Working as a Technical Product Owner

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Abstract

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This thesis aims at documenting the responsibilities and growth progress during a period of 8 weeks of a technical product owner at Mascus Ritchie Bros Finland Oy.

The thesis focusses on describing at a detail level the daily tasks and explaining their impact on the professional development of the author. Being a technical product owner, the author serves as a liaison between business stakeholders and engineering team. By effectively leveraging communication skill in daily situations, owning the product backlog, and implementing core agile methodologies, a technical product owner helps maximize the value of the product. The process of acquiring these essential skills were recorded in this thesis based on diary entries, and self-reflection is described in weekly analysis. Diary entries were collected from 25th April 2022 to 17th June 2022. Weekly evaluation aims at analyzing incidents and new knowledge learnt during the week.

This thesis can be beneficial for understanding the responsibilities, essential skills and knowledge of a product owner or technical product owner.

Keywords
Technical product owner, agile methodologies, project management, product management, teamwork

Contents

1 Introduction 1
1.1 About Ritchie Bros & Mascus 2
1.2 Technology and methodologies 2
1.3 Key professional concepts and abbreviations 3
2 Description of the initial situation 6
2.1 Analysis of current work 6
2.2 Interest groups 8
2.3 Interaction situations 9
3 Diary entries 11
3.1 Observation week 1 11
3.2 Observation week 2 19
3.3 Observation week 3 27
3.4 Observation week 4 34
3.5 Observation week 5 43
3.6 Observation week 6 51
3.7 Observation week 7 58
3.8 Observation week 8 65
4 Discussion 73
References 77
Table of figures 84

1 Introduction

This thesis was written in the form of a diary thesis, which aimed at documenting daily responsibilities and professional development progress of a Technical Product Owner working at Mascus Ritchie Bros Finland Oy. The observation period started from Monday 25th April 2022 to Friday 1st July 2022. The thesis will include a set of daily observations for every working day as well as weekly analysis for said period.

My responsibility consists of effectively developing several products and managing the workload for different teams to strengthen the business development of both Mascus and Ritchie Bros. Implementation of agile methodologies and customer requests handling are also part of the job.

Due to the data privacy policy of the company, confidential details are not disclosed. Instead, the thesis focuses on observing daily situations and discusses that at weekly analysis, as well as the skills acquired, professional growth, and limitation of myself. These include a wide range of subjects, such as product development, effective teamwork, agile methodologies, communication, customer satisfaction. Acknowledgements for these subjects were acquired from various sources, including online learning platforms (LinkedIn Learning, Coursera, Udemy), agile communities such as scrum.org, articles from magazines like hbr.com, or books such as Doing Agile Right (Rigby, 2020).

Due to the nature of my job, communication with others occurs daily and plays a vital role in succeeding in the job. Communication skills are one of the most important skills when working in any professional environment. My tasks also require project management, leadership, technical knowledge, conflict management, teamwork, negotiation, decision making and presenting skills. Therefore, it can be concluded that several types of management skills, teamwork skills and communication skills are the most crucial requirements to do my job.

Table 1 Overlay matrix of the in-text connections in the diary-based thesis

Own professional development objective	Theoretical framework	Observation week	Results of own professional development
Understand the ecosystem of Mascus and Ritchie Bros products and services	1.2, 2.2	Week 2, 4, 5	Week 2, 3
Project management	Week 1, 2	Week 1-8	Week 6, 7, 8
Time management	Week 6	Week 3, 4, 6, 7	
Agile methodologies	Week 1, 7	Week 7	Week 7 , 8
Communication	Week 3, 5	Week 3, 5, 8	Week 8

Own professional development objective	Theoretical framework	Observation week	Results of own professional development
Testing methods	Week 5	Week 5	Week 6, 7

1.1 About Ritchie Bros & Mascus

Ritchie Bros. Auctioneers, or Ritchie Bros. is an enterprise founded in 1958 and specialized in industrial asset disposition & management. The company also does business in selling heavy industrial machinery by organizing live and online auctions, as well as other sale channels (Ritchiebros.com, 2020). The company has acquired multiple of its competitors from distinct parts of the world, including IronPlanet, Mascus, Marketplace-E, GovPlanet, TruckPlanet, Kruse Energy, Salvage Sale, Rouse, and currently offers all its child organizations' services in addition to its own: Ritchie List, Ritchie Bros. Asset Solutions, Ritchie Bros Financial Services and Ritchie Bros Appraisal Services (Ritchiebros.com, 2020).

Mascus is an international electronic marketplace for buyers and sellers of used heavy machinery and equipment. Professionals such as equipment dealers, brokers, manufacturers, and private sellers can advertise their equipment on Mascus listing service. (Mascus, 2017) The company was acquired by Ritchie Bros in 2016 and currently operates under RB’s branding and management team. Besides the online marketplace, Mascus offers (1) a directory for dealers, manufacturers, spare parts, and other service providers; (2) online inventory management solutions for dealers; (3) an auction section; (4) easy-to-use tools and services for machinery end-users. (Linkedin.com, 2022)

1.2 Technology and methodologies

The stack of Mascus contains various technologies such as C#, ASP.NET framework, jQuery, CSS, Next.js, React.js, NodeJS, etc., depending on project and customer. Main methodologies are Kanban and Agile methodologies, in which Scrum is practiced.

In the new projects that I will be working on for the second and third quarters of the year 2022, Mascus will be using newer technology stacks. We use AWS (Amazon Web Services), Docker, .NET Core, React.js and Next.js, TypeScript.

These mentioned above are the important technology being used by Mascus engineering team. They are utilized to build, develop, and maintain various products of the company. My daily work however does not require reading, assessing, or implementing code using these programming languages. I am expected to acknowledge about our technology stack only.

1.3 Key professional concepts and abbreviations

C#: a modern, object-oriented programming language which was created by Microsoft. (BillWagner, 2022)

ASP.NET, or .NET: one the most popular developer platforms including tools, programming languages, and libraries for building many different types of applications. (Microsoft, 2022)

Scrum: a framework for project management which adopts agile methodology. With Scrum, people can develop complex products while in an evolving, fast-changing environment. (Scrum.org, 2020) At first Scrum was used for software development, but nowadays Scrum is being used widely by many organizations in the world.

Kanban: a popular framework used in project management, implementing agile methodologies. In Kanban working style, tasks are presented on a board with different columns, allowing team members to visualize the status and progress of the tasks. (Atlassian, 2019)

RBAS/ RBAS IMS/ RBAS Business: Ritchie Bros Assets Solutions, or RB Asset Solutions is an integrated platform that provides a single, shared view of inventory, data insights & disposition channels for every asset (Ritchiebros.com, 2020). With this platform, dealers or sellers can see the overview status of their stock, as well as send these stocks to desired sale channels, such as Mascus marketplace, webshop (their own listing site), auction channels, or sell internally within their organization. There are plenty of tools too such as graphs and charts based on customers' data, inbox function, contact requests and want ads.

RBAV/ RBPR: Ritchie Bros Assets Valuator, also known as RBPR – Ritchie Bros Price Results (Rbassetsolutions.com, 2021), a tool for estimating the machine's price based on data gathered by Mascus and Ritchie Bros for many years. The tool uses machine learning algorithms to estimate the market value of the equipment and suggest that projected value for seller or dealer.

IMS: Inventory Management System, common name for platforms built by Mascus for dealers and companies to create and manage their inventory easily. There can be standard RBAS Business/ RBAS IMS (as explained above) or RBAS Enterprise. Unlike RBAS Business – a standard product, RBA Enterprise allows dealers to have more customization per request. RBAS Enterprise look and functions are decided based on the customers' needs and designs, but it shares with RBAS Business certain similarities and core functionality.

Webshop/ Plus: Solutions built for dealers. Webshop allows these companies to advertise their products, including a wide range of heavy machinery, on their website. Does not include payment options. Internet users can see listed ads, but they cannot make direct payment on the page.

Jupiter: code name for project to rebuild the Mascus.com platform into a newer and better design with the purpose of improving customer experiences, increasing revenue and exposure of Mascus company to search engines.

M2R: code name for project to transfer invoiced and prepaid Mascus customers to use a specific instance of RBAS platform to manage their listings.

Mascus Admin: internal platform for internal Mascus users. An enormously powerful and effective tool to manage internal information, organization hierarchy and enable users to have access to various of Mascus's tools and services.

Scrum: an agile framework, used widely by many companies and organizations. The framework focuses on adapting with market changes and business requirements rather than careful planning and management. Compared to traditional methods, this framework is more flexible and fast paced.

Build/ dev environment: lowest level of all environments, a place where the code is pushed and evaluated by developers, quality assurance team or internal employees of Mascus.

UAT environment: User acceptance testing (UAT) environment, a place where users can test the new implementation before these features are pushed to production environment.

Production environment: the deployed environment where users interact with the system. Highest level of the environments.

Server deploy: short for server deployment. Server deployment happens once a week, the aim of it is to rerun the configuration file on server and update all the newest changes and modifications that have been made to the source code. By doing server deploy weekly, Mascus ensures to react fast enough with bugs and errors on production environment and implement change requests that come from customers.

QA: Quality Assurance. The task of quality assurance is to ensure that the implementation of certain features works well with existing system in different environment, including build, UAT, and production environment (Productplan.com, 2022). On a more general level, quality assurance and QA specialists (or testers) inspect the system and ensure quality of the product or service.

PM: Product Manager. At Ritchie Bros/ Mascus, Product Manager communicate with business directors and business development managers and define the strategic business development for the product or services. From here, they can establish different necessary implementations for the product/ service and better improve the general business value of this certain product/ service.

PO: Technical Product Owner. This is my role. A Technical Product Owner acts as the bridge between business development managers and development team, helps process business requirements, participates in decision making process for product development. Product owner is the general professional title in the market, however at Mascus/ RB the term Technical Product Owner is used to indicate that the product owner must have decent technical understanding about the product or the system.

2 Description of the initial situation

2.1 Analysis of current work

Scrum.org defines a product owner as the value maximizer, who is accountable for maximizing the value of a product. Being a product owner means that one is responsible for several key tasks such as “developing and explicitly communicating the Product Goal; creating and clearly communicating Product Backlog items; ordering Product Backlog items; and ensuring that the Product Backlog is transparent, visible, and understood” (Scrum.org, 2020.). On a different note, according to productmanagerhq.com, a technical product owner is someone who “manages the technical aspects of the product development” and they do this by defining product goals, product roadmap, and managing backlog. Despite that, technical skills understanding is not a mandatory requirement for the job, but the most important thing is to effectively manage the backlog and maximize the value of the product that he or she owns.

Despite being a direct employee for Ritchie Bros., my daily working life still relates and connects strongly with Mascus and its products and services. As a Technical Product Owner, I act as a liaison between engineering team and the business stakeholders. One of my key responsibilities is managing the development of two products (RBAS and Mascus marketplace). However, due to the large scope of them, management is done together with other product managers, business development managers and product owners. The extent of my work includes mostly European development of these two products. I also participate in communication flow of development team and key clients in Europe, regarding a wide range of Mascus’ products and services, such as marketplace, IMS, webshops, inspection tool, email, and export tool.

