model. Operational model includes the process guides on how to deliver according to the set standards the corporate approved services. It will include the periodical training and support from the corporate side. In addition to training, it will include the availability of the new products and services from the corporate R&D departments. In addition, the corporation offers ongoing marketing on the national level. In return the franchisor benefits from initial franchisee instalment fee and ongoing royalties. Royalties are contractually agreed percentage of either revenue or profit that forms a fee, which is periodically paid to the franchisor. [10]

The entire franchise is formed with the corporate side, who handles the onboarding of the new franchisees and maintain relationships with the existing franchisees. On the other side are all the franchisees. The contract is formed in style that one's success cannot happen without the other. Franchisor is only successful when its franchisees are and franchisee can successfully operate only with the help of good governance from its franchisor, see Figure 4.

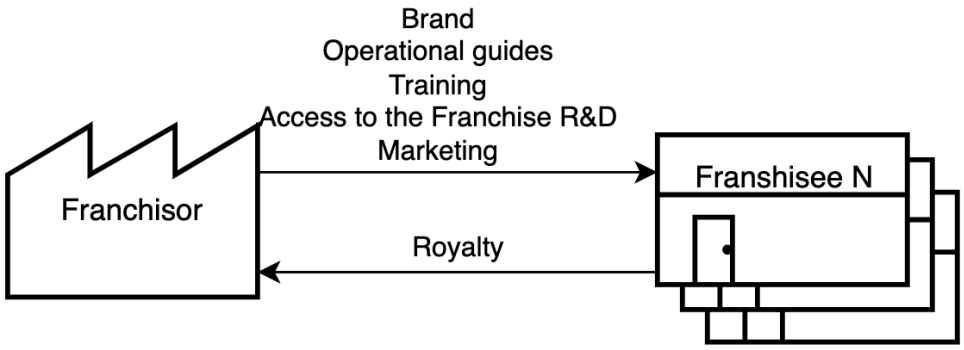

Figure 4 Relationship between franchisor and franchisees

1.5.2 Industry segment

To form the correct team composition on the vendor side the industry of the customer needs to be known. Good consultation is made based on experience and has formed over time.

The customer's main industry is automotive after-service. They specialize on truck coatings and accessories. This indicates that the sales are process based, but they might do retail sales for end-customers not wanting to get the full service. On procurement side it indicates for detailed purchasing planning due the variance of the car parts is large. On the operational level the service shops need to perform service activities, which are applicable for end-customer experience and internal quality standard for performing the work. This indicates for consideration of digitalizing the demand and supply not only on the physical products, but as well on the service resources and technicians.

1.5.3 Customers problem

Every organization needs to grow, this means a combination of increase in revenue, probability, profits. Otherwise, the organization is in a larger risk of losing its market to the competitor and with larger volumes more market control is possible. The second reason for the growth is owners' expectation on the ROI. Revenue is collection of the income of the organizations business related activities. Profitability differs from profit due its nature. While profit is the absolute sum of the remaining after all the expenses have been deducted from the revenue, the profitability is a relative number which indicates the rate between the generated profits compared to the consumed resources. [11]

Franchising as shown in Figure 4 in a complex relationship between franchisor and franchisees. Therefore, the customer problems in this case are listed for the franchisor, but a large amount of these must be solved through the franchisees.

Customer's problems that seek resolution through the new ERP implementation:

- End-customer experience upgrade
- Franchise standardization
- Revenue increase
- Profitability increase
- Lack of corporate data

2 BUSINESS PROCESS MAPPING OF THE AS-IS SITUATION

Assessing the combability of customer's way of working to the ERP system can be done in multiple ways. The result of the assessment is not the final difference between the two as both can be modified to some extent. One misconception that happens quite often is that the ERP vendor claimed business processes are the absolute truth. Reality is that each ERP vendor has many ways to set up the business processes and they can differ based on the ERP vendor. The ERP's processes cannot be modified too much as then the system interconnections will lose its value and the customer may not be willing to change its processes too much. Therefore, if the result of the assessment shows that customer needs to modify its processes, it needs to get the customers approval and acceptance. [12]

Precise understanding and validation of the collected information will be achieved with business process mapping of the as-is situation. The approach consists of making a visual display of needed steps and their sequence to deliver processes from start to end. Mapping this will enable for both parties to understand the nature of the customer business process and will enable to move to the second stage which will be removing inefficiencies as the process es can be optimized. Some processes can already be finetuned and change is not always needed. The understanding of processes and even more so the existence of these will enable the digitalization.

The benefits of doing business process mapping include communication, visibility, standardization, auditing, training, and continuous improvement. Visual existence of the steps and their sequence is used to find the shortcomings and inefficiencies in the workflow. This helps along on the training side as it is concrete map of actions and decisions instead of the summarized long description. By following the style across multiple workflows, the standardization will happen and the visibility into actions increases resulting into auditing capabilities. [13]

2.1 Information collection

2.1.1 Method selection for information collection

Selection of research methods will depend on the research topic and the desired outcome and its precision. It may include other constraints as geographical distance, project budget and timeframe. The methods for data collection are segmented into primary sources and secondary sources. The secondary source research focuses on analysis on previously made documents such as earlier research, personal records, client histories and so one. As there were no known documents which have been approved valid from the customer side on their business processes the information collect had to focus on primary sources.

Primary sources are divided into observation, interviewing and questionnaires. The observation can be done as participating in the activities of interest or as a non-participating viewer. The interview can be held as structured or as unstructured – the key difference is in the flexibility of the content, way of questioning and the set-up structure. The interview may be held with a certain level of flexibility and the questionnaire is either mailed or done as collective administration. [14]

The goal of this research was to get precise understanding of the business processes that are fitted into the scope. The customer has enabled the access to some franchisee's owners and members of the corporate team. The customer and its franchisees are in the United States and the implementation and product development team is in Estonia; therefore, the geographical constraints need to be considered. The accessible franchisees have limited time to participate in information collection but are an integral part of the implementation plan.

The selected methods for the research were non-participating observations and flexible specialist interviews. The selection was made to get deep level of understanding of the customer workflows, and this is only possible with the combination of observation and interviews. Observation will enable to detect actions that the user/worker itself does not even recognize to be as part of the process. The interviews will enable to seek out the actions made that were unnoticeable through the observation.

Surveys would not bring the benefit needed as the user itself might not be able to focus to the detailed level that is needed for collecting the process information. Experiments were left out due to the time and budget constraints but can be later used for defining the preferred choice for new UI user experience definition.

Data analysis would be a good fit as a research method, but the customer did not have legacy franchise wide software and the access to the franchisees personal tools was limited. [15]

Research method capacity and build-up was agreed before beginning of the interviewing to limit the franchisee exposure and stick to the project timeframes, see Table 2.

Table 2 Information collection plan

Method	**Topic**	**Attendees**	**Volume**
Observation	Day-to-day franchisee activities	Franchisee A	3 workdays
Interview	Corporate view to purchasing	HQ operations lead Project manager Super user	1 session
Interview	Corporate view to sales operations	HQ operations lead Project manager Super user	1 session
Interview	Corporate view to service operations	HQ operations lead Project manager Super user	1 session
Interview	Full process coverage	Franchisee A	1 session
Interview	Full process coverage	Franchisee B	1 session
Interview	Full process coverage	Franchisee C	1 session

2.1.2 Visualization of the results

The processes must be visualized to get customer's validation of the correct mapping. The mapped processes will help with internal fit-gap analysis. The visuals will include a short supporting description for the processes as long textual presence will lose the focus. The processes must be understandable in simple quick to read order and must include all required steps.

The visualization will be done following the set legend and will include the same symbol and colour coding throughout the thesis, see flow objects in Figure 5 and Figure 6.

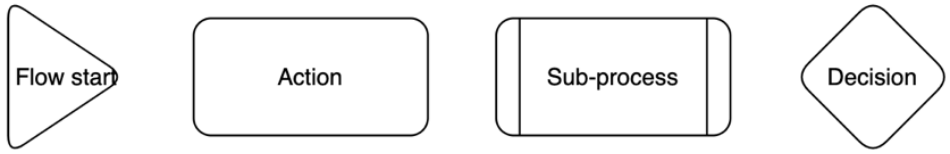

Figure 5 Flow objects

Figure 6 Object nature

2.1.3 Responsibilities mapping

Before the beginning of the business process analysis, it needs to be clear who will be responsible, who needs to be source of information, who is the person to consult and who the approver of the process.

For defining the roles and responsibilities the RACI matrix is used. This is a tool that will assist with elevating the role confusion. The key actions are mapped and listed in one dimension of the matrix and persons and/or functional teams are listed in another. Both dimensions are tied together with their relationship. The relationship can be non-existent, defining leading the action, marking approval responsibility, indicating the need for consultation, requesting to be informed.

Each project should be equipped with RACI as it is the best practices of project management. The existence of the RACI matrix itself does not generate any value, but the joint review of persons involved will enable to avoid the confusion and getting the project attendees buy in. [16]

In the Figure 7 symbols stand for: R – responsible, A – approval, C – consultation and I -inform. One person can have multiple relations with the task as for example the PM can be both the person responsible and person who approves the action.

Roles / Actions	Customers team						Vendor team	
	project manager / super user	project sponsor / project owner	Franchisee A	Franchisee B	Franchisee C	Corporate team member / experts	Consultant / PM	Product teams
Scheduling the interviews	CA	I	C	C	C	C	R	
Creation of the interview content	I	I					RA	C
Conducting the interview	C	C	C	C	C	C	RA	
Making the observation	A		I	I	I		R	
Documenting the business processes	C	I	C	C	C	C	RA	C
Validation of the business processes	R	A	C	C	C	C	C	
Fitment analysis	C	I					R	A

Figure 7 RACI for business process mapping

2.2 Collection of business processes

All obtained information necessary for business process mapping was obtained while conducting expert interviews and observing the franchisees performing their daily operations. The information collection was done according to the collection plan. The process consisted of an observation period lasting several days and was followed up with interviews. They were held as group and solo interviews. The observation was performed before the interviews as it enabled to enrich the captured info with detailed questions on the processes. It was not possible to evaluate some processes only with the observation method. In addition, the interview enables for the businesses under analysis to point out their current weaknesses or enhancement wishes. The information is documented as collection of business processes. The mapped processes are an aggregation of multiple franchisees feedback, franchisor business operations guide and consultant's observation. The mapped processes are accompanied with a short and precise description.

2.2.1 Sales

The customer has two main ways to make a sale. The edge cases are ignored as the main 2 processes are covering more than 95 % of use-cases. Sales method which creates more revenue is a process-based sale and it involves selling services. The other sales method is not generating as much revenue but is used for in shop add-on sales or walk in customers merchandise sales.

The process-based sale, seen in Figure 8, references that the sale duration may be multiple weeks or even more as the time is not known ahead from giving the end-customer the estimation and getting a confirmation for it. The other unknown period is the time from the agreement on works until the order is processed. This is important as this is the time frame from end-customers engagements to collecting the payments.