Work tasks

- Manage the product backlog and sprint backlog of two different projects: M2R and Jupiter
- Contribute to design for new Mascus marketplace (Jupiter project)
- Participate in decision making for product development for RBAS and Mascus.com
- Project the timeline and control the schedule of the two projects as well as for RBAS product in general
- Manage workload for three development team: Team Jupiter, team One and team Two and ensure that the progress is visible
- Delegate tasks for developers in team Two
- Facilitate Scrum meetings and events for teams and implement agile methodologies
- Document important business and technical information for M2R and Jupiter project
- Participate in and manage development for new features implementation and support requests for key clients in Europe

My daily work requires strong communication, project management, collaboration, product development, analytical and technical skills. Other skills required might include leadership and management, flexibility and adaptability, time management and domain knowledge. These skills are necessary for maximizing the product's business value and enhance collaboration between business stakeholders and development team.

For office skills, the job requires familiarity and successful execution of different software and tools such as all Microsoft Office tools (Words, Excel, PowerPoint, Outlook, OneNote), collaboration tools (Slack, Teams), productivity tools (PowerBI, Jira, Confluence, Stash) and other tools for technical purposes such as Git, Visual Studio.

Before working as a Technical Product Owner, my position was Production Support Manager, and maintaining communication between team Two and few clients in Europe was the most important task in my job description. Staying in this role helped me to have a general overview of the companies and some of its products that I work with. I was also able to leverage my communication and project management skills to better improve the productivity of engineers in team Two and maintaining our customer relationships. However, my knowledge about Mascus and Ritchie Bros' systems and products are limited. The understanding about heavy machinery industry as well as my technical skills were at a basic level. I did not have a deep knowledge about Mascus marketplace and RBAS IMS, and I was not aware of their business values, strategic development path or internal operations.

Therefore, being promoted to Technical Product Owner can be considered as a golden opportunity for me to grasp an even more in-depth overview of the two products specifically and the company's business activities generally. It is the chance to profoundly comprehend our business model, the industry that we are operating in, and the company's strategic development plan. With this knowledge, it could motivate myself to develop professionally and increase work quality to contribute to the company to a larger extent. To reach this goal, my plan is to sharpen not only core communication skills, but also product development and management, leadership, and technical skills. Conducting research and learning from various sources are expected methods to enhance my understanding especially about technical aspects.

Certain achievements were accomplished during my employment period at Mascus Ritchie Bros, such as the successful completion of daily tasks, the improvement for our customer service and product quality, and positive feedbacks received from colleagues. As for myself I have greatly improved my soft skills such as teamwork, project management and communication. Although I can skillfully leverage my acquired skills to a certain level in the new role, there is a lack of technical knowledge and overview comprehension of the products and services ecosystem. It can be said

that for the previous role, I can be considered a skilled professional, yet for this new role of PO, my excellence stayed at novice level. Therefore, these are the areas for improvement that I need to consider and invest time and effort to enhance. By continuously gaining insights about Mascus and Ritchie Bros services, leaning about product development, improving domain knowledge, and strengthen a wide set of soft skills, I hope to excel at my new role, contribute for the business organization and reach a new growth level in my professional development.

2.2 Interest groups

My work requires interaction with both internal and external professionals. For the external side, I interact with some key clients' representatives. However, the people I interact with the most are my co-workers who are also employees of Mascus or Ritchie Bros.

There are four main groups of people that I interact with at a daily level (Figure 1):

1. Developers (internal)
2. Business and product management professionals (internal)
3. Accounts managers and support team employees (internal)
4. Clients (external)

Besides these professionals, I communicate with other colleagues in the company, for instance the other product owners in the US team. In some situations, collaboration between us is required, however these occasions rarely happen more than once a month.

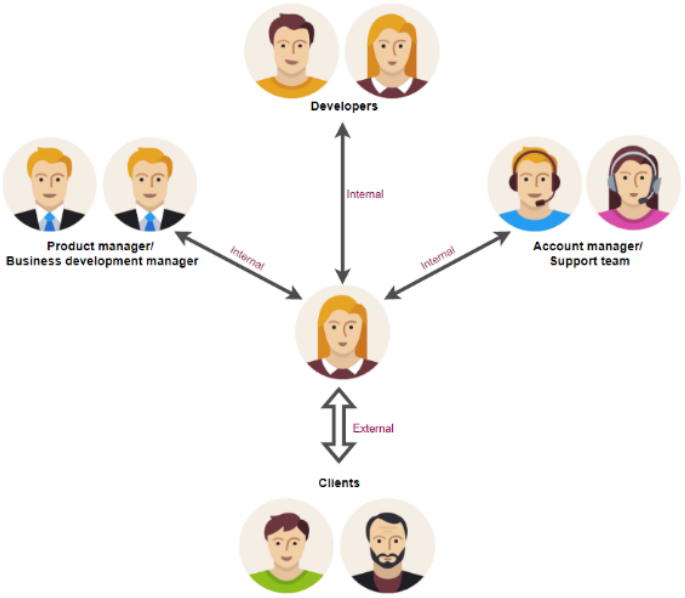

Figure 1 Interaction with different professionals at work for technical product owner

For Developers, here are three development teams that I am working closely with every day:

Jupiter team, which is responsible for the development of Jupiter project, including:

- Business development manager
- IT director
- Two senior software engineers, focusing on software architecture
- Two senior software engineers, focusing on integration and database
- Two senior software engineers, focusing on backend development
- Two software engineers, focusing on frontend development
- Software engineer, focusing on DevOps

ONE team, which is responsible for the development of M2R project and RBAS product in general, including:

- Two senior software engineers, full stack development
- QA developer, focusing on quality assurance
- EU product manager

TWO team, which is responsible for customer requests and support, including:

- Two senior software developers
- Two junior software developers
- Project support coordinator

Besides that, I also interact regularly with several other co-workers, including:

- RBAS product owner, US
- Two RBAS product manager, US
- Account managers
- Country managers/ territory managers
- Other senior managers
- Marketing specialists

2.3 Interaction situations

My daily working life involves a lot of discussion, mostly through direct messages on different collaboration tools such as Teams, Slack, emails, and meetings mostly virtually through tools like Teams, Zooms, Google Meet. Because of Covid pandemic, it is rare to have offline, face-to-face interactions.

Similarly, I am also in contact with clients and other parties through virtual channels such as emails, and online meetings on Teams and Zoom. I am also interacting with the sales team through our internal issue tracking system (Jira).

Communication with others happens at a daily level and plays a significant role in my job. Even though I was able to manage communication at a good level, there are still challenges that I face regularly. This might include the troublesome task of explaining technical issues for people without technical background (sales or marketing team members) or negotiating with account managers about timeline for certain requests while maintaining an appropriate workload for teams.

In the future, I hope to be able to develop my negotiation, coaching, and communication skills even more to benefit myself and other colleagues from it.

3 Diary entries

In this chapter, I will record the daily tasks of each of my working week as well as an analysis at the end of the week about the events that happen during the week and my perspectives on these situations and my conclusion on how that affect my professional growth.

3.1 Observation week 1

Monday 25th April

Monday is typically a busy day for me because I have at least two weekly meetings with my colleagues, and there are requests and emails from the previous Friday to be checked. The first meeting is a weekly meeting for everyone in the office where we will discuss our tasks for the week and raise any concern that we have. This week is a remarkably busy week for me, I will focus mostly on the development for the new Mascus listing site project, or Jupiter project. I also will work on the new requirements for M2R project, which is a project with the goal of encouraging users to use our product RBAS to manage their listings. Together with this, I have the developments for our RBAV tool to discuss with our senior software engineers as well as the usual requests from our customers for webshop and IMS side. During the meeting, I have discussed with our director of software engineer and our integration senior software engineer about an issue that was blocking our territory managers from demonstrating our products to users.

Soon after that meeting, we have the grooming and planning meeting for Jupiter project where I will play the role of a Technical Product Owner. The project will start this week, therefore there are a certain number of issues we need to discuss to establish our working methods and tools. We had a long but effective meeting which resulted in some interesting and helpful conclusions. We investigated the way Jira operates and agreed on a flexible working style for the team.

After that I worked on some emails and requests from sales representatives and accounts managers. There were about 10 of these requests. I managed to send them over to development team. For the ones where the information was not so clear, I replied to the senders and asked them to explain further information.

I talked to two developers to check on the status of some current implementations for our M2R project and after that I updated the status of these issues in our system accordingly. I checked some requirements for the RBAV implementation and decided to discuss with the senior software engineer who worked on this tool on Tuesday because I do not think I will manage to do it.

By the end of the day, I realized that I had had a long and effective working day, but it was still not as effective as I wanted, due to my not being able to read and understand the requirements for the

RBAV tool as I had planned. Nevertheless, I still feel happy because I discovered new things about Jira, our issue tracking system which I believed will help greatly for other projects as well. I also received some additional information about our M2R project which I personally believed helped me to be able to have a wider perspective on the project.

Tuesday 26th April

Today was a remarkably busy day for me. My tasks of the day require a large amount of discussion with different parties: our product manager, several senior developers, our quality assurance developer, our senior manager on software engineering and our support coordinator. The discussions will focus on several developments for M2R and Jupiter. M2R is a big project which will roll out for a certain part of customers located in Finland and Italy. The goal of M2R is to transfer users from current Mascus.com platform to our RBAS product, which encourages users to utilize RBAS to manage their listings instead of the traditional Mascus.com, and we want to ensure that our customers will have a smooth transition experience without feeling confused and upset about the transformation.

I started the day with an early meeting with the product manager and project support coordinator. This is a weekly meeting where we discuss current issues that our customers in Europe encounter as well as prioritizing them and brainstorm practical solutions. There are few important issues pending for key customers which were sent to the support development team, but the status was unclear, so after the meeting I need to track the progress of these issues from our tracking system and inform our support coordinator about it. The meeting went well. Because of the pressure from project coordinator and customer, I was planning to shift some issues to senior developers. However, the product manager mentioned that our senior developers should spend most of their time on the M2R project due to its critical position to the other upcoming projects of Mascus. I feel grateful that the product manager intervened in my plan on it, because sometimes following prioritization is easier said than done. I also learned a lesson to prioritize tasks in a strategically logical and effective way.

After the weekly meeting, I read some documentation about our M2R project to understand the structure and vision of the project more clearly. We have more important requirements coming in for the project, which is last-minute, therefore I need to plan the work carefully. I also read documentation on our assets valuator tool, which was built based on the database of sold assets on our platform. The tool will suggest to users a proper pricing strategy based on its data analysis. The tool’s improvement will be included in the roll out for M2R in May; therefore, it is important to do these tasks. After reading, I gained more knowledge for the project specifically and how the products in our system communicate with each other generally. I scheduled a short call with our senior

software engineer who built the logic for the asset valuator tool, and he helped me explain some technical aspects, and we discussed how the tasks can be done and who should oversee them. It was short but effective.

After that, I checked the M2R project board and talked to the other two senior developers. We projected the timeline together and estimated if we could do the tasks in the proper amount of time. We decided that we need a meeting to clarify the scope of the project with our product manager and the business development manager because as the project is ongoing, the requirements keep changing and there are more developments and user cases being discovered, which resulted in a slight confusion for the team, and it is challenging to complete the tasks if they are unclear about the requests.

I spent some time working on our support requests after that. We have some requests from several customers which came directly to me through emails, and the customers were confused due to their contact point withdrawing from their projects without their acknowledgements. I understood their concern and felt that the situation should be improved, therefore I informed our account manager for the Europe region and asked him for support. I proposed to him and gave some thoughts about streamlining the process and improving communication between our company and customers with the purpose of preventing similar situations in the future. I also checked other requests from other customers, including improving SEO (search engine optimization) content, changing UI elements, and promoting local campaigns, and two new orders for new customer solutions.

Even though I still have more tasks to do, I decided to stop working at 19:00. By the end of the day, I was exhausted but at the same time happy for having a highly productive day with a lot of tasks being crossed off the list and I learned helpful lessons. I learned that when developing new product or project, there must be a strategy for it, and even if it is challenging to follow up with the strategy, I should try to do it because losing focus and prioritization in the tasks might be problematic not only for me but for others who work in the same project with me too. I need to carefully consider what can and should be done, and what can wait. I learned that the time developers spend working on a project is important and should not be wasted, therefore the requirements should always be clear, and there should be more discussion if uncertainty arises. Additionally, in a big organization, unclear or inadequate information sometimes happens due to a lack of decent interaction and miscommunication. When it does, it should be solved properly, and action should be taken quickly enough to protect our clients from any inconvenience.

Wednesday 27th April

I started the morning by handling an urgent request from the business development manager. There was one feature that we had made for our product, but it is missing a certain functionality which required immediate action due to the feature's exposure to users in the production environment. For this situation, I have asked our most senior engineer for help. The change will simultaneously affect our US team, therefore I needed to be in contact with our North American co-workers, including our product manager, product owner, and release manager. After that, I prepared for the coming meeting for the Jupiter project. We have regular meetings on Monday and Wednesday with the intention of discussing our progress towards the project goal and addressing any problems that might cause a delay. Because the project is still in its early phase, the meeting today was spent mostly on the technical structure and setup of the project. The discussion was not simple for me to understand because of its heavy technical complexity, but I am still grateful because I acknowledged the necessary information about Jupiter.

After that, I spent time working on Jupiter and Mascus documentation. It is important to document the purpose, business value and technical structure of the project because it would serve as one of the anchors for later development stages of the project. After that, I had a meeting with our QA developer to answer his concerns and explain to him about our products. After the meeting, I started checking the new requirements for the M2R project. We needed to prepare a presentation and find out all the use cases for the users because there is a new idea for a central switch which controls what features to render and offer for users on user interface based on varied factors such as user's level and permission, location, taxonomy, and workflow configuration.

The process of making the presentation was heavily exhausting and required a lot of attention and focus, because we need to have a big picture of our system as well as different circumstances for thousands of companies and users.

I also spent about one hour checking customers' requests and requirements. I discussed with one of the clients to clarify their request on changing meta description and meta titles to serve for their SEO practices. One of the clients wants to change their subdomain on the configuration file on the server, and I processed that request together with a few more requests and orders for new solutions. I sent them to our support production developer team and tried to arrange proper workload for each of the developers to reduce the stress for them but keep the speed and quality of our customer service.

After the working day, I am happy because I have learnt a lot about our products, services, as well as our systems and how we can bring value to the clients and users.

Thursday 28th April

The focus of the day is the important meeting for M2R project, and it is also an opportunity for us as a team to discuss with each other to understand the project at a much deeper level. My goal of the day is to contemplate the system transition and reply to all the requests from account managers and support team for customers.

I started the day by checking my emails and found out that one of the tools, which is called RBAV, is not working properly in a lower environment due to a problem with SSL. SSL is an abbreviation for Secure Sockets Layer, which is a certificate that creates an encrypted connection and establishes trust. I needed to be in touch with our developers and we were able to solve the problem within a brief period and that has brought our account managers and sales representatives great benefit. After that, I was researching the Mascus system and spent a remarkable amount of time interpreting the impact of the new change requirements for the M2R project. I went to the meeting with many questions and after the long discussion where product managers and business development managers answered my question, I felt happy for broadening my knowledge not only about my company but also about general technical aspects.

I spent the afternoon carefully planning the changes and projecting the timeline for the launch to make sure that no unwilling incidents will affect or delay the rollout for customers. For this, I needed to discuss with our developers and tried to limit the number of tasks and changes that we will implement for the system. I also discussed with our QA developer for the testing plan. There is a lot of discussion to be done about the testing plan, but I am happy to see that the whole project is going well.

For the rest of the working day, I spent time answering emails from customers and helped inform our account managers about the current process of some issues for their accounts. I also delegate tasks to our developers in the support team and make sure that our customer service maintains its quality.

By the end of the day, I was able to project a more exact timeline for our M2R project. For the next day, my goal is to be able to document all the changes that we have been discussing during the day to Confluence, our company’s documentation system.

Friday 29th April

The tasks that I needed to do during Friday included documenting the knowledge about different subjects such as our Jupiter and M2R project, especially the admin tool for our Mascus platform, conducting the sprint retrospective meeting for team One and starting the new sprint work. We have discussed the days before about the workload for the upcoming sprint, therefore I included these tasks and make sure that we will be able to finish the projected features in the next three

weeks. For documenting the admin tool, I needed to spend a lot of time writing down my technical understanding about the tool. It took me about three hours including consulting for our architecture too, but I was able to scrape a draft version of the tool. Mascus has been established for more than 20 years and the admin tool is one of the most powerful and useful tools that is used by our internal users. Nevertheless, there is no official documentation about it, therefore I hope that with the help of my fellow workers, I will be able to collect the information and technical knowledge on Confluence, our widely used tool for sharing knowledge. The purpose of this is to support, aid and simplify the onboarding process and help new employees to achieve a basic level of understanding of our company and our system.

Before noon one of the senior engineers contacted me about one situation where our system was attacked by an SQL injection. SQL Injection is a type of injection attack that enables the execution of malicious SQL statements. SQL statements, or scripts, control a database server behind a web page or web application. Hackers can exploit SQL Injection vulnerabilities to bypass application security measures. Once being able to dodge the authentication and authorization of a website, attackers will be able to retrieve and manipulate the content of the entire SQL database. SQL Injection can be used to perform multiple actions with data such as add, modify, and delete records in the database (W3 Schools, n.d.). Therefore, it is extremely important to validate the input and use parameterized statements where applicable. To deal with this, we have made a request to the development team, and it was fixed during the day.

In the afternoon, I spent time going through our project status for M2R and Jupiter and checking the customers' requests again. I created several tickets into Jira based on the emails I have received and replied to the account managers. At the end of the day, I am happy that I have had a productive Friday and I was able to create some documents that will benefit a certain part of my co-workers. I am also happy to pioneer in documenting the knowledge even though it is a burdensome workload.

Weekly analysis

After one week of challenging work and a lot of communication with other people, I have learnt tremendously about Mascus and its system. I have been working at Mascus Ritchie Bros for two years but before I was mostly dealing with customer requests and working with webshops and IMS. Since I have joined M2R and Jupiter project, it has been a wonderful opportunity for me to learn and to have a big picture of our system and products and our vision for company's development. On Friday, I also became aware of the SQL injections attack, which is one technical risk for our users if the system is not efficiently protected. I have also acknowledged that in project management, there are a lot of uncertainties. Risks and uncertainties naturally occur to any project, yet

with uncertainty the management is more difficult. Risks can be anticipated. Acknowledging uncertainties only happen when they appear in the project, thus making upfront planning for them challenging. (Pmi.org, 2013).

Traditionally, risk management process consists of 5 different stages: risk identification, risk analysis, risk response and monitoring and control (Cobb, 2016). For projects using agile methodology, it can be difficult as Scrum framework specifically and other agile frameworks in general do not have formal risk management tool (Botis, 2015). Another reason for this difficulty is that for traditional project, the project manager is responsible for implementing a risk management process for the project (Northeastern University Graduate Programs, 2020). However, for Scrum framework, there is no project manager. Theoretically, agile methodology uses iterative development cycles with fast-paced adaptability to deal with arising risks and uncertainties. However, in real life, agile frameworks do not implement adequate risk management approaches (Today Software Magazine, 2015). Poor risk management might lead to severe results with delay in schedule and cost growth, thus risk management in agile processes should still receive decent attention. Nevertheless, there can be adaptations to better suit the spirit of the framework. The solution is that risk management should be applied at both levels: project level and iteration level, or at each sprint. (Botis, 2015)

According to Botis (2015), at the first level (project level), risk management should be done at a higher level considering all its requirements, timeline, and cost. In the beginning phase of the project, discussion between project team members should be carried out to identify, prioritize, analyze, and plan the solutions. In this phase, a checklist of possible risks is appreciated. This process of evaluating the risks for the whole project will then be repeated for each iteration. When a new sprint starts, in the sprint planning gathering, risk management should be conducted to evaluate the situation of the risks. Based on information of the project, the team define and analyze possible wrong outcomes in that sprint and for the whole project. This can be done based on previous iterations as well as latest information that comes along with the project. After the sprint planning meeting, the team should be aware of current risk planning of the project and risk planning for the sprint itself only.

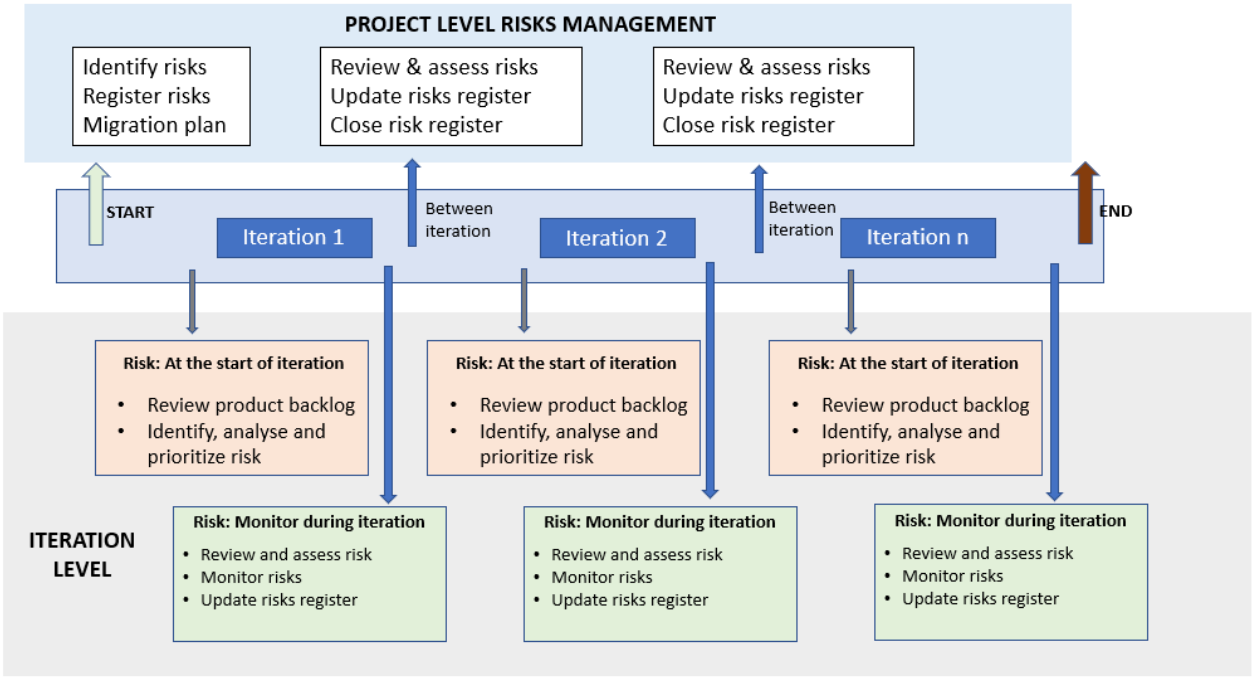

Figure 2 Monitoring Risks Efficiently. Source: https://www.todaysoftmag.com/article/1367/a-simple-approach-for-risk-management-in-scrum

During the implementation phase where Sprint occurs, these risks will be carefully monitored and dealt with should they arise. Because there are planned actions for these risks on various levels, consequences of these unpredictable occurrences are likely less severe.