Sale begins with end-customer engagement and the sales representative will have to follow up until all the information is available to compile the initial estimation. This work is done via email, phone and in person. After the information for creating the estimate is received it will be handed over to the end-customer to get the approval. If it will be rejected, then it will be the sales representative job to correct the offer and send it again for approval. The customer might disengage during the negotiation phase and then the order needs to be marked as "lost". The approved estimation will be taken into planning phase. Then the order will be processes after which the final invoice will be created, and it will be paid by the customer.

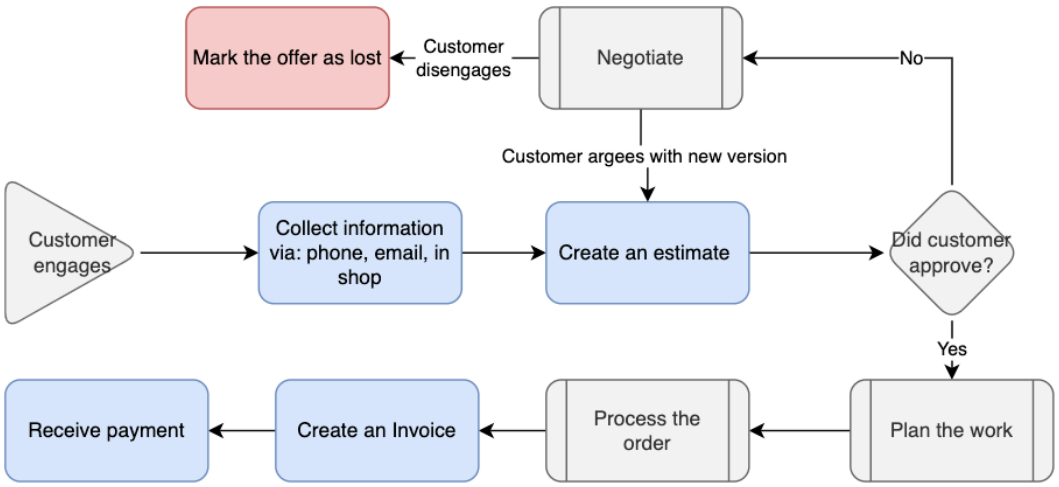

Figure 8 Process-based sale

For the quick over the counter sales there is a simplified process, see Figure 9. After the end-customer engagement the sales representative needs to consult the customer on their purchase as all goods for sale a special equipment, which requires fitment analysis. If the customer chooses to proceed with its order, then invoice will be created, and payment will be taken from the customer. If the payment has been confirmed, then the goods will be handed over.

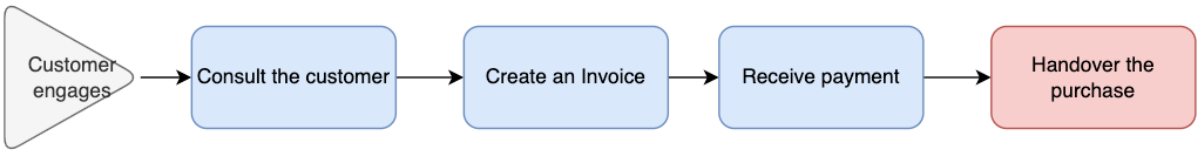

Figure 9 Over the counter sale

2.2.2 Resource planning

Resource planning is mostly a sub-process of the process-based sale for the company, as tasks are not rescheduled for any efficiency gains. The resource planning, shown in Figure 10, is initiated when sales representative tries to reach the agreement with the end-customer on the timeframe when the work is going to be completed. The representative needs to first make sure that there are no goods that need purchasing. As if purchasing is needed then its lead time must be considered for the work planning. The next constraint is the availability of bays – service point/area as it will not be possible to provide the services outside of the shop. It usually goes hand in hand with technicians' availability, but due to vacations, sick leaves etc it still needs to be checked.

If the next available timeframe will fit the expected order fulfilment hours, it will be offered to the customer along with the next availability as an alternation. The offering will continue up until the customers approval of the time.

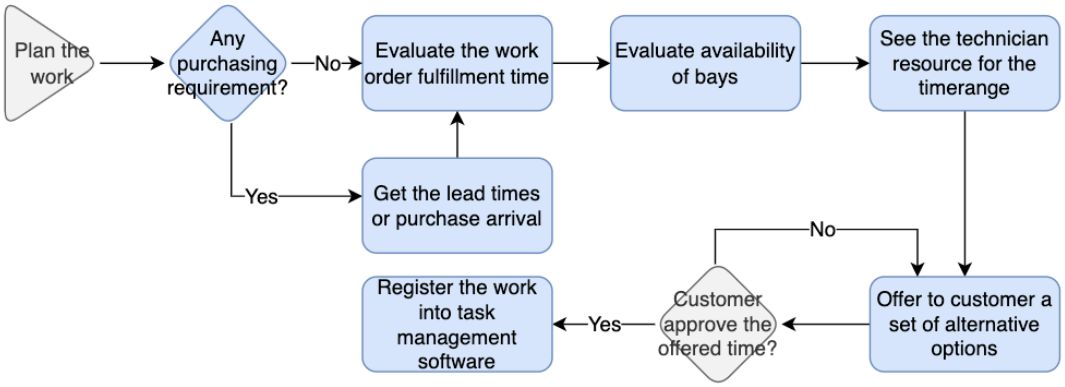

Figure 10 Resource planning

2.2.3 Processing the order

Processing the order is the most crucial value adding process for the company, shown in Figure 11. This is their unique selling point as they are a dedicated service provider rather than the usual car part re-seller. The processing begins with job planning. First, the requirements are listed for the job and are accompanied with job and instalment instructions. Then after receiving the indication from front of the house to start the job the readiness assessment will be done. This includes checks: is the vehicle present, all parts have arrived, enough resources. If the readiness assessment is successful, then the vehicle inspection will be made to capture the as-is situation and then start fulfilling the requirements. After fulfilling the requirements, the job results must be archived to clear end-customer complaints. As a final step invite the customer for vehicle pick-up.

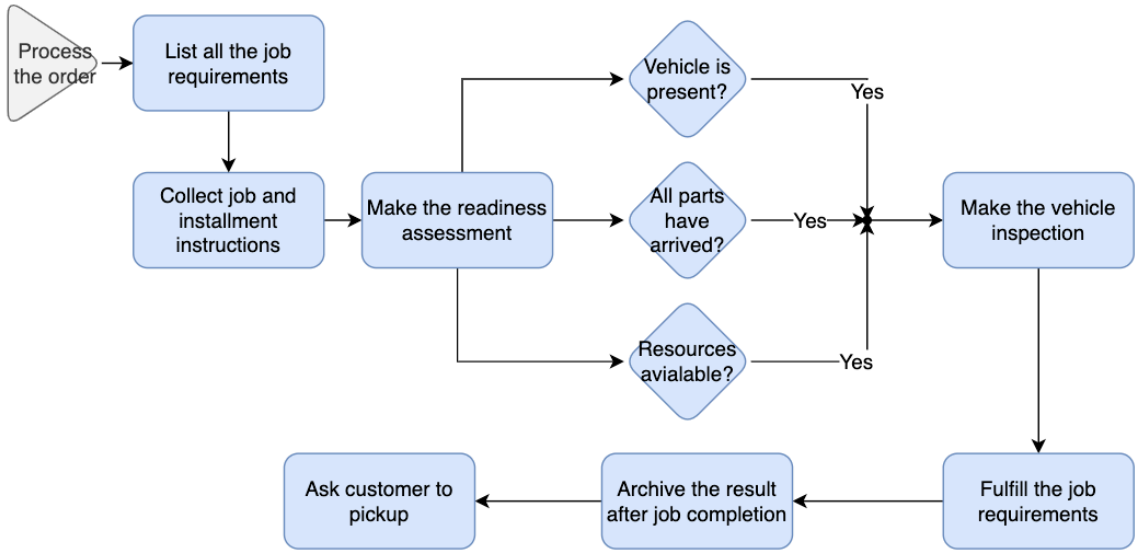

Figure 11 Processing the order

2.2.4 Inventory management

Inventory management consists of keeping the track of the current stock levels. The inventory is not connected to the sales processes and there is no movement tracking between warehouses or warehouse locations. There are currently no expectations on inventory levels only stockings procedure is performed to understand to current situation periodically. This is visualized in Figure 12.

Stocktaking differs between re-sellable goods and consumable material. Consumable material will be counted or measured dependant of the nature of the consumable and then added to the currently inventory levels sheet. The inventory will be corrected, it means purchasing will be made dependant on the historical consumption rate and delivery time.

For re-sellable goods there is no inventory management system so far as mostly everything will be consumed. Due to it, the re-sellable goods will be counted periodically and compared to incoming agreed works. All goods that do not have incoming order, which will consume them will be added to campaigns or sold directly to the joint buyer.

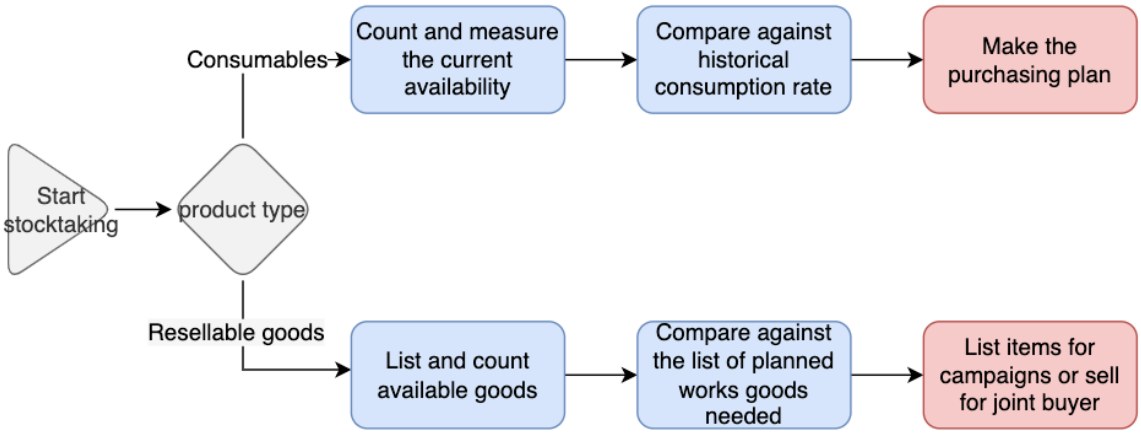

Figure 12 Inventory management

2.2.5 Purchasing

Purchasing depends on the purchaser's selection on the vendor. The selection is made based on the purchaser's knowledge of the part availability from different vendors. Most of the purchases have repeating nature and it has created three main options, shown in Figure 13.