With M2R project, I hope that this knowledge will let me prepare a better plan for the whole rollout. At the project level, M2R suffers from many risks, few of them are the changes of business requirements, lack of developer resources, or possible technical problems that prevents the developers from fully implementing the features for the project. On a lower level, for each sprint there is always the risk of having urgent bugs or requirements from big customers which requires immediate action. These incidents usually take a lot of bandwidth of team One, especially if they are difficult bugs. For this reason, my coping method is to always save buffer time for the team when planning the sprint. This means that I never plan for the team to work on features that will take their max capacity. Instead, I suggest having only a certain number of features which will take up to 80% of team One's capacity. The rest 20% is saved for hot fixes, urgent implementation, or if the developers are taking sick leave. The most carefully prepared and planned project would still be exposed to unexpected changes or incidents. A product owner should always be aware and prepared for possible situations and deal with them with a thoughtful and calm attitude.

Overall, it was an incredibly challenging and productive week. In the upcoming week, my plan includes clearly and precisely follow with the plan and make progress for each development team, continue documenting my knowledge to our Confluence space, and discuss more with our business manager about the development of the two projects.

3.2 Observation week 2

Monday 2nd May

The goal of this week is to start the testing process for M2R project. The project will be launched for selected clients in two regions before officially rolling out for international customers, with the pilot clients carefully selected beforehand. Therefore, we need to prepare the testing plan and schedule early before finalizing the pilot phase of the project at the end of the month.

I started the day by going through the task board for the sprint. A sprint in our team usually lasts for three weeks. The last sprint ended last Friday, and today is when the new sprint started. We had a sprint planning meeting where we projected what features could be done in the sprint. The developers were optimistic, and they wanted to do all the remaining requirements for M2R project, but I tried to add more buffer time to it. Time management is critically important and there should be time for unwanted incidents. We decided the workload for the sprint together and after that the developer started on the tasks. We also discussed the testing plan for the pilot customers with the QA developer and we put the first steps to testing process. After talking to team One about M2R, I hosted another meeting for Jupiter team and Jupiter project. Due to the project still being in environment establishment phase, we did not make considerable progress, but we were trying to define a timeline together for the project launch day. The discussion was long and informative, but at the end there was still no certain schedule being decided. There are a lot of uncertainties for the project, and it is risky to confidently secure a promised timeline for upper management, therefore we did not rush into it, but we were thinking carefully and considering all related aspects.

I spent the afternoon working on our translation keys. We need to send them to our translation agency, and because of that I need to prepare a file with certain essential phrases to be translated. To create this file, I need to access our database and check the keys. I also delegated tasks to developers in team Two and sent responses to a few account and territory managers about some issues that their clients are having and the progress of these issues.

By the end of the day, I managed to cross out all the tasks in my checklist. Tomorrow, I hope to have more time to work on our monthly report for Mascus headquarters and check the newest search filter page design of Mascus new platform.

Tuesday 3rd May

The morning started with the regular weekly support meeting where I met with the product manager and project support coordinator to discuss new developments and requirements from our big clients in Europe. Today we spent time reviewing several new solution orders from some key clients. The clients wanted special implementations which required additional research into the compatibility between our system and the third-party agency, and I needed to explain some key technical concepts for the project support coordinator. We also talked about a few current ongoing issues, where implementations are being made by team Two.

After that meeting, I came back with M2R and Jupiter project work. I checked our translation keys file and found out one urgent issue which might affect the quality of the pilot launch. The issue originated from the dissimilarity between RBAS and Mascus system. The number of languages that RBAS supports is far smaller than that of Mascus, which leads to inevitable missing translations for users who are not under the supported version of RBAS. I contacted our two senior software architects, and we consulted the other managers for solutions. We produced one solution to use a tracing tool to track which phrases and keys are used most frequently by our users. After deploying this tool to the production environment, we will be able to export a report on the most popular translation keys and send them to our translation agency. We were able to implement and deploy this tool during the day and made the announcement for related professionals working on the two projects.

I spent the rest of the day working on the KPI report for Mascus. KPI stands for Key Performance Indicator, which is a measurable value that is used to demonstrate the success of a company or organization at reaching its target (Klipfolio, 2022). Every year, business managers will decide the KPI for each solution and announce it to the sales team. This year, I initiated an idea to categorize all orders in our tracking system and based on that create KPI reports with visualization using PowerBI. Since the goal is to make 100 new dealer webshops, the figures describe current progress towards our KPI as well as the number of solutions per each country. For example, in April we received a total of 8 webshop orders with two in Finland and one in each country among China, Denmark, Germany, Netherlands, Norway and UK. This has helped us reach 46% of our KPI, indicating that we need only 54 webshops more to reach the goal (see figure 3 and figure 4). The graphs illustration was an innovative way to process things and it was warmly appreciated by the upper management. Last March I created a quarter report and today I needed to create the report for April because I did not have time to do it before. I finished the report, analyzed it, and sent my analysis to business managers as well as the internal communication department. I felt motivated and excited to be a part of my company and to contribute my energy to a more prosperous future of Mascus Ritchie Bros.

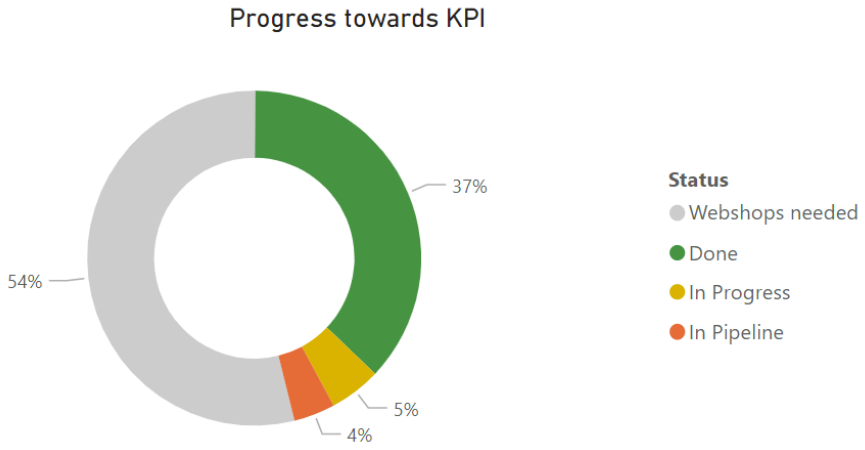

Figure 3 Progress towards KPI for Mascus webshops (April 22)

a total of 8 webshop orders with two in Finland and one in each country among China, Denmark, Germany, Netherlands, Norway, and UK

Figure 4 Number of webshops by country (April 22)

Wednesday 4th May

Wednesday was a busy day for me. Because of lifted Covid restrictions, today I decided to come to the office to have face-to-face conversations with my co-workers. I started the working day by checking emails and replying to some customers. I sent the April KPI report for business managers and internal communication department. Then I spent the morning working on investigating some issues that a big client of Mascus is having due to their complex hierarchy and organizational

structure. After researching, I proposed a solution for the customer and account manager and provided them with technical explanations to bring a clearer vision of how backend and database operate.

After that, I was involved in a profoundly technical discussion between me, a senior software architect and the new QA developer. We drew a diagram together to represent the relationship between our ecosystem, including the relationships between two solutions that Ritchie Bros offer clients: buy & sell assets and manage assets (see figure 5). The lengthy conversation has improved my knowledge of our ecosystem to a more broaden and deeper level.

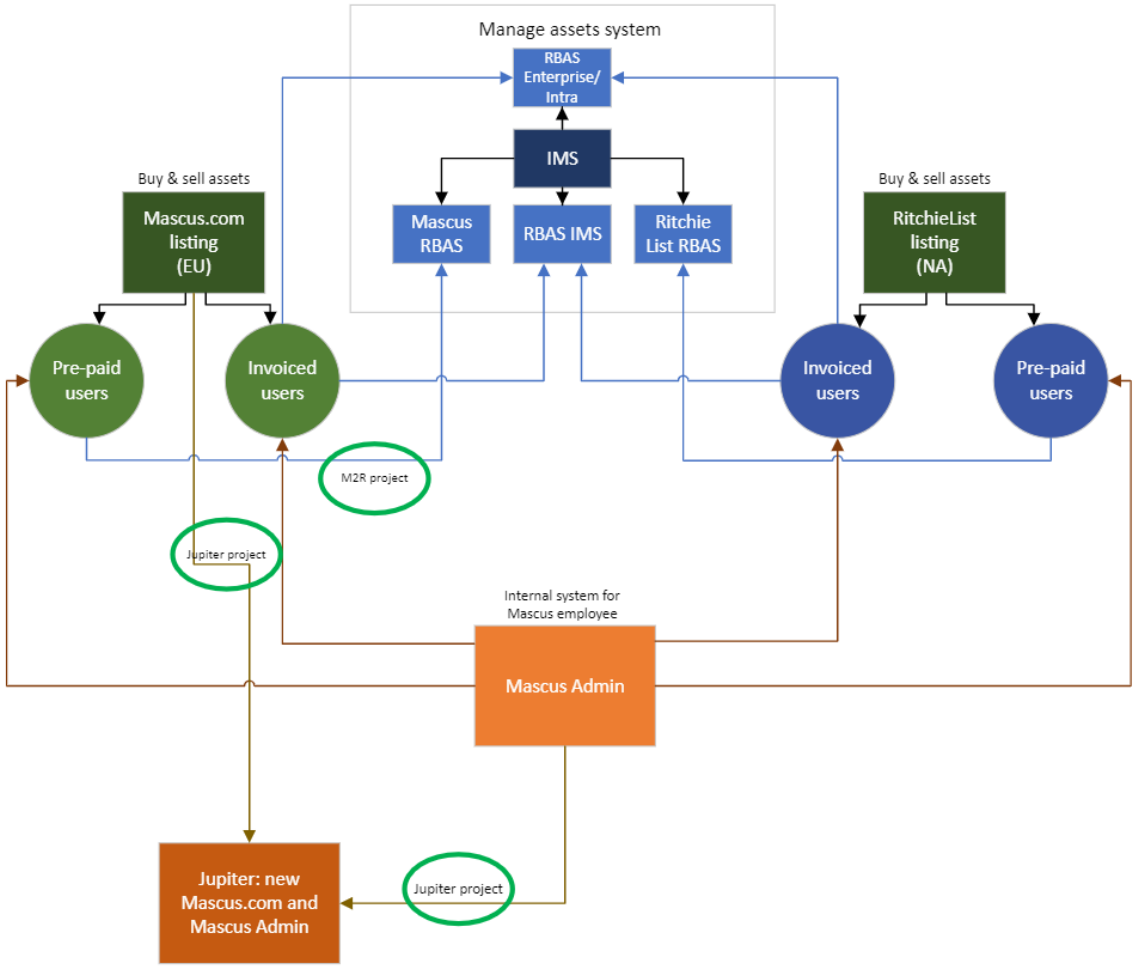

Figure 5 A diagram showing how Jupiter and M2R project integrate in Mascus and RB ecosystem

After the discussion, I continued my work to analyze the new design for Jupiter project and create some tickets in Jira for tracking purposes. I also arranged a meeting between our product manager, team One and QA developer to explain the new requirements for the M2R project which was

described earlier in previous diary entries. Together with that, I created a summary of requirements and their business purposes to provide background information for the team.