The selection of the prime vendor is made always for standard parts as the prime vendor has the largest list of available products and cheapest prices due to the corporate agreement. Purchasing will start with the part searching from the vendors customer portal. The portal handles the ordering process along with the fitment approval. The generated order must be paid for before the shipment.

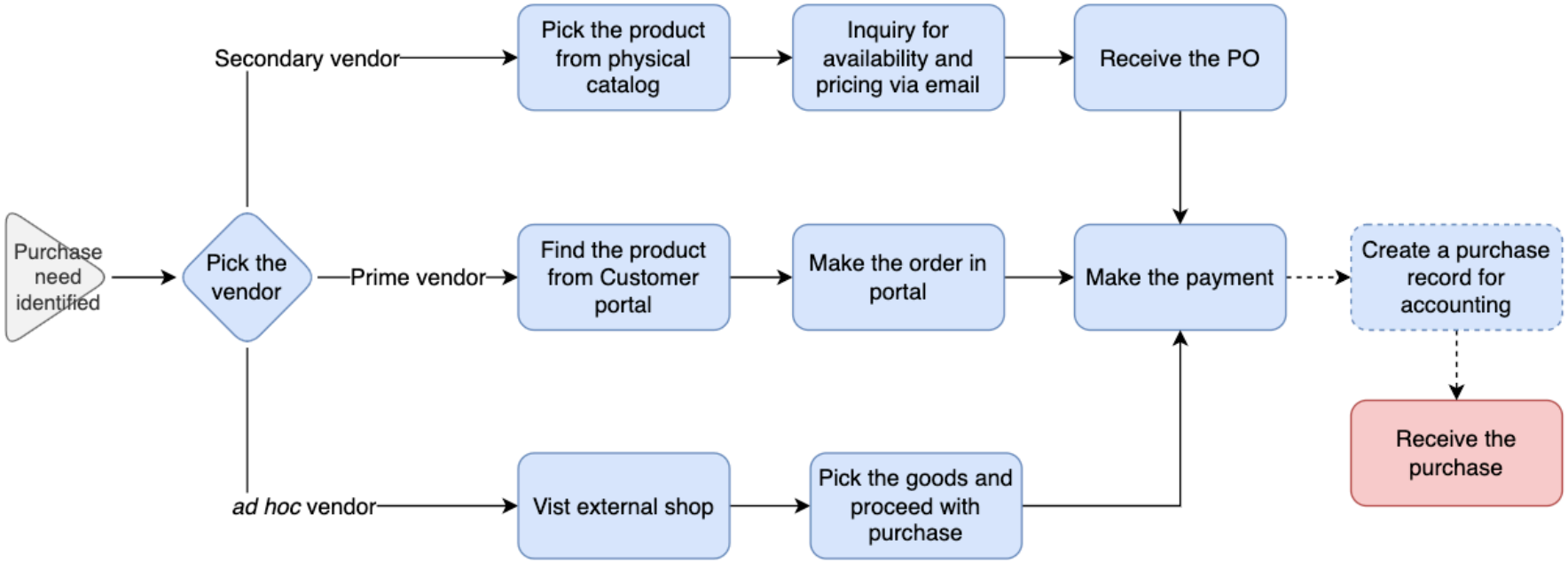

Figure 13 Purchasing

If the part is not available via the search results or based on the knowledge of the purchaser, then the secondary vendor will be used. This requires locating the part numbers in physical catalogue and an email inquiry for the vendor. Dependant of the availability and current pricing the vendor will send the PO. If the PO fulfils the expectations, then the payment will be made.

If the secondary vendor cannot fulfil the purchasing request, then the purchaser will make the visit to a physical shop. Desired goods will be selected, and the purchase will be made. All three scenarios will end with the receival of the purchased goods. If the purchase needs to be recorded into the expense account, then the purchasing record needs to be created for accounting.

2.2.6 Customers management

The company does not currently have a centralized source to manage their customers. They are more focused on fulfilling the orders that are coming from the end-user self-engagement. There are some processes, which are performed on the *ad hoc* basis. The customer information is collected separately dependant on its nature. All contact information is stored to the contact book and transactional information to customer account is stored to accounting system, see Figure 14.

Company runs periodically an accounts receivables report to make sure all the invoices have been paid on time. For customers whose balance is positive, meaning they are in debt to the company will be contacted to inquire about the payment failure.

For sales drought periods company exercises from time to time the *cold call* method based on the previous year's contacts. Given estimates will be reviewed. If the previous option is not providing the results needed, then marketing will be used to send offers based on customer groups.

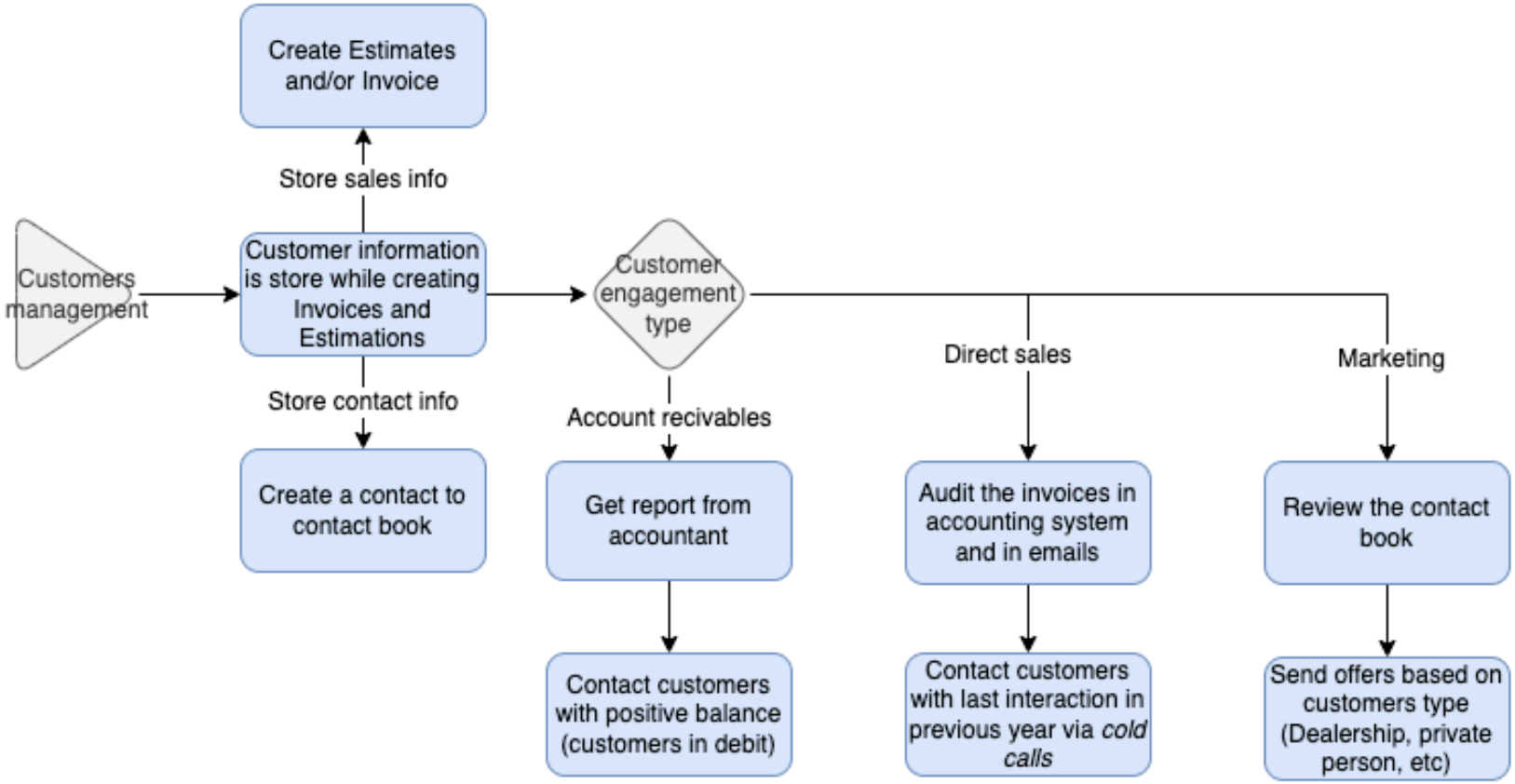

Figure 14 Customers management

2.2.7 Vehicle information management

Besides the forementioned workflows the customer wants to manage within the new system the vehicle information. They are currently handling their vehicle data in very limited ways. The vehicle information is stored for the work order for the technician to pair the work order and the vehicle. After processing the order, the vehicle information is only stored if it is applicable for the franchise warranty management database. The vehicle information management is shown in Figure 15.

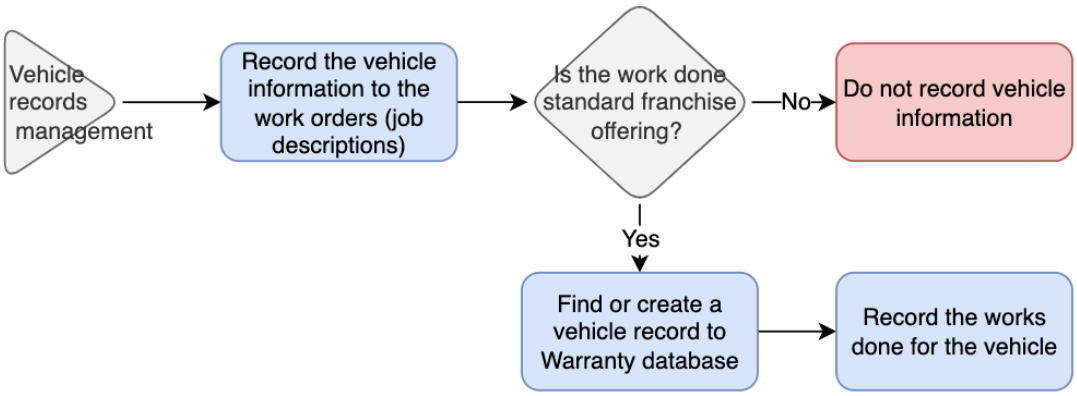

Figure 15 Vehicle information management

3 SYSTEM'S COMPATIBILITY ANALYSIS

Benefit of implementing a standard ERP solution is company's business process standardization to fit the formed way how to operate in the specific industry. The standardization is achieved by many companies validating the business processes the system workflows support. As it is explained earlier, the business processes supported in the system might be the industries best practice but do not have to be considered as the only correct one. The added benefit of working on the standardized processes is that system upgrades are going to be effective right away without any modifications. This is one of the main benefits of having a SaaS based ERP system while operating on standard processes.

On the other hand, the existing processes (ERP modules, within the user can operate) might not be fitting with the company's core processes. The core processes are often unchangeable, and it will be easier to pick a software that would support the process or pick one who would be willing to build the support for the main processes. To understand the software's capabilities to handle desired processes or identify the areas, which need to be developed before the implementation the gap-fit analysis will be made. [17]

The gap-fit analysis will consist of two parts:

- A thorough understanding of the company's business processes that are within the scope for the potential implementation
- A thorough understanding of the capabilities and limits of the potential ERP software

3.1 Current modules

ERPLY is a SaaS based ERP system development company. In addition to developing the system, the company handles larger implementation projects to its platform. The platform consists of main general usage modules and special client specific modules. The client specific modules are the outcome of legacy implementations. These projects were not able to create features which would be considered as general usage. The company's goal is to refactor and enhance the existing general usage modules or create new general usage modules to reduce the complexity in maintaining the system.

The high-level architectural setup for modules includes the microservice, which runs the business processes, the API for interaction with microservice and a front-end application, which mostly takes care of the user interface, shown in Figure 16.

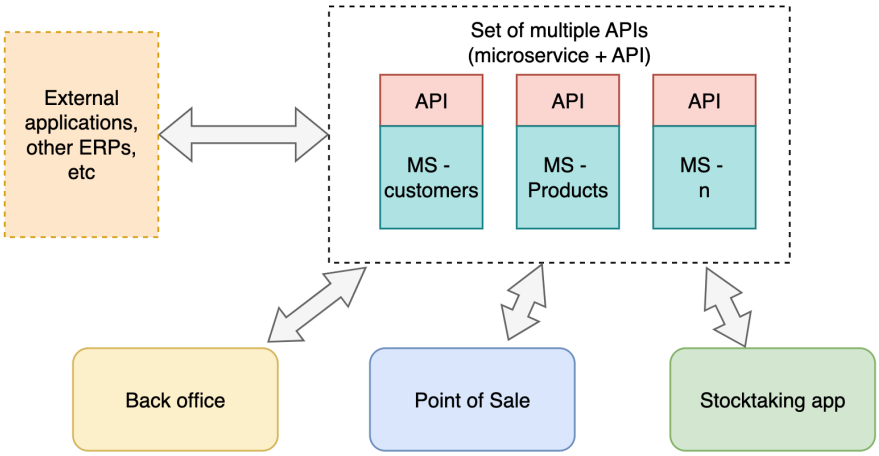

Figure 16 High-level platform architecture

3.1.1 The Back office

The back office is collection of business processes related to inventory and warehouse management. The core features are pointed towards managing retail industry and wholesale warehouses. From the interface perspective it is a traditional ERP, meant for "office workers" as it is not supporting fast retail sale operations neither has a simplified forms and views. These functions are covered in other applications as it is hard to satisfy all user level needs within one application.

The back-office handles as standard many processes and some modules are hidden customer specific ones, which could be used during the implementation as to avoid additional special development, but the focus should be on implementing the standard processes. Standard processes include customers & customer groups management,

sales process, product management, inventory management, purchase process, account management and reports.

Customers & customer groups management enables to add, edit, view and archive customer data. It creates the possibility to manage your customers in groups to enable enhanced reporting and differentiating pricing based on their grouping via price lists. Extra tools support both the customer import and export and quick links to customer related reports.

Sales module covers most of the processes-based sales flows with support to document types: invoice, waybill, invoice/waybill, quotes, order, and credit invoice. The interface is standard document form, and all documents enable transition to other types based on the user's workflow eliminating the need for double entry. In addition to sales documents creation, it enables the view and edit options for the sales documents created in other applications. Sales processes includes managing payments to track the account receivables.

Product management module is taking care managing the product catalogue. The catalogue management complexity varies dependant of the user needs, usually more complex management is needed for e-commerce businesses. The management will include managing the product groupings in one or multiple hierarchies. Managing product information – information that is used for presentation and operations e.g., product code and name and description and sales price. All analytical data is collected based on actual transactions not per user entries as it is more reliable and offer the user the accurate feedback e.g., product purchasing price, warehouse price, wholesale price, etc.

Inventory management is for assessing the current stock levels and getting analytical information regarding product value. Inventory management relies on correct entries and handling of inventory, but time to time it must be checked if the actual result equals the digital version. The stocktaking procedure is used to evaluate the stock as it will result in the validation of correct inventory or actionable inventory transactions. These transactions are called inventory registrations and write-offs. The forementioned stocktaking procedure is enabled in dedicated application as well.

Purchase process includes the transactions handling in two document forms purchase orders and purchase invoices. The purchasing process is needed in order to create the input to the inventory management processes even if the purchasing itself is not done within the system. The creation of purchase invoices raises inventory levels. Purchasing module includes the links to the dedicated purchasing reports, which will enable stock replenishment and stock distribution digital processes based on desired stock levels and historical data.

Account management is a combination of the users & user rights management, company's information management, company's account preferences and configurations management, which include the tax and currency management, warehouse(s) and its registers management and so on.

The reporting module is aggregation of reports needed across the ERPs implemented processes as they are giving a feedback based on the historical data. The reports can be formulated to fit the custom views the user is used to or the user can use the pre-existing standard reports available. Main reports are sales and payments reports, purchase and inventory reports, warehouse management reports, accounts receivables and stock replenishment.

3.1.2 The Point of Sale

Point of Sale is a dedicated application to enhance the user experience for more simplistic actions. The applications focus is to help to manage the retail sales for the retail store workers. Over the time due to differentiating workflows of different user companies the application supports many workflows in addition to capturing a retail sale.

The application manages different sales flows as it allows to create layaway sales, which is in its nature the prepayment invoice for the retail customer. It makes it possible for the user to save the sale if end-customer is not ready to finalize the sale now. The application can be used for creating the sales orders to the interface without having to go to the Back office module.

The core workflow enables to create the shopping cart and then make the transactional document out of it which is invoice/waybill. The document will be linked with the received payment. The application supports multiple integrated payment providers making receiving the payment more secure. The other side of this process is covered as well as the application handles returns and invoices.

Besides the core features the application supports employee time tracking with employee timeclock feature, which lets users to simply mark their arrival and departure to work resulting in actionable date for the payroll management. Simplistic inventory and product management operations can be done through the application to enable resetting the price and the possibility to look up stock levels and its price.

3.1.3 Stocktaking app

Stocktaking application is dedicated application for stocktaking procedures. Most of the companies are doing the stocktaking physically as it is not comfortable to carry the physical device along the aisles of the shops or warehouses. This usually results in

ineffective stocktaking leaflet, which is not optimized for either marking nor even the order for stocktaking.

This labour-intensive procedure is accumulated to one application which handles on its own different stocktaking procedures. It enables stocktaking in batches as the user does not have to make the entire procedure in sequence. The user can make the stocktaking for example in limited range of brands or product groups. One of the added bonuses is the modern interface, which is well suited for mobile devices and makes the digitalization easier and more efficient.

3.1.4 Integrations – APIs

The integrations to other applications and ERP systems are essentially built on the same architecture as internal applications. They rely on the microservices and their APIs to produce transaction documents or modify or create existing records. This approach is used, if the users' requirements are not fillable either by existing products or there is no interest in building the support for the workflows, which are existing in some other applications.

The list of available APIs is extensive as it is the same as for the internal applications, this means it is possible to manage every point of the workflow via an integration to the platform, without developing anything internally. The approach might be a hybrid option, which would entail the enhancement or development of the workflow on the platform side via microservice and API development, but not consisting of the interface.

3.2 Coverage analysis

3.2.1 Matrix for coverage

The evaluation of the fit-gap between the company's processes and the offering of the ERP platform is presented in coverage matrix, Figure 17. The matrix is a visual tool that enables to correctly map the fit between two instances and recognize caps. The coverage matrix exercise has multiple stages in which different parties participate. First stage is the collection of requirements, which was done earlier. Then these requirements must be validated by the company under analysis before the assessment, because excessive or lacking amount of process coverage will impact the assessment. The next step is to align the evaluation criteria and the comparable content. Thirdly the internal team (ERPLY) assesses the coverage of the processes with the current general usage modules. The analysis needs to be neutral, and all processes that the team finds to be covered by existing modules need to get validation from the customer side. After the approval of the fit-gap the implementation plan can be refined, as the scope becomes clear. It might involve an extra negotiation step, in which the parties assess the difference of the original assumptions and the current deviance. The negotiation will lead towards updated project plan. After the approval on both sides for the updated project plan the next milestones and timeframes can be agreed upon. [18]

The coverage is evaluated on a high-level, where the mapped customer process is performed in any of the existing modules, or the workflow is played through with existing APIs. For each scenario a high-level test case will be written, and it will be linked with the high-level expected test result. [19]

Matrix vertical axis list the processes that are applicable for ERP implementation. The horizontal axis represents the current modules and existing API support. The link, if existing, between the processes and the current capabilities will be represented with the "Y" symbol – stating the support or mention of the partial support. If the module and process do not have link then "-" symbol will be marked. The APIs will get a dedicated evaluation for the process coverage as it helps to visualize the expected work to resolve the fit-gap. This is because the API development is more time-consuming and costlier than the module front end development.

Application / Process	User interctable applications			API support
	Back office	Point of Sale	Stocktaking application	API name
Sales process	Y	partially	-	Y
Resource planning	-	-	-	paritally
Processing the order	-	-	-	-
Inventory management	Y	-	Y	Y
Purchasing process	Y			Y
Customers management	Y	partially	-	Y
Vehicles management	-	-	-	-

Figure 17 Fit-gap evaluation matrix

3.2.2 Assessment for coverage

Results of the fit-gap coverage matrix indicate that there is a big difference among the systems current capabilities and the everyday processes of the company. The processes that are covered by the systems current capabilities are in alignment of traditional retail businesses. The support excellent for sales and purchasing and inventory management and customer management will be enhanced after the implementation.

The gap lies in the operations management as which is the other half of the business processes of the customer. The management of the order planning and order processing is not currently supported in the ERP platform and therefore the straight implementation would be conformational as to the selected software is not covering the half of the company's everyday activities. In addition to the existing gap-fit in order planning and processing the support for vehicle information management is not existing on the sales processes.

The uniformed decision in the sales process was that the forementioned processes must be covered within the implementation, so there are three options remaining:

- Integration to an external application
- Upgrade for existing modules
- New dedicated module development

The option for integration to external software would be the easiest rout for the implementation development phase. On the other hand, this will raise the effort for the training stage of the implementation as users needed to be trained to use two different systems. The systems have no universal login option and are more costly for SaaS agreement as it would be one system.

The upgrade for existing module is the preferred route if small adjustments are needed and they are scalable for most of the customers portfolio. If the gap is more than

modifications and more like new workflow development, then this approach must not be considered. The result of implementing new workflows of existing modules will raise the development complexity for further enhancements and will confuse the existing users as the new workflows are not intended for their business case. This in result will increase the workload on the support side for all active SaaS agreements.