For the rest of the day, I spent several hours working on the Gantt chart for M2R project before sending it out to our team and product managers. Gantt chart is a chart combined of different bars representing separate phases in the timeline of a project. It is one of the most popular project management tools used for presenting and assisting the planning and scheduling of a project.

After finishing the chart, I have noticed that there are a few new requests from EU webshops customers and account managers, but I decided to answer them in the next day's morning because some investigation work is needed. After a long day, I am delighted to learn new things from my colleagues, and I was able to fluently use project management tools to visualize critical details about M2R project.

Thursday 5th May

My Thursday started with the estimation meeting. In Scrum, estimation is done by having the entire team during Sprint planning meeting to estimate the effort that should be spent on certain tickets or user stories. Today we had 5 tickets for 5 implementations. The purposes of these requirements are to improve user experience when they are being transitioned from Mascus.com to RBAS Business as a platform to manage their assets. Because of the dissimilarities between the two systems, it is anticipated that some users will find the UI and functionality changes confusing, and this might decrease customers' satisfaction overall. To minimize the impact of this, we need to implement these features so that users feel familiar with RBAS to a certain extent. In the meeting, senior developers, and QA developer in team One estimated the effort they would spend on the ticket, and we arranged the workload to be reasonable with the team's capacity and capability. We agreed that all 5 tickets should be done in this Sprint, and after the meeting the developers finished their current tasks and started on them immediately due to their urgency.

After the meeting, I spent about one hour checking customer requests and replying to some of them. The server deployment was done early in the morning by our developer in China, therefore I need to communicate to some account managers and sales team or customers that their requests have been made. This usually requires checking our Kanban board and talking to developers if needed. I was happy to learn that all requirements from our big clients were successfully made and updated on production environment.

In the afternoon, I worked on Jupiter project and checked new design, wrote down my opinions and my proposal for improvement. I did some research about Mascus tools called Finance calculator and Price indicator and was in contact with our senior business development manager for further

clarification. I was not able to fully comprehend his explanation, therefore I arranged a meeting with him for better understanding. Shortly after that, the QA developer contacted me for clarification between two systems and I spent the rest of the working day explaining to him at a deep level about some of our old solutions and how they are different from the current ones.

At the end of the day, I am pleased to be able to support others and to see our M2R project making progress towards the goal.

Friday 6th May

Today I fixed the timeline chart for M2R project based on the suggestions of the product manager. I added additional information about fix versions to clarify the relation between the project timeline with release cycles. Fix version is the version where a team plans to release a feature or bugfix to clients to improve its current product. It is a familiar information field for reporting, and it has proved the convenience for release planning, monitoring progress and velocity of development team (Atlassian, n.d.). M2R project creates modification within RBAS system, thus the transparency in the schedule of the project and release cycles is beneficial for both US and European teams.

While editing the Gantt chart, I had a discussion with product owner from US team and learnt that there would be a delay in the next release to production due to many unfinished quality assurance tests. The untested features might risk the reliability of RBAS system and damage the database in unexpected behaviors, therefore the release was pushed back by one week. I needed to project this information into the timeline, too.

I received a requirement from customer for implementing Pardot form handler in their webshop. Pardot is an automated marketing tool that helps dealers identify and analyze potential business leads for their business (The Drip, 2022). For Mascus, Pardot works as a third-party service provider. To have Pardot form integrated to the webshop that we built for customer, we need to implement some specific scripts. I spent about an hour reading and researching the compatibility of this solution to our system. After that I talked to the account manager about its advantages and disadvantages and included the estimation for the functionality from a senior engineer so that he could make an official proposal for the customer.

For the rest of the day, I read emails and delegated tasks for developers in team Two. I was in contact with some support coordinators about small improvements for a few customers.

Weekly analysis

After five busy but productive working days, I am happy to have a significantly deeper understanding of Mascus ecosystem. It is important for a product owner to be able to make informed decisions

for her products, therefore profound technical knowledge of the system is a solid foundation for effective and tactical decisions. I was able to visualize part of the complex system into a simple diagram. The diagram is created as a general graphic presentation without the two projects Jupiter and M2R (figure 6) and describes in a broader overview about the ecosystem of Mascus/ RB.

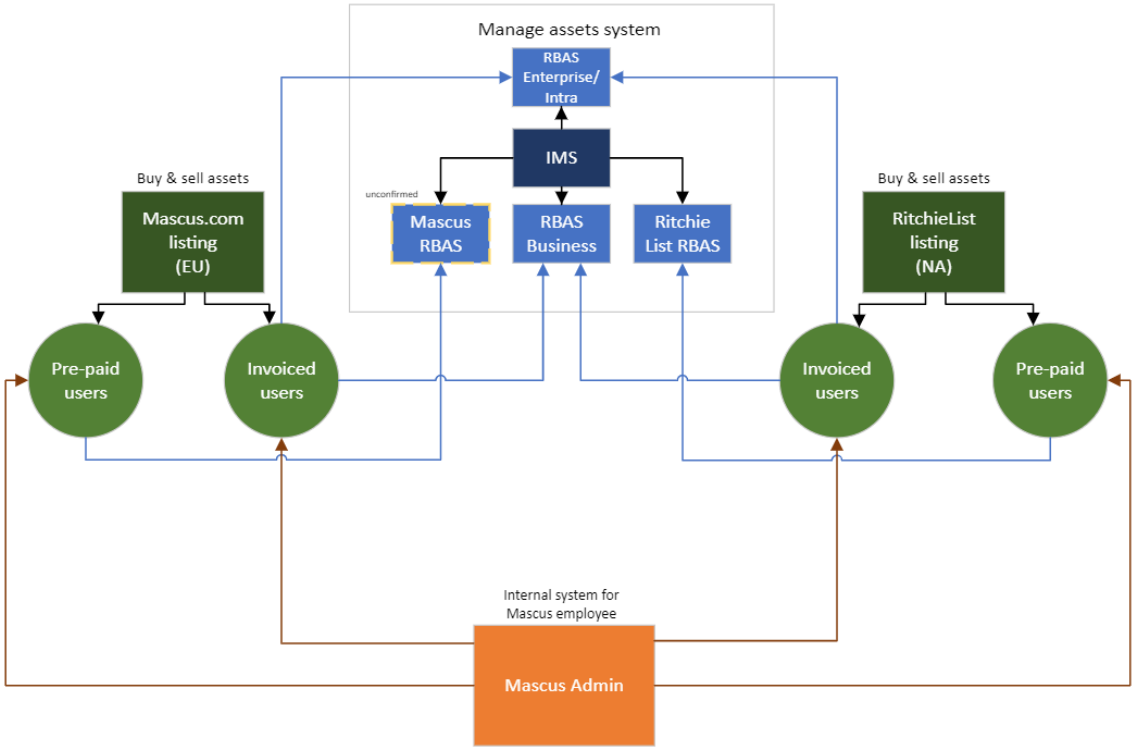

Figure 6 Mascus ecosystem from a high-level perspective

As demonstrated earlier in the daily entry of Wednesday 4th May, the M2R and Jupiter project fit in the big picture as shown in the following diagram. M2R project has a certain impact on invoiced users in Europe who are using Mascus.com as a platform for managing ads, while Jupiter will influence all customers who are using Mascus.com as a used equipment listing site in general.

As from the previous week, I learnt the importance of documentation for software development and for our company in general. Documentation serves as a company's proof of its activities or the integrity of its products (Gough and Nettleton, 2010). It describes historical actions, upcoming plans and rules and regulations in a company. Documentation indicates professionalism and acts as a helpful guidance for better performance (Indeed Career Guide, 2022). These records benefit greatly for new employees to the company by offering answers to frequent questions about the

company's system and products. Documentation can also be used when employees need a resource to bridge certain knowledge gaps (Atlassian, 2022).

Despite such great benefit, at Mascus the process of creating documentation has not been considered a prioritized task. This originated from several reasons; however, the main reason was that at the beginning of the company's formation, there was not enough personnel for the workload and the importance of documentation was not fully acknowledged. Along with time when the business expanded, system understanding got lost in transition between ex-employees and newcomers, making it a challenging task to gather all important information in one place for knowledge sharing. Seeing this, I have seized the opportunity to start the documentation process of Mascus with the purpose to keep a record of development team One, Two and team Jupiter. This week I have managed to modify our official documentation page with the newest updated information. Besides, I have also asked for input from other senior developers for technical records that explain key concepts and provide deeper understanding about Mascus' systems. I hope that in the future the documentation improves our current onboarding process. Furthermore, keeping a documentation process helps make my work more innovative and effective, and motivates me to enhance work quality on a general level.

In this week, I also had the chance to improve my skills with PowerBI in creating visuals. Furthermore, I was able to review my knowledge about project management by creating and updating the Gantt chart for M2R project. The chart described each phase (pilot, phase one, phase two, possible phase three) with its timeline projection according to the week and month of the year. (Figure 7.)

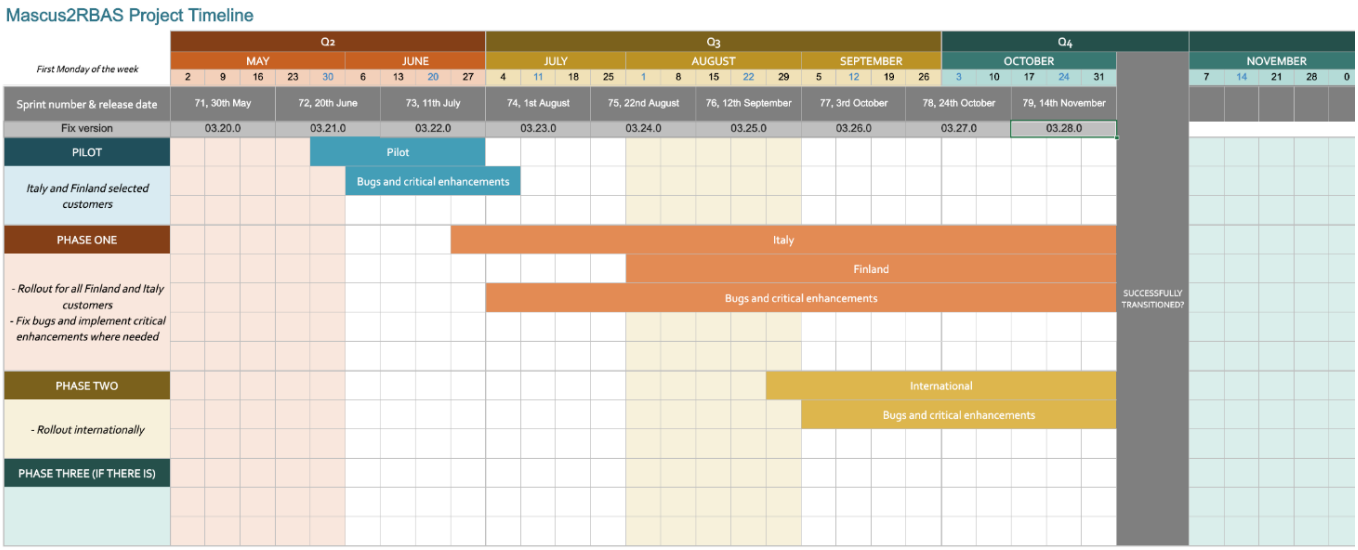

Figure 7 M2R project Gantt chart - revised version

This is an important document for the project. Leveraging the bars to demonstrate a project's estimated timeline and tasks, Gantt chart is one of the most popular project management tools for managing project schedules which was initialized by Henry Gantt more than 100 years ago (ProjectManager, 2022). It consists of a list of tasks that need to be done placed on the left side, and on the right side the estimated timeline for these tasks. Projects usually function based on a task-by-task order, meaning that one task can be started when its predecessors are completed (Hall and Johnson, 2002). When one task misses its deadline, its successor task is delayed. If this situation happens more than once, the project might suffer from catastrophic consequences (Projectsly, 2022). Therefore, schedule monitoring is critical to any projects to ensure a successful outcome. With tools like Gantt chart, team members will be able to see the task list with assignee of each task and projected deadline for each task. This will not only raise the sense of responsibility for each member but also give a better overview of the situation. For M2R project, because each task needs cooperation of the whole team, I have decided to remove that, and instead add the sprint number with related fix versions. This approach helps team members and product managers to see how the project aligns with internally defined release cycles. Nevertheless, the chart leaves rooms for improvement and I hope to update and improve the chart with more precise information along with its progress.

To conclude, M2R and Jupiter projects are making substantial progress, and for M2R when the pilot phase is coming, thus it is essential to be attentive with the schedule and prevent unwanted incidents interfering with the launch. In the next week, I hope to be able to focus more on the testing process and controlling the workflow of the project.

3.3 Observation week 3

Monday 9th May

A new week has started and today I had several meetings to talk about different topics.

In the Monday meeting, we discussed other projects delayed due to funding and personnel problems. One ambitious project with the code name Rolls Royce aims at creating one unique search tool to be effective on the whole database of all children companies of Ritchie Bros, including Mascus. I personally found it interesting and significantly complex, but because that was carried on by a separate team at Ritchie Bros headquarters, we do not know more about technology used for it or the current progress, but I believe that the tool is challenging to make and if it is successfully

implemented, it should have an impact on Mascus too. It is good to acknowledge Rolls Royce's existence.

After that, I went into Jupiter meeting where we talked about some tickets that I have created to translate the requirements of the landing page. We also briefly talked about the search filter with some logic of backend behind. Figure 8 below explained the flow from user's search action to data retrieving in backend side. The idea is that the user will choose their desired category from the landing page. For each category, there should be specific filters and search options listed for users. Therefore, when user chooses a specific category, there must be communication between frontend, backend, and database to render category-based search filters and options for users.

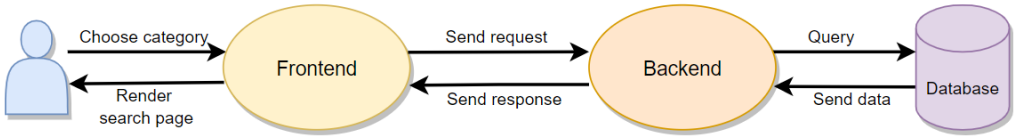

Figure 8 Search function and logic behind for Jupiter project

After this meeting, I had also another meeting with product managers for both Europe team and US team to discuss and make decision whether to change the release cycle of RBAS from 3 weeks to 2 weeks. The proposal came from European product manager because he felt that reducing the release cycle will be better in adapting to development strategy and it gives more flexibility in directing the product towards the suitable direction. We had a long discussion and despite the official decisions were not made yet, everyone felt comfortable with the change. The final decision will be made later in the week when there is the input from the Vice President of Product Management, but I as other product managers do not see any big challenges.

The last meeting of the day was about the delay for the two recent releases for RBAS and we were presented with the list of features that were not tested in this release, which lead to the postponement of production update for the product.

After the last meeting, I quickly replied to a few emails about SSL expiration for customers and gave them basic information about the compatibility of their purchased SSL certificate with our system.

Tuesday 10th May

I have a shorter day than usual because of a doctor's appointment. I worked until 13:00 only. My day is filled with three meetings.

I started the morning by the regular weekly support meeting with the product manager and project support coordinator. We discussed some customer issues and were able to conclude some of them. We talked briefly about the process of activating access to RBAS Business for some customers when they make contract with Mascus or Ritchie Bros. One of our big clients is requesting customized feature on one of the products that we offer them, and because of the great amount of development work and customization that we need to invest in, we were reconsidering our proposal.

After that, I went to another online meeting which is a weekly checkup meeting with our QA developer. In this meeting, we will discuss the current testing progress for M2R project, and I will try to answer all the questions that he has, because he is new to Mascus and he does not understand everything about our complex system yet. The meeting went well, I answered some of his questions about a feature that we built for M2R and the reasons behind the business decision for implementing the feature. Testing progress is going well in general, and I was pleased to see him making good progress and maintaining steady speed to our pilot launch.

The third meeting of the day is our whole company townhall. It is a monthly meeting to discuss Mascus's business activities and our financial position. The meeting lasted for about an hour and I got a helpful overview about Mascus's profit and loss over the last 4 weeks.

Wednesday 11th May

I spent a large part of the day being in calls with different colleagues from the sales department. One of them reported a bug which was not reproducible from our side. One account manager from United Kingdom wanted to discuss the workload that we should quote to customer based on the requirements that they have sent. Another one encountered an issue where the website created by us for customers was missing the header and footer. He could not understand why and after we had the discussion, it seemed to have originated from miscommunication when we received the order. We had a talk and despite agreeing to spend extra development hours to fix the problem, I felt like the effort that we spent in total on the webshop does not correlate with the amount of revenue gained from the business agreement.

The incident with the last account manager inspired me to contemplate how as a Product Owner I should be able to look at the problem from other people's perspectives to make sure that my understanding about the request meets their expectation of the result. Smooth internal communication is one of the factors that helps ensure great customer service. Internal communication not only

helps solve issues faster, but also keeps every team member updated and promotes teamwork. In fact, 80% of consumers consider speed as the most influential element in deciding a pleasant customer experience (Gani, 2022). This means that in my situation, I should ensure the effectiveness of internal communication to strengthen our quality of customer service.

The rest of the day was spent with our QA developer. He has been on the team for about 4 weeks, and under the pressure of keeping M2R project on track with the schedule, he needs to work hard to understand Mascus ecosystem and how the feature works as well as how to test it. Therefore, he needs a considerable amount of help, guidance and support from other people including me. We spent time discussing the current progress for testing and I was glad to see that everything was going punctually.

Our server deploy was done on Wednesday in the morning, so I also spent about 30-45 minutes of the last working hour to check all the tickets in the support board and ensure that they have the correct information such as fix versions, status, and release status.

Thursday 12th May

I started the morning with several calls from developers from team One. They needed clarification for one feature that they are working on for the M2R project and preparing for the pilot launch. I spent about one hour talking to them and explaining to them the description of the feature and mentioned the business value of it and by the end they had an even deeper understanding about the feature.

There was one question related to the M2R project, which required decision making. When we set up the project and defined the features to be released for each phase, we deliberately left modifications for homepage for phase 1 instead of pilot phase. We focused on altering the My Stock page and Add asset page because based on data gathered from Mascus user, we understood that placing a machine and managing assets are key features which generate business value for users. Therefore, during the transition process, we decided to focus on developing what matters the most to users and save the development effort on other functionalities after the pilot launch. However, in My Stock page, there are quick links which are related directly to home page, and to keep this change for My stock page we need to modify home page too. Development work is not enormous; however, it does affect the testing progress as we would have more things to test if we decided to go on with keeping the quick links in My stock page. After discussion with product manager and QA developer, I have decided to follow with the original plan which was to keep the modifications for home page for Phase 1 instead of trying to accelerate the speed of the project and potentially cause harm to testing process. I believe that transitioning users at this pilot launch is critical to the

success of the whole project, therefore rushing things without providing them useful and functional features might damage our business.

There are many support request tasks coming in from various teams, including support team, sales, product development team and direct customer. I spent most of the afternoon reading and processing them. I also created the release documentation for the server deployment happening yesterday.

Friday 13th May

During the day, I had a lot of communication with my colleagues. I discussed with our PM about Volvo, our long-term customer. There has been a small issue with their IMS, and I need more information from the PM to solve the problem or forward it to the development team. I also had conversations with developers in team One about ticket verification. Ticket verification is particularly important for developers because clear requirements and input data ensures that implementation is in the correct direction and avoids wasted time and effort caused by misunderstanding.

During the day, I also had a meeting with our QA developer and explained to him about export tool. This is one of the tools built with Mascus system. When a customer is using our services, they have multiple options to send their machine advertisements to, such as Mascus.com listing marketplace, webshops, or another customized platform based on their needs. For example, when uploading the machine details to Mascus.com platform, users from company X of ours can choose to send the machine to one of their internal equipment-selling platforms. Such solutions are called export tools, and these are different per customer because they are specifically created based on the needs of each customer.

After this I also answered some emails from customers and from customer support team. I spent about one hour after that to put the fix versions of the Jira tickets and ensure all information are up-to-date and accurate from the boards of team One and team Two.

I had a meeting with two country managers for UK region in the afternoon. They asked me about the process of some SSL tickets because they had troubles following the flow of these change requests. To my surprise, they were not aware of some changes in development team and the process of creating a Jira ticket, which have been communicated since the beginning of 2021. Nevertheless, after a year and a half, they mentioned that they heard about these changes for the first time, which explained why they have been encountering problems while creating Jira tickets in our internal system. I spent time explaining to them the reasons behind the process updates and guiding them how to use Jira tickets to track a customer’s issue. I also suggested them to create a sheet of all SSL for all of the webshops in UK region to keep track of the work.

Weekly analysis

The meeting with the country managers from UK on Friday has made me reflect on the communication flow and how changes in one department affect other departments in the company. The change mentioned in the meeting was that because of the limitation to server access, only certain developers can work on SSL installations. Before this change took place, almost all developers could have access to production server. However, our software development managers had concluded that granting access to everyone reduced the systematical characteristics of the work process. Because everyone can access directly to production server, changes can be made directly there, and the newest changes overwrite old codebase without acknowledgement from other members of the team. Eventually, the codebase became cluttered and disorganized, causing difficulties for members of development team or new developers to the team. Therefore, limiting access to the server and organizing the code quality check process was necessary. This change seemed to not have a major impact on sales department, mostly to development team. However, I learnt that it was not the case during my meeting with the managers from UK.

At our company, the change process is managed through clear and timely communication. Means of communication is determined by the scope of the change. Minor adjustment simply requires emails to all employees, whereas transformation in bigger scope calls for more complex actions, for example meetings, training sessions, or workshops. Specifically, this change was communicated to sales department in the beginning of 2021. Unfortunately, I was away from work during that period, therefore unable to take part in delivering the changes to account managers and other members from sales. My acknowledgement is that a meeting was organized following by a training session to introduce the new process in Jira and how the changes within development team take place.