The costliest and most time-consuming option is a new dedicated module development. This will include building the base features from ground-up as all functions cannot be "borrowed" from the existing applications. Some features might need to be built as duplicates to avoid the need for switching modules. The positive outcome for the solution includes easier further enhancement capabilities, a new business segment for the SaaS company and easier customer support process as the workflows will be limited to the module users only.

The decision was made for new dedicated module development as there was already pre-existing backlog of customer desired enhancements. The dedicated application is more marketable for the order processing industry than one big application that would cover the requirements in limited fashion. The choice brings along more time pressure for the development phase as there is much more development needed as anticipated from the customer side from the beginning. The limited timeline pushes for excellent project management, which includes laying the solid foundation for the module. This will consist of laying down the business processes the new module must independently cover and getting the agreement from the customer side that it would fulfil the requirements. In addition to the process mapping the risk evaluation must be done to avoid sudden surprises.

4 DEFINING WORKFLOW FOR THE NEW MODULE

Defining the business processes for the new module is done to lay out how the gap-fit between the customer processes and existing solutions will be resolved. The visualized process description will help to get customers approval for the development. The added benefit that comes with the mapping is the understanding for internal teams on what the application must achieve from the holistic point of view. The high-level understanding makes the user interface design and small features development more concise with the overall goal.

In this definition the business process will be referred to as workflow. Workflow and process are not the same in theoretical mapping, but in this case the goals are to offer the workflow that would cover the customer's processes. Why the processes and workflows are differentiated is because the process exists without the workflows or with many workflows, but there cannot be a workflow without the process. The goal of the workflow is to offer a chain of activities to complete the job as efficiently as possible. In this case, due to the decision the entire service sales and operation related processes are to be handled as one workflow.

The offered main flow and sub-flows will be a reference point for other team members, who need to consider the whole main flow and as well the sub-flows. This means the further detailed level the flows are defined the easier it would be to evaluate the suggestion. Evaluation will be done by internal teams once again to offer improvements to the proposed workflows based on personal experience, technical feasibilities, and industries best practices. The reason for mapping the workflows is that workflows can and will be improved in order achieve the goal of the process more efficiently. [20]

4.1 Main flow – handling the work order

To maintain the accuracy and differentiation from existing workflows a new record must be taken into usage. The base record for the new flow, seen in Figure 18, is a work order. Every flow will start with creation of a work order. The first action which happens simultaneously with the work order creation is the linking of the customer record. It will be followed by the linking of the vehicle and contact record. New sub-workflow is the work order build-up, which will be the premise for further automatic actions. In addition to the work order billable rows, the record can include relevant information as notes and/or with linked files. The previous actions will end the build-up phase, but it will be still possible to change the entered content in later phases either by adding, editing, or removing.

The next activities are optional for the user and will be dependent on the certain sales situation or in-store process. These will be the generation of an estimation and prepayment invoice. These documents will be created automatically from the existing data from the work order. This is the reason that the work order must be linked with a customer record and the build-up of the work order will be done with associated product records from the user's account. The prepayment invoice might be accompanied with a payment, and it must be possible to register the payment through the same interface.

The flow continues with the planning phase, which consist of mostly planning the possible time for the work order fulfilment considering the availability and readiness. The next sub-workflow will be processing the order, as the vehicle has been brought in and team is ready to handle the order. After the order has been successfully processed, an invoice will be generated automatically in the same way as the previous transaction documents had been generated. The invoice will be including a payment and therefore the interface must support capturing the payment information.

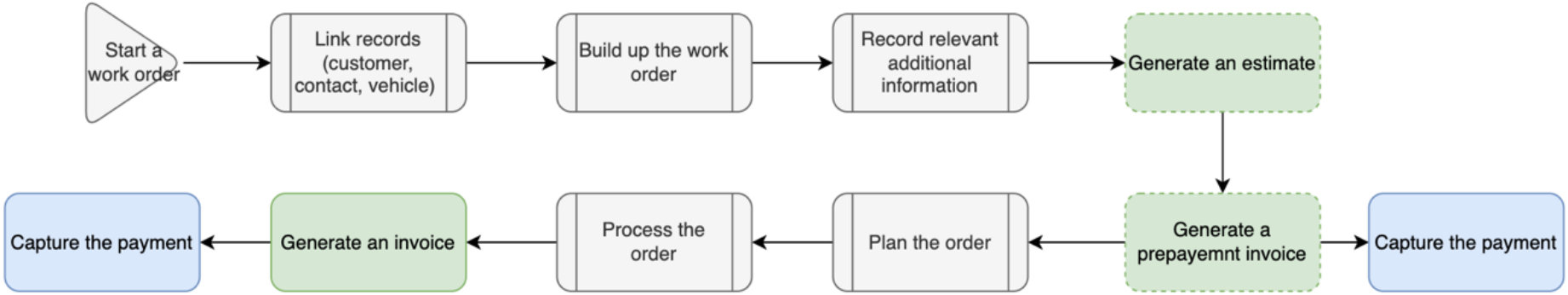

Figure 18 Main workflow

4.1.1 Linking records to work order

The record linking is more efficient way of reusing the existing data or the data that is going to be captured as the records will be stored independently and can be associated with other records. The work order has up to three different linked records that are neither product nor services. The record that must be always associated with a work order is customer record, even for cases where the customer information is not needed then the record could be picked as "default customer". The second linked record is the contact record and by default if user is not stating that the contact differs from the customer record the same record will be linked as contact. In both cases is the record is not existing in the database it must be possible to create a new record through the interface.

The third record linked to the work order is the vehicle record. Vehicle record is not a mandatory one, but is needed for more efficient separation of works, especially for the same customer, who might have multiple vehicles, e.g., B2B customer. Work orders with linked vehicle records will create an archive of planned and done works, which is useful for resolving customer complaints or analysing the service history. Record linking is shown in Figure 19.

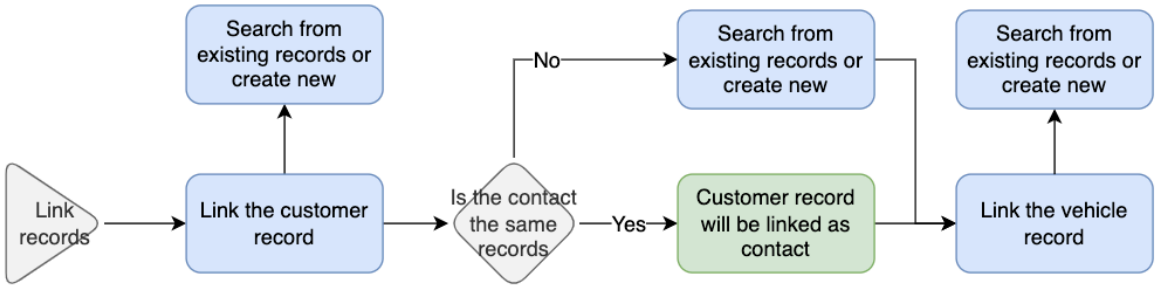

Figure 19 Linking records to work order

4.1.2 Building up the work order

Building up the work order with product and service records available from the PIM database creates the possibility to automatically convert the work order into transaction documents. This results into more efficiency as the data needs to be entered only once. The added benefit is the correction of the transactional documents as they are created automatically and there is not a place for user error in new record creation. The principle of keeping the work order record clean will result in more accurate work orders as they are used for later invoicing, which meant the technician side of the operations will receive more granular and more accurate information.

Another added benefit to the work order record is the possibility to group the order into positions. This benefit can be realized in printouts to offer to end-customer an opportunity to better understand the estimate. The positions will be fulfilled with product and service records that will be added as rows into the positions. The rows will be selected amongst the existing records in the database or via new records creation to the database via UI. The user has possibility to change the row quantities and pricing up until the invoice has been generated out of the work order. See building up the work order from Figure 20.

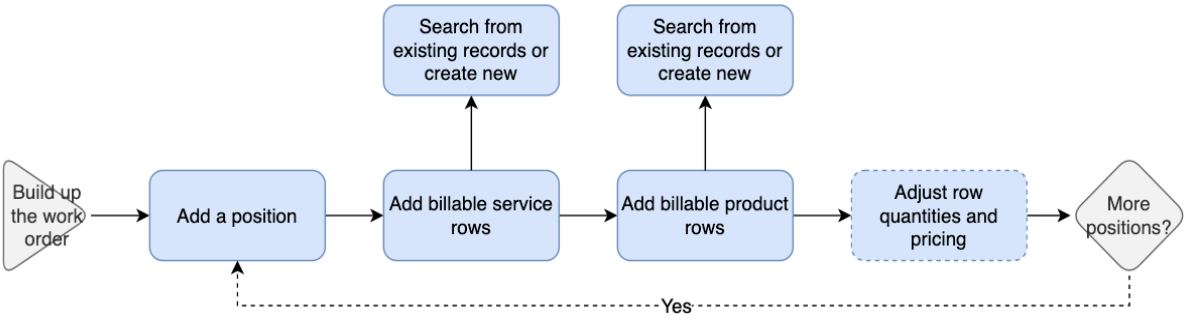

Figure 20 Building up the work order

4.1.3 Record additional information to the work order

Besides the information of billable services and products the work order must include information from the customer and sales representative discussions, it is shown in Figure 21. In the opposite order the information from the technician is worth storing to the same record as it reflects the other side of the order. This in addition limits the information loss from back of the shop to the front of the shop. Information from both sides can be positioned on three levels depending on the need for accuracy – work order, position, or row level.

The second format of information is files. Files can represent the installation guides for technician or other relevant documentation. The document can be added from the order processor side as well indicating performed quality inspections etc. The other use case for files linking is attaching pictures. Pictures are an effective form of storing information of the before and after situations. The important part to consider is that it would be possible to upload the pictures either from local machine or create pictures on spot while using a mobile device.

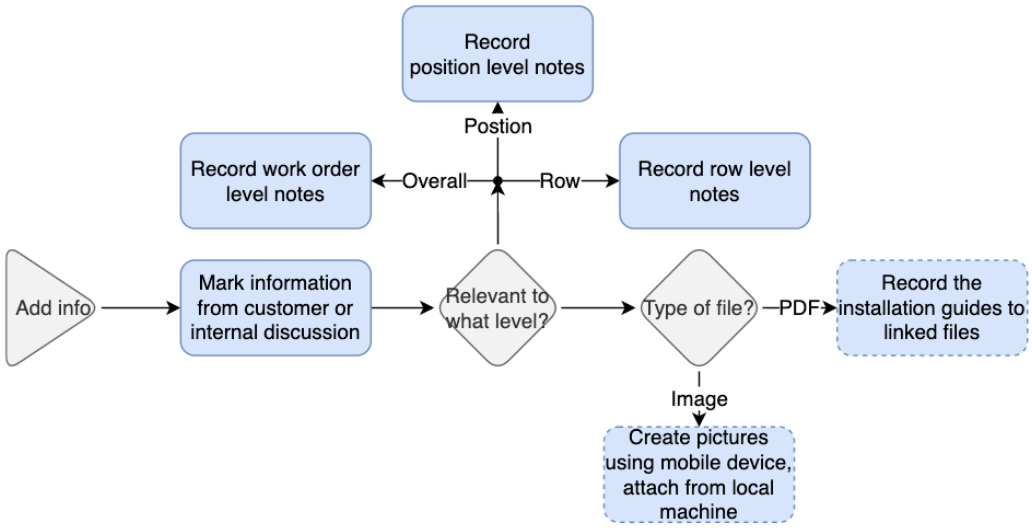

Figure 21 Recording relevant information

4.1.4 Plan the order

Planning of the order steps need to be done in correct sequence, see Figure 22. This is due to the logical argument that no installation cannot be done without the parts and even if the parts are existing technician cannot start the work without a physical location. All three steps need to be supported to make the time offering for the end-customer for processing the order.