Because organizational changes are challenging, multiple means of communication should be executed to ensure that these changes are transferred effectively to involved employees (Beach, 2020). Repeating the changes through several means of communication increases the visibility of the change to internal professionals and puts everyone on the same page. These changes can be communicated through meetings, town halls, emails, individual team meetings, videos, and surveys (Beach, 2020). The repetition of information about the changes leads to a more comprehensive understanding and awareness of employees of it and what kinds of actions are needed from them. The observed situation here indicated that information about this internal change was not effectively delivered to accounts managers of Mascus. A case in point is that these two country managers in the UK who were not aware of this process. This led to a negative impact on our day-to-day work life and reduced the speed of processing issues within our organization. This is a lesson for me to emphasize the importance of smooth communication, especially with changes.

When the hidden motives for change decision are being thoroughly explained, it encourages employees to have a deeper understanding for the necessity of the change, leading to better adaption to it (Lucidchart, 2020). Because of this, I have spent time explaining the new process to my colleagues, and I also stated the reason we need this change, the goals I hope to achieve with it and why this would benefit our company in the long term. They were surprised but they stated that it was understandable why this new process is needed. They asked for my help to record this explanation so it could be sent to other team members in their teams, and I was happy to help. After the meeting, I was glad that these country managers were more fluent with our Jira system as well as tickets related to SSL installations. I genuinely hope that this would improve our workflow in the future and help enhance internal relationships.

However, this incident has left me thinking about how to improve our communication in the future. Changes in one organization happen very often, if not daily. Being aware of the changes that have an impact on your daily work life is essential for any employee. For that reason, to ensure that everyone has enough information to work on, I have decided to create a short email reminding team members of sales department about this change in working process. The email reminded my colleagues about the new process and offered help for those who need it. By conversing directly, I would be able to help answer all the questions they might have. I also saved a copy of this explanation and instructions for the working process to our internal system. This is the place where everyone can look for information when they have any concern. One of my thoughts was also to inform all of my colleagues who work directly with me if there are any other changes in the future. Moreover, depending on the scope of the change, repetition of communication could happen from one to multiple times to ensure the information being delivered thoroughly.

Another thing that I have noticed during this week was that I and other team members need to spend a lot of time for our new QA developer. As a new member to the team, there are many things about Mascus system that confuses and prevents him from completing his tasks. Naturally, when there is a new team member, the team's general productivity is reduced because of the onboarding process. Senior member of the team should take time to introduce the new hire about the company, the team, and the job. This process could be stressful for both the company and the newcomer; however, this is mandatory and must be done properly to avoid losing talents – one third of new hires are gone from the company within two years after joining (Stein and Christiansen, 2010).

With that being said, onboarding usually takes time and effort. For example, explaining the meaning behind project code names, abbreviations, or the goal for each project takes time and cannot be done within one day. Besides these elements, architecture, technology, current process, and

products are also important knowledge that require more than a short period of time. On a broader level, company hierarchy, business model, and team structure might lengthen the familiarization phase even more. It is a process that must take a long period, and according to Carucci (2018), onboarding might even take up to one year. However, organizations should not hesitate in spending resources on onboarding as this is the most “vulnerable” year for the both the new hire and the company. Investing time and effort during this transition will eventually benefit the organization (Carucci, 2018). For this reason, I have become his onboarding “buddy”. This concept was introduced by Microsoft in 2019 (Klinghoffer, Young and Haspas, 2019). It is simply defined as one current employee of the company acting as the mentor who assists and answers questions that the new employee has during onboarding process. However, with this onboarding “buddy” concept, detangling the questions from a new employee is less formal compared to that from human resources or high-level employee. This benefits both the company and the newcomer in various ways, but the three most important things are providing context (for the new talent), boosting productivity, and improving new employee satisfaction (Stein and Christiansen, 2010).

Understanding this, in the situation of our new QA developer, I have tried to provide him the context by having weekly meetings with him. In this meeting, I provide context to him by introducing the team structure and responsibility, explaining the services and products from Mascus system, and talking about unspoken rules or best practices for the team. For example, I have spent time talking about Jupiter project and M2R project, what they are and what they aim at. I also mentioned the role of testing and QA developer in M2R project specifically and for Mascus generally. This has helped him to gain a deeper understanding of our company and the project that he is working on, which results in better quality of work. Moreover, he expressed in our meeting that these knowledge transfer sessions made him feel better about joining the company and reduced his stress over the project.

To conclude, it can be said that I was happy to be able to learn about our process changes and the importance of onboarding process. This reminds me again about the importance of documentation, especially for new recruits. This was something I have learned from previous weeks, but it became even clearer and more important to me after this week. With the help of documentation, the onboarding process will be even better for other new employees. In the upcoming weeks, I hope to be able to assist our QA further in his journey at our company, and be able to communicate better with new hire as well as with my colleagues. Besides, I hope to accelerate both hard skills and soft skills in my professional growth.

3.4 Observation week 4

Monday 16th May

I had two meetings in the morning, and they are both regular, recurring meetings. The first one is the weekly kickoff meeting for Helsinki office where everyone describes their goals for the week. For this week, my goal is to get all the features of M2R project thoroughly tested because this week is when the sprint ends, and we will deploy all changes made in sprint to UAT environment. It is extremely important to have the features gone through an efficient quality assurance process. Besides this, I have regular customer meetings and support requests to handle. I hope that by the end of the week our team will be able to do all the tasks delivered to us.

The second meeting was a meeting at 10:30 with Jupiter team where we discussed the most appropriate testing methods for Jupiter project. There were several options proposed by engineers in the team, such as end-to-end and unit testing, but no decisions were made because they need more time to investigate and gather data.

After lunch, I did not feel well because I had allergic reactions. Therefore, I decided to ask for the afternoon off from my manager.

Tuesday 17th May

Our weekly support meeting was rescheduled to Wednesday morning due to conflict from the product manager's meeting schedule, therefore I did not have any meeting from 9 to 10AM. However, I have several other meetings and plenty tasks to take care of.

I spent the morning checking all the emails from Friday evening until Monday evening, which I was not able to check due to my health condition the day before. There were several emails from clients where they requested my help regarding issues with their solutions. Some clients asked for SSL certificate installation for securing their domain, and some clients require change requests for their solutions. I transferred these business requirements to tickets for easy tracking in Jira, our internal issue tracking system. Specially, one client was slightly concerned about their webpage built by us, to which they addressed that the site was not fixed since last Thursday and required a meeting to understand the reasons. By using a customer-oriented attitude and strong communication skills, I was able to explain to the client about our working process and the reason behind our weekly server deployment instead of daily access to production server. The client seemed assured, and they understood our process better.

At 10:30AM I have a meeting with a big client, who has been using Mascus's products and services for more than 10 years. They have upgraded their solutions recently to a more powerful and functional system. The new system was built by developers in team One in February, nevertheless the system was not in use due to delays in the client's internal communication and organizational changes. Therefore, today is the first day where we demonstrate our product to the client, including

their general manager and several regional managers. I made a presentation about how our system works, what are their new features and what are the best practices for them to consider when they are using our solution. The presentation went well, and the client's general manager wanted to have an official guideline so that their internal users can keep the document as a manual for using the system. He also stated few questions which required me to investigate further.

At 13:00 I have a meeting with our QA developer to discuss current testing progress for M2R project and raised some questions about the current set up for users who are using Mascus.com as a platform for managing their ads. I answered these questions and explained to him about some features that we are building for RBAS Business product and the business motives behind. We agreed that everyone else in the team should be aware of the status of testing progress. Therefore, I set up a meeting with the whole team and the product manager for the next working day to better inform team member. As the deadline for the project is approaching, it is essential to keep communication flow concise and clear.

After the meeting, I was in another meeting with Mascus regional manager in France. He brought up some issues that he needs assistance with. Two of them related to data integration, which should be delegated to engineers in data integration team. The last request from him was to check the machinery category of a webshop that we built.

The problem with webshop originated from taxonomy. Taxonomy is the way one organization defines and categorizes machines into categories and subcategories. One machine can be defined with different terminologies by two separate organizations. The difference between Mascus's taxonomy and the client's taxonomy was the reason causing the problem in the webshop. Some solutions are proposed by me, but the regional manager needs to inform the client before any decision can be made.

The last meeting of the day started at 16:00 and involved several key decision makers of Mascus. The purpose of the meeting was to discuss the search results page and how we should arrange elements in the page. The arrangement should satisfy several requirements, including SEO enhancements, user friendliness, beautiful design and technically achievable. The discussion lasted for about one hour and a half and during that time I learned a lot about website design and technical knowledge from meeting participants.

Wednesday 19th May

At 9:00 in the morning I had a meeting with the product manager about a client of Mascus. We successfully delivered their global webshop a few months ago, which led to our contract with some other local business units. Currently we are working on a specific webshop for one child company.

The customer is a demanding one, therefore we spent 1 hour inspecting all details of our solution before communicating it back to the client's representative. After that, we joined the support weekly with the project support coordinator and discussed thoroughly current progress of some customers' issues and the future impact of M2R project on support team. The meeting was scheduled for Tuesday morning but was moved to Wednesday morning.

At 11:00 I have Jupiter progress meeting with Jupiter team. The project is still in its foundation stage. The development environment and project structure were set up last week, but official programming tasks are not being worked on until the completion of project setup. In addition to that, we have one more request to modify the new Mascus Admin tool. For that requirement, my task is to create few tickets for developers and follow up closely with the status of these tickets. When the meeting ended, I started with the process of creating and managing these tickets in the system right away.

At 13:00 I start working on several support requests and requirements from European customers. One of them encountered a problem while linking to our webshop. They wanted an iframe, which is a tool used to embed a document in the current HTML document (www.w3schools.com, n.d.). However, what we delivered was a webshop with header and footer crawled from their main site. This caused double headers in their site, which had an enormous impact on the website's appearance. I proposed to the client two solutions and waited for their response. After that, I checked another customer's issue with their integration, which required me to investigate our source code as well as consider input from integration team. There were several other requests where I needed to focus and read our code as well as consult senior developers before being able to communicate the information to customers.

Because Wednesday is our weekly server deployment day, I also informed some sales managers and support staff about the fixes that we implemented as requested. Then I created the documentation for the European team weekly release in Confluence, our documentation and knowledge transfer tool. I spent about 30 minutes filling in fixed versions for the tickets on the production support board.

At 15:00 I was in a meeting with team One and the product manager. The topic of the meeting was testing the progress of the M2R project. There are less than two weeks before the pilot phase, therefore every team member should be clear about the progress towards launching day and address any obstacles if they have. The meeting went well, and we had a clear picture of which features were tested on build environment and which features will be tested for the rest of the week. The QA developer also had some questions to which we answered him and explained the business relations in the background.

After the meeting, I went back to support board and investigated some tickets from sales team. After ensuring information is enough to be worked on, I delegated the tasks for developers in team Two based on their workload and experiences.

For the rest of the day, I worked on a customer's solution which was built few months ago. They had demo on Tuesday, and I worked on creating a user manual to introduce and explain how some features work in our system. The purpose of the document is to serve as guidelines for inexperienced users and help them maximize the value of the solution we built.

Thursday 19th May

In the morning I had a call with the QA developer to discuss the testing process of M2R. Today is the last day of the sprint and we usually push all the changes for RBAS Business from build environment to UAT environment. Therefore, it is critical to ensure that all development work has been properly tested in lower environments before moving them to UAT. The QA developer has expressed concern that he would not be able to test all the features. About 90% of them are tested, however the remaining 10% could not be tested within the day before the deployment.