End-customers availability or suggestive timing is captured along the details of the scope of the order. Then the parts availability check is done and if the parts are present, then this step is ignored, if not then the lead time for parts is taken into consideration. The next availability check is done to the resources (representation of physical space or lifts availability) and the last check is now performed on the technician availability.

Aggregating all the known information to the time offeror customer validation is the prerequisite for marking the order into calendar. Upon customer approval the order is planned into the calendar either per full positions or row per row. This will depend on the factor is the technician and resource the same throughout the order or not. Splitting up the tasks on granular level enables precise job assignment and more precise tracking later for possible payroll calculations. The created task is always associated with the work order rows or row.

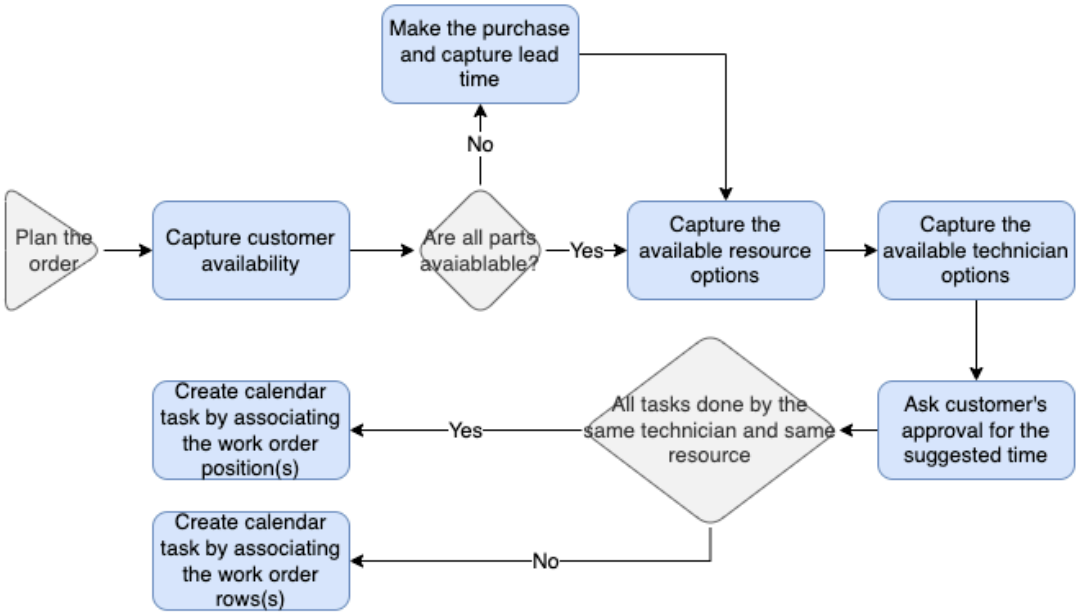

Figure 22 Plan the order

4.1.5 Process the order

The final sub-workflow in the work order main flow is processing the work order, see Figure 23. The not specified objects in from the figure represent the triggered status of the work order. Although the work is not done within the system it still needs to be tracked for capturing the status of the shop without actual visual confirmation. This enables later to apply automatic messaging systems to the end-customers or internal communications to avoid information losses and raise customer satisfaction.

The work order status depends on user entered markings and linked task statuses. The technician is responsible for marking the task status accurately for giving the feedback for the system users of the status of the open work orders.

After work order creation the status will be set to "Draft". This stage will be used for building up the work order and generating an estimate for it to capture the customers approval. After a user has marked to the work order the receival of confirmation the work order will be pushed to status "Approved". This stage is a separation stage of the work orders that are in preparation from the ones, which are already known incoming works. The next status of the work order is "Checked in". This status is again user triggerable, and it is marking that the customer has left the vehicle available for servicing.

Next three statuses are given to the work order automatically based on the given algorithm.

1. Are all tasks linked to the work order marked as “done”, if yes then status is “Done”, if not then point 2

2. Is any task marked in the status of “blocked”, if yes then the status is “Blocked” if not then point 3

3. Is any task marked in the status of “in progress”, if yes then the status is “In progress” if not then point 4

4. If none of the previous check result in the positive value, then the work order status will be remaining in status “Checked in”

After all tasks have been marked as done and the customer picks up the vehicle then after the user trigger for the action the status will be changed to “Picked up”. This stage reflects of the successful processing of the order. Besides given workflow in circumstance of the work order changing to irrelevant there is a possibility for user to cancel the work order. This action will result in work order status changing to “Cancelled”. This status enables to filter out irrelevant work orders form reports and graphs etc.

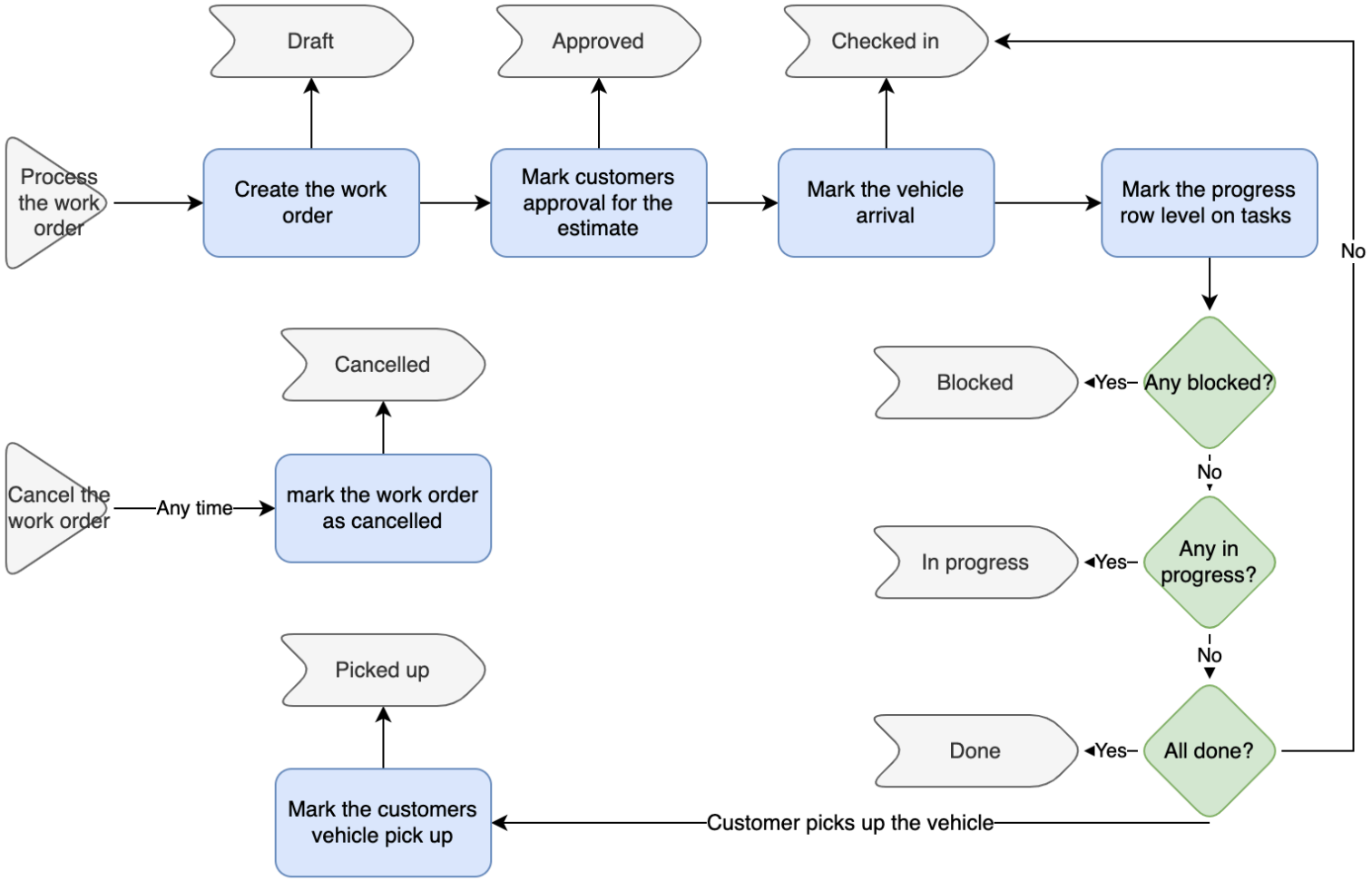

Figure 23 Work order status management

5 ESTIMATION OF BENEFITS FROM THE NEW MODULE DEVELOPMENT

The scope for the new module has been defined with mapped workflows, which it must cover. The updated scope entails that the budget and the timelines for the implementation project need to be reviewed. The extra budget and prolonged timeline are the risks that every implementation project holds, and the persons involved in the project from both sides are aware about.

From experience it is known that if the compatibility research shows a big fit-gap, then considering the long term goal, which is rolled out solution to all franchise operators in the franchise chain and their satisfaction with the implemented software, it must be addressed right away.

To convince the customer to increase the timelines and the budget a clear list of benefits will be needed. The list of benefits will show, why the fit-gap needs to be addressed right away. The benefits will be listed in two sections as the franchisor might want to consider their franchisees feedback for the potential benefits, but it does not want to share to full coverage of benefits the franchisor is gaining with the new software implementation. Although the franchisor and franchisee both benefit from the others success the communication is still under tight evaluation and not all franchise decisions have been made transparent.

Listed benefits can be objective and measurable or subjective and emotional as they will be used for getting preliminary approval. The elements from the list include subjective targets are not added to the project plan as key indicators as they will bring the risk for project closure. The project plan will only be updated with benefits that fit the *SMART* criteria. This acronym stands for: S – specific, M – measurable, A – achievable, R – relevant, T – timely. [21]

5.1 Store level

Estimated benefits for the store is valuable material for the store level implementation phase. Onboarding new software to an active business unit is troublesome if the actual user of the system is not dedicated to the implementation. This risk is mitigated with introducing the stores the list of benefits before proceeding with actual pre-implementation steps.

The advantages of the new module are:

- Streamlined workflows
- Thorough digitalization
- Ease of user training
- Savings on licensing

New module will streamline the store level workflows because it is built on the store actual processes. This is one of the main benefits of implementing fitting software, as the usage of it will guide the everyday users towards optimized processes. Without digitalized steps, the workers know their main process or sub-processes end-goals, but each of them might be reaching the result in its own way. Along the workflow, without the support of the dedicated module, interesting datapoints will be lost and even the quality of order processing will suffer. After implementation of the new module that supports the order processing and planning workflows, the users have a tool that will guide them toward optimized workflows.

The streamlined workflows will bring along the benefit of digitalized datapoints throughout the workflow. This means that the collection of work orders will turn into the servicing archive. Dependant of the company's internal procedures the historical work orders include the information from previous orders in lengths of notes, billable materials, pictures, quality files. The second benefit the order processing digitalization will provide is the possibility to analyse the processed orders. The datapoints will reveal the order processing efficiency dependant of the planned hours vs the actual marked hours. Third thing the digitalization will enable is automation. It will be possible to develop automated messaging, or the tracking of the work time based on the user triggerable data entries. In addition to the previous the digitalization, will help to improve the in-house communication as well, as if the system is used for storing the notes and marking of the order progress, everyone will have the common understanding of the as-is situation.

Ease of user training is one of the most undervalued benefits of uni-ERP implementations. The level of training is decreased significantly with limiting the usage of different systems. The training scope and re-training is almost doubled, because even the simplest procedures are not in alignment e.g., login process to the different systems. This will be relevant for the employee turnover as well, as the new employees will be easier to train, if the company is using only one system. The ease of training is possible, because the new module will cover the order processing workflows solely and for most of the users there is no need for outside of the module training. This is limiting the "noise" and making it easier to master. The added benefit is the lack of employee frustration with limited amount of software in usage. [22]

Savings on the licencing has two parts. Direct cost savings come from the need of only paying one SaaS license fee instead of the multiple. This is powerful cost-saving annually and the benefit may increase even more as the user tries to manage more processes within the system then the annual licensing amount will decrease even more. The not direct cost savings come from decreased load on the licensing management. [23]

5.2 Franchisor level

The franchisor reaps the same benefits as the store but not directly. The franchisor benefits will be presented from another angle as they will not be the direct users of the new module. Franchisor benefits are grouped to categories:

- Standardization of end-customer experience
- Ease of new franchise onboarding
- Improved offering to franchise candidates
- Franchisor level data

The franchisor benefits from the new module because it enables to force their franchisees to use the system across their workflows. This will enable to setup unified end-customer experience for direct interaction and indirect. The direct interaction means all stores will start using the same templates for their documents. Besides documents the workflows will be automated the same way e.g., automatic email sending follows the same rules across the franchise chain. The email and SMS messages are using the same templates, which creates more brand value. The indirect interaction means, if the stores are using the same system for processing their orders it means they will be leaning on the same workflows. Besides the workflows the record forms would require the same input, resulting into similar customer engagement across the chain.

Ease of onboarding new franchisees is possible as the franchisor can offer an ERP system, which has full coverage of the franchisee related business processes. New franchisees do not have to try to align their legacy software or order any expensive integration between different systems as the franchisor can offer the digital coverage throughout the processes.

It will be easier to form new franchise deals if the franchisor has the across the chain software in place. Not only does it increase the confidence amongst the new joiners, but they will also see the already existing enhancements, which are continuously developed to the whole franchise. Each automation or a new feature delivered, even based on one franchisee request, will reach each store in the chain. These customer industry specific upgrades would be too expensive to order for the standalone stores.

For a franchise, which is using ERPLY across its chain, it is possible to associate the accounts into on franchise chain, see Figure 24. This means grouping of the individual franchisee stores into one shared chain, where it is possible to share data amongst different accounts. Each franchise solution will have three types of accounts – one HQ

account, one reporting account and store accounts. Each franchise will be setup as a tailored suit, as it is possible to configure the chain in three ways – shared data model & synchronized from HQ model & mix between two previous. Every way of configuration enables the possibility in some way to move data from HQ to stores and collect data from stores and aggregate to reporting account. [24]

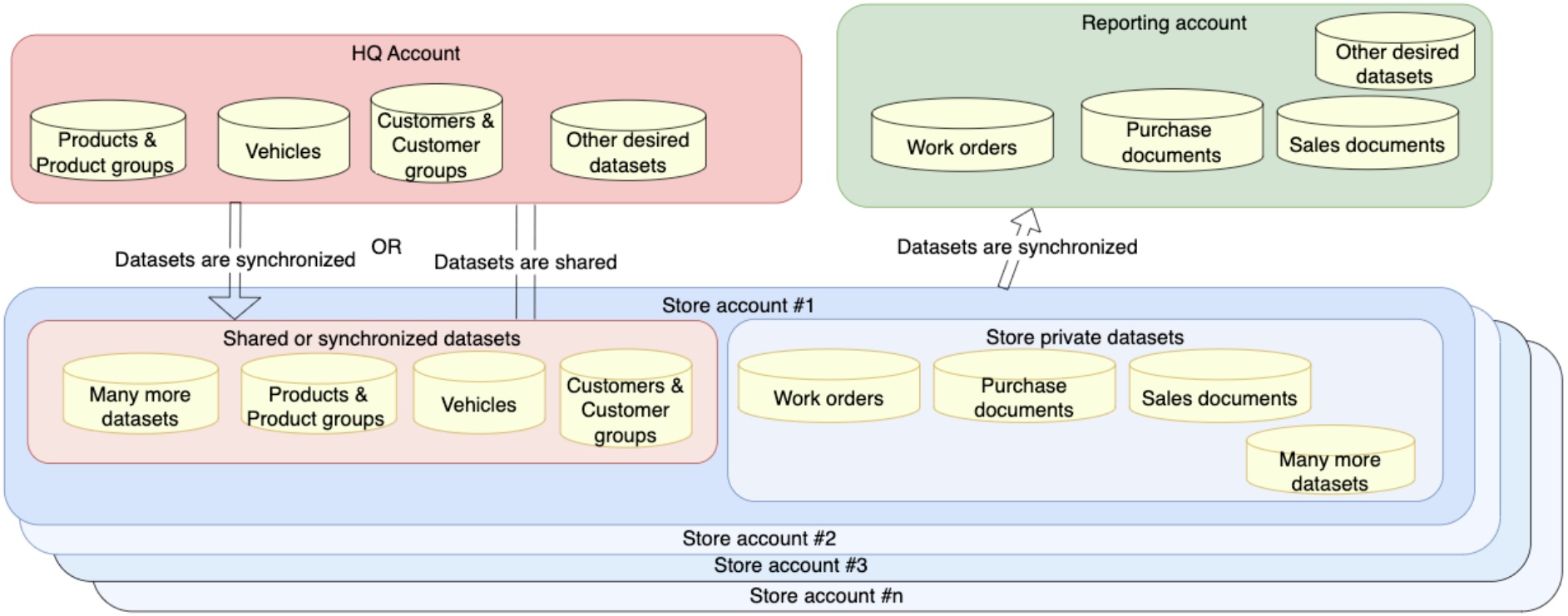

Figure 24 ERPLY's franchise solution

5.2.1 Dynamic royalty calculation formula

The connected franchise chain creates the possibility that all stores are using same product group hierarchy. Even more the products can be synchronized from HQ account to store accounts, creating the standardized offering for franchise main selling services and products. From stores it will be possible to aggregate the data to franchise reporting account. One of the data entries can be royalty sum. As each franchisor will agree on the royalty rules for the franchise agreement there is no available data field. AS for this franchise specific use-case the desire is to get the royalties calculated from received payments periodically. The variables for the calculation are requested to be franchisee specific royalty coefficient and over franchise product group royalty percentage. These two variables will provide the franchisor with the possibility modify franchisee's royalty rate for enhanced franchise agreements and guide their franchisees towards offering more franchisor products.

The proposed formula is made on granular level to get the most precise results for the periodical royalty calculation. The algorithm is following:

1. Find all payments made in given date range
2. Find for each payment the related sales document and calculate the payment coverage for each sales document

$$\lambda\ (\%\ covered\ for\ sales\ document) =\ \kappa\ (payment\ sum)\ /\ \iota\ (invoice\ total\ with\ tax) \quad [5.1]$$

3. Royalty calculation will be done for each sales document row, which had the associated payment in the given date range, considering the sold line items net price

$$\tau\ (royalty\ for\ invoice\ line) =\ \nu\ (line\ net\ total) *\ \lambda *$$

$$*\ \rho\ (product\ group\ royalty\ \%) *\ \alpha\ (account\ royalty\ modifier\ \%) \quad [5.2]$$

4. All invoice-payment line combination's royalties are added together to form the royalty for the period

$$\varepsilon\ (period\ royalty) =\ \sum \tau\ (royalty\ for\ invoice\ line) \quad [5.3]$$

5.2.2 Exemplary royalty calculation

Illustration of the royalty collection algorithm is done on limited and simplified data to show the value in dynamic calculation. This is the problem is stated:

"Get the royalties for account *ID241* for date range 18-11-2022 to 20-11-2022 based on data in appendix 1."

1. Find all payments made in given date range

Found payments IDs for the date range: 153, 152

2. Find for each payment the related sales document and calculate the payment coverage for each sales document

$$\lambda\ (\%\ covered\ for\ sales\ document) =\ \kappa\ (payment\ sum)\ /\ \iota\ (invoice\ total\ with\ tax)$$

$$\lambda_1\ = \frac{510}{510} = 1\ [5.1.1]$$

$$\lambda_2\ = \frac{542{,}4}{678} = 0{,}8\ [5.1.2]$$

3. Royalty calculation will be done for each sales document row, which had the associated payment in the given date range, considering the sold line items net price

$$\tau\ (royalty\ for\ invoice\ line) =\ \nu\ (line\ net\ total) *\ \lambda *$$

$$*\ \rho\ (product\ group\ royalty\ \%) *\ \alpha\ (account\ royalty\ modifier\ \%)$$

$$\tau_{11} =\ 100 * 1 * 0{,}04 * 1 = 4\ [5.2.1]$$

$$\tau_{12} =\ 150 * 1 * 0{,}04 * 1 = 6\ [5.2.2]$$

$$\tau_{13} =\ 175 * 1 * 0{,}05 * 1 = 8{,}75\ [5.2.3]$$

$$\tau_{21} =\ 200 * 0{,}8 * 0{,}07 * 1 = 11{,}2\ [5.2.4]$$

$$\tau_{22} =\ 175 * 0{,}8 * 0{,}04 * 1 = 5{,}6\ [5.2.5]$$

$$\tau_{23} =\ 215 * 0{,}8 * 0{,}04 * 1 = 6{,}88\ [5.2.6]$$

4. All invoice-payment line combination's royalties are added together to form the royalty for the period

$$\varepsilon\ (period\ royalty) = \sum \tau\ (royalty\ for\ invoice\ line)$$

$$\varepsilon\ = \sum \tau\ = 4 + 6 + 8{,}75 + 11{,}2 + 5{,}6 + 6{,}88 = \ 42{,}43\ [5.3.1]$$

The franchisee owns franchisor 42,43 (accounts currency) for time period 18-11-2022 to 20-11-2022.

SUMMARY

Thesis main objectives were achieved through conducting the customers compatibility analysis. The as-is analysis of customer processes and existing ERPLY's system modules was the premise for performing a fit-gap analysis between customer's business processes and ERPLY's existing system. The result of the fit-gap analysis was showing that a new module needs to be developed as currently the system lacks in coverage for resource planning and order processing management.

The business processes the ERPLY system is not currently covered were taken into consideration when the main workflow was defined. The main workflows sub-processes were defined to detailed level to give the system architects a clear understanding what the business processes must be supported by the new module.

The analysis itself has enough supporting detail and description of steps taken during the analysis to make it a guide for next implementations. The analysis will be used on next advanced projects as a base for analysing the customers compatibility to the system. Each next analysis will include the business process mapping of customers processes and the coverage matrix. Based on the results from the coverage matrix evaluation the new feature or module workflow mapping needs to be made, if fit-gap is existing.

The thesis composition was made based on the tasks set together with the supervisor in the beginning of the analysis.

The analysis included an overview of the company, which was doing the research. The overview covers the brief history of the company and its customer segmentation. The segmentation laid the understanding of why the research was necessary and showed that it can be repurposed as a standard, since the company is expecting similar projects to come in. The company's main product was defined along with ERPs implementation standard.

The overview of the use-case company showed the implementation complexities and the industry to which the system provider wanted to move. The customer is a franchise chain, who provides automotive service. The customer for the implementation project is the franchisor, but its franchisees are going to be the direct users of the system. The complex relationship between the franchisor and franchisees was imminent as both are dependent on each other's success and failure, so it was considered throughout the analysis.

The methodology of process mapping and business process description was given in chapter two. The author chose interviews and observations for the method of

information collection. Most of the interviews and observations were held through video conferencing. Interviews and observation were picked due to the time criticality and geographical distance as video conferencing allows to hold interviews from distance and make partial observations without going to the site. The time criticality pushed the system provider to quickly understand its customer's business to provide the refined project plan with realistic timely milestones.

The process mapping along with its legend can be used as a standard for the next implementation projects. In the case-study, it will give both the system provider and its customer a better understanding of the company's business processes. Although the end-users (franchisees) of the system are small and medium businesses, the processes under analysis were sales, resource planning, order processing, purchasing, inventory management, customer management and vehicle information management. All the processes were mapped as per the author set guidelines.

The overview of the existing ERPLY system modules were given to form the compatibility matrix. The matrix showed which of the processes are already covered by the existing modules either fully or partially, and which were not. The matrix enabled the decision makers to decide between leaving out the processes not covered for the implementation or building a new module to support those. The decision was made to build a new module to get more buy in from the franchisees during the system implementation and capture more data for the franchisor.

To get customer's approval for the module development, the estimated benefits were listed for the franchisees and the franchisor. The benefits were needed as the customer will face a prolonged period for the system implementation and increased development budget as the new module needs extra development and testing. Besides being a strong selling argument for the customer to approve the new module development, the benefits will be used during a store level implementation process to get the store more excited about the new system.

SUMMARY IN ESTONIAN

Töö põhieesmärgid said saavutatud läbi kliendi äriprotsesside kaardistamise ja tootesobivuse analüüsi. Kliendi hetkeolukorra protsessid ja ERPLY süsteemi moodulite kaardistamine lõi eelduse tootesobivuse analüüsi teostamiseks. Tootesobivuse analüüs näitas, et süsteemi on vaja luua uus moodul, mis katab ressursside planeerimise ja tellimuse käsitlemise protsessid.

Äriprotsessid, mida ERPLY süsteem hetkel ei toeta võeti aluseks uue mooduli töövoogude defineerimisel. Põhivoo alamprotsessid said defineeritud protsessi sammudeni, et anda edasi süsteemi-arhitektile ülevaade äriprotsessidest, mida uus moodul toetama peab.

Tehtud analüüs sisaldab piisavalt toetavat materjali ja kirjeldusi tehtud sammudes, et seda saab kasutada juhendmaterjalina järgmistes juurutusprojektides. Seda analüüsi kasutatakse juhendina järgmistes keerukates juurutusprojektides põhjana kliendi äriprotsesside ja tootesobivuse hinnanguks. Iga järgnev juurutuse eeltöö koosneb kliendi äriprotsesside kaardistusest ja tootesobivuse hinnangust. Lähtuvalt tootesobivuse analüüsi tulemustest selgub vajadus uue funktsiooni või mooduli töövoo kaardistusele. See tekib juhul kui klindi protsessidele ei leita sobivat toodet.

Lõputöö ülesehitus on tehtud vastavalt püstitatud vaheülesannetele. Need ülesanded püstitati enne analüüsi koos juhendajaga.

Analüüs omas ülevaadet ettevõttest, mis teostas uurimust. Ülevaade ettevõttest kajastab lühidalt ettevõtte ajalugu ja selle klientide segmenteerimist. Klientide segmenteerimine tõestab vajadust püstitatud eesmärkidele ning näitab potentsiaali töö korduvkasutuseks. Tööd saab kasutada ettevõtte sisemise standardina, sest ettevõte eeldab samast kliendisegmendist uusi lisanduvaid projekte. Lisaks ettevõttele defineeriti ERPLY põhitoote olemus ja ERP'i juurutus-standard.

Ülevaade kasutusjuhust andis hinnangu selle komplektsusele ning ka kogu ärisegmendile, kuhu süsteemipakkuja soovib liikuda. Antud juhul on kliendiks frantsiisikett, mis teostab sõidukite teenindust. Kuigi juurutusprojekti tellijaks on frantsiisi peakontor on süsteemi põhilisteks kasutajateks frantsiisilitsentsi omavad väikeettevõtted. Koheselt sai ilmsiks kompleksne frantsiisi ärimudel, kus mõlemad osapooled on üksteise edust ja ebaedust sõltuvad. Selle äride vahelise kompleksusega tuli arvestada kogu analüüsi vältel.

Äriprotsesside kujutamiseks ja nende kirjeldamiseks valitud metoodika on kirjeldatud teises peatükis. Autor valis informatsiooni kogumiseks intervjuu ja vaatluse meetodid. Enamik vaatlusi ja intervjuudest oli tehtud läbi videovestluste. Vastavad meetodid said

valitud kuna tuli arvestada nii geograafiliste piirangutega kui ka ajakriitilisusega, mis olid projektile seatud. Ajakriitilisus suurendas intervjuude vajadust, sest analüüsival poolel oli vajalik kiiresti saavutada detailne ülevaade analüüsitava tegevusest. Ülevaate põhjal tuli teha täiendusi projektiplaani ja uuendada ajastatud eesmärke, et need ühtiks paremini reaalsete võimalustega.

Protsesside kaardistuse koos oma legendiga saab võtta kasutusele kui ettevõtte protsessikaardistuse standardina järgnevateks juurutusprojektideks. Selles analüüsis annab protsesside kaardistus nii süsteemi pakkujale kui ka kliendile parema arusaama juurutuses olevatest äriprotsessidest. Kuigi tulevased süsteemi lõppkasutajad (frantsiisi lepingu omajad) on väiksed või keskmised ettevõtted kaeti kaardistuse käigus nii müügi, ostu, ressurssi planeerimise, tellimuse teostamise, laoarvestuse, kliendiarvestuse kui ka sõidukiarvestuse protsessid. Kõik protsessid kaardistati vastavalt püstitatud juhistele.

Tootesobivuse analüüsi teostamiseks tehti analüüs olemasolevatest ERPLY moodulitest. Katvus-maatriks näitas, millised protsessid on juba kaetud olemasolevate moodulite poolt kas täielikult või osaliselt ja millised pole üldse kaetud. See maatriks võimaldas otsustajatel teha valiku mitte kaetud protsesside osas. Võimalus oli need jätta kõrvale juurutuses või toetada uue mooduli arendamist protsesside katmiseks. Otsus tehti uue mooduli arenduse kasuks, et saavutada lõppkasutajate suuremat süsteemi heakskiitu. Lisaks aitab uus moodul frantsiisi peakontoril koguda rohkem lisainformatsiooni.

Selleks, et saada kliendi heakskiitu uue mooduli arendusele tuli teha hinnang saadavatele kasuteguritele. Kasutegureid oli vaja, et lihtsustada uue mooduli arenduse pakkumist kuna sellega kaasneb kliendi jaoks pikendatud periood süsteemi juurutamisele ning ka eelarve suurenemine. See tuleneb vajadusest uut moodulit arendada ja testida. Lisaks sellele, et kasutegurid on toetavad mooduli lisaarenduse müügile on neid ka hea kasutada kui projekt liigub poe tasandi juurutuseni. Kasutegurite meeldetuletus poodidele juurutuse alguses hõlbustab uue tarkvara omaksvõttu.

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APPENDIX 1 – DATA FOR ROYALTY CALCULATION

Franchisee must make sales and receive the payment to own the franchisor in royalty. Table 3 and 4 are simplified extraction of two invoices. Invoices are numbered as A and B, both have unique IDs.

Table 3 Invoice A - ID15474

Row #	**Net price (ν)**	**price with tax (Tax = 20 %)**	**Product group ID**
1	100	120	1
2	150	180	1
3	175	210	2
TOTAL	**425**	**510 (ι)**	

Table 4 Invoice B – ID15464

Row #	**Net price (ν)**	**price with tax (Tax = 20 %)**	**Product group ID**
1	200	240	3
2	150	180	1
3	215	258	1
TOTAL	**565**	**678 (ι)**	

The dynamic royalty calculation enables to mark specific percentages for products groups. This enables the franchisor to motivate the franchisee into selling the products more in favour of the franchisor. The table 5 represents the pointed royalty percentage for unique product groups.

Table 5 Product groups royalty percentage

Product group ID	**Royalty percentage (%)**
1	4
2	5
3	7

The royalty is calculated based on customer payments as the franchisor does not want to charge the franchisee before it has actually received the payment for their work. Payments can be associated with the sales invoices, but they must not have one to one ratio.

Table 6 Received payments

Payment ID	**Payment sum (κ)**	**Payment date**	**Sales doc ID**
152	542,4	20-11-2022	15464
153	510	19-11-2022	15474

The franchisor wants to make different agreements with their franchisees based on the potential market of the franchisee location and expected volume. Therefore, each account in the franchise chain will be tagged with the royalty percentage.

Table 7 Account royalty %

Account ID	**Royalty percentage (%)**
241	100