At this point, it is important to consider the situation and make an informed decision. There are certain risks if untested changes are pushed to UAT environment, but complete testing requires more time than expected. After carefully checking the untested features, I came to conclusion that these features would take up to two days for quality assurance process. I set an urgent meeting with PM from both European and US team, the release manager, and developers from both teams. I presented my findings about the situation and proposed to delay the UAT deployment until Friday instead of Thursday as planned. Most of the participants agreed with my proposal and added that the delay would not affect heavily clients of both teams.

In the afternoon, I spent time working on the user manual for the client. During this process, I discovered that there are some issues with their IMS solution. I contacted the developers in team One and briefly explained the reason for the importance of the user manual and asked for help. However, I also stated that issues for this IMS solution are not as prioritized as defects and issues found during testing process for M2R pilot launch. I agreed with them on an estimation for a fixed timeline.

One of the things that I have been trying to improve is the mutual understanding for development work of both EU and US teams on RBAS Business. For this, I decided to arrange a meeting with the PO from the US team to discuss and brainstorm improvement methods to enhance communication on a general level.

Friday 20th May

Today was one of the busiest days of the week for me. There are several important matters that needed to be solved during the day: UAT deployment for RBAS Business, including the changes made for M2R project; fixes for issues on client's IMS; and support meeting with one country manager from one big client. He had several issues and concerns about our platforms, from Mascus.com marketplace to our IMS system and required us to discuss these with an employee at technical manager level.

I started the day by checking the mailbox and replying to several emails from clients and co-workers. At 11:00 I had a call with the QA developer. We have been working closely this week and spending a lot of time for discussion so that I could acknowledge the testing progress and he could have support from any questions or concerns. According to him, all features have been tested sufficiently, with two defects found in the building environment. These defects have been communicated with developers from team One earlier in the morning and estimated to be fixed before 14:00. The features will be tested again after 14:00 for final confirmation that everything works properly. I felt assured and delighted by the progress.

At 12:00 I had a meeting which lasted for about 1 hour. The meeting included me, the PM and project support coordinator. The coordinator found some bugs on one feature while experimenting on one client's IMS solution, and she felt concerned about the severity of these bugs, which can only be handled by developers on team One. The PM shared the same opinion and they both expressed their thoughts in the meeting and proposed that these bugs must be fixed during the day. I, on the other hand, evaluated the situation in a different way. My investigation about the bugs focuses more on the technical side and user's engagement with the feature. It can be concluded from general observation that users do not use the malfunctioning feature on a tremendous frequency. My opinion was that the feature does need fix, nevertheless it should not be prioritized because at this point there are more critical issues. We had a lively discussion which resulted in an agreement that these bugs can be fixed, however only after defects found on M2R are properly fixed.

After this meeting, I went directly to another meeting with the general manager of our big client. The client had many questions about the way our system works, and I spent an hour explaining to him the underlying technical matters as well as proposing some ways to effectively achieve his work. I also mentioned some features of Mascus, such as ad boosting, ads promoting, and company logo uploading. After the meeting, he stated that he felt thankful for having direct instructions from a technical employee and he also gave compliments for Mascus products.

I spent the next working hours checking tickets from the sprint as today is the day sprint ends and we would have UAT push. I filled in all necessary information, for example fixed versions, affected versions, and ticket status. Filling this information is important because it will help the release manager to define which features to include in the UAT deployment. At this point, the defects found in the morning for M2R project have been fixed and properly tested again. I moved them all to their correct status and checked everything carefully.

The last meeting of the day was at 19:00 with the Product Owner in the US. Because of the time difference, we must arrange it for this time. We talked about the communication methods that have been utilized between two teams and I raised my concern about inadequate transparency for strategic product development for RBAS Business. The PO assured me that by using proper labels, tags, and other data fields for a ticket in Jira system, we would be able to control any events that happen within one sprint. He also stated that releasing documentation would be useful too. I agreed with him but suggested having a recurring discussion every three weeks on Monday between two teams. The purpose of this meeting would be to clarify what features and changes each team plans to develop within the following sprint. By doing this, we would be able to increase transparency and reduce unwanted confusion for everyone, especially for QAs.

By the end of the day, when the changes for RBAS from M2R project were successfully deployed on UAT environment, I sent a message to our team One, also including the PM, to thank them for the hard work and dedication and wished everyone a good weekend.

Weekly analysis

This week has been an extremely busy but productive week. Its importance was indicated not only by the crucial testing process for M2R project, but also by many customer meetings, requirements, and team communication.

At some point during the week, one of the features of M2R was slightly adjusted in its description. The request has been changed from one way to another due to some conflicts with the current logic of the tables in the database. As a matter of fact, modifications on existing products and services sometimes cause conflicts with the current business model and technical structure of the product. Consequently, well-planned, strategic feature development is essential in maintaining successful product (Parlor, 2021). When thinking about this and what has happened during the week, I have been able to conclude that before deciding on any feature development, careful planning and consideration must be considered. More importantly, inputs of SMEs (subject matter experts) are considerably important. This process is critical to avoid duplicated or redundant work. SMEs can

be different people, such as product manager, technical specialist, or seniors who have deep knowledge of current system.

During this week, I also had to face difficulty when prioritizing tasks. The structure of two development teams One and Two are transparent and reasonable. Team One focuses on developing RBAS Business product and challenging features from clients, whereas team Two spends most of their time working with customer support requests and building new solutions for webshop or simple IMS. The challenge is that due to organizational restriction, there are certain things about support work that can only be done by team One. Thus, when there is a large amount of development work for RBAS Business, it could be troublesome to determine the order in which tasks should be completed. This situation happened on Thursday and Friday when there were bugs in the IMS that we built for one big client. Usually, this would be proceeded with the highest attention and effort. However, last week was also the critical point where we needed to finish all the testing work and fixing defects for M2R project. As a product owner who is not only involved in RBAS Business development and M2R project but also customer support management, I need to decide what should be done first. To reach this decision, I must understand the importance and urgency of each matter and prioritize the work accordingly.

According to Barnhart (2021), the first step to prioritize tasks is to write down all of them regardless of size and frequency. Listing all the tasks, from big to small one and from daily to month one, helps one understand about their actual amount of work by looking at the number of items. The next step is to determine the significance and urgency of each task. One needs to be consistent with the defined schedule and committed to completing it. Focus and determination should be spent to tackle tasks which needs the highest level of effort.

Sharing the same point of view with Barnhart, Patil (2021) agreed that the first step is to list all the tasks as individual items. However, instead of immediate consideration of their urgency and importance, Patil suggested that one should first categorize the tasks into four categories (4Ds): Do the task, Defer the task (to a later time), Delegate the task (to someone else) and Delete the task from the list. Furthermore, Patil also mentioned several other approaches to define the proper priority besides urgency and importance elements, such as **MoSCoW** method (Must have, Should have, Could have, Won't have), **Eat That Frog!** method (solve the most unwanted tasks first), or the **Pareto** principle (identify the 20% most critical tasks and prioritize them).

Using the same principle, on a more general level when it comes to product development, what could be done is to consider the effort needed versus the benefit that the work brings. This is called a prioritization matrix – see figure 9. (Nielsen Norman Group, 2018). The matrix considers the

value and the effort for the feature implementation. By doing this, it brings a clearer look on the value, impact, and necessity of the tasks in question.

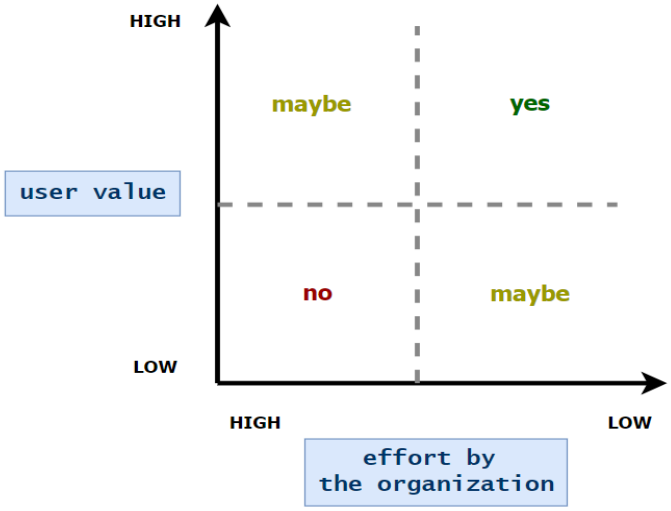

Figure 9 A prioritization matrix helps decide which tasks to prioritize based on value to user and effort by organization. Source: https://www.parlor.io/blog/product-features/

One more thing to consider when determining priority is the need for core clients, since one of the tasks that need to be prioritized came from our key clients. Multiple different clients benefit the business greatly and secure the business itself, however if the team is not able to satisfy all the clients at the time, it is better to focus on key clients (Harvard Business Review, 2022). By combining these two schools of thought, I was able to determine the order of completed tasks – we needed to focus on M2R project before running the server deployment to fix the bugs from clients as mentioned in previous diary entry. This has also improved my negotiation and communication skills. Delayed results generally have a negative impact on customer relationships; thus, it should be handled with proper means of communication and language.

This week, I also had the chance to observe a challenging situation originated from two teams developing one product. Also called cross-team collaboration, or cross-functional collaboration, this process includes the cooperation between multiple teams to reach the highest possible level of productivity (Wrike.com, 2022). It is undeniable that there are certain benefits for the business organization from this cooperation. Davey (2021) argued that cross-team collaboration helps speed up project progress with excellent results, while also increases engagement and innovation. Furthermore, it strengthens internal connection, enhances professionals' skills, and satisfies stakeholders more easily. When applying to the situation observed from my workplace, the scope of the issue is not limited in one project only, but for the whole product with multiple strategic

development projects. There are two development teams working on RBAS Business with strong technical backgrounds, experience, and strategy. They are well equipped to develop the best RBAS Business product, where one aims at maximizing product value for European customers, and one works on North American market. Due to the geographical difference, both team work on the same standard product with few localized modifications when needed. These key notations should have been communicated in common channel, however the occasional lack of proper and timely communication led to the observation this week. As Brown (2021) pointed out, smooth collaboration between teams requires the teams to empower and invest in cooperative strategies and encourage knowledge sharing and organizational learning. From here, the initial approach to solve the problem observed at my company is to strengthen mutual understanding between the two teams of RBAS IMS about what the other one is doing and how that might impact their own work. To achieve this, we need to enhance and strengthen our knowledge sharing and time investment for better collaboration. With the recurring meeting between the two POs every three weeks, I hope to increase transparency and improve our work quality. This is an approach that could have been done earlier to avoid miscommunication, which eventually costs us more time and effort and reduces work quality in general. Nevertheless, figuring out how to solve this gap in two teams' communication has helped strengthen my teamwork skill and brought a new point of view for me.

3.5 Observation week 5

Monday 23rd May

I spent the morning for two meetings: the first one is the regular weekly meeting for Helsinki office and the other one is Jupiter daily meeting. In the first regular meeting, we talked about workload for this week. My goal this week is to follow the testing process on UAT environment for M2R changes for RBAS Business. Besides, we are planning to have several clients' meetings this week to discuss strategic development in our business relationship and how to move forward with our current solutions.

In Jupiter meetings, everyone discussed testing methods again. I listened to the conversation between the engineers and learnt some interesting knowledge about testing methods and what could be the most suitable one for Jupiter project. We also mentioned the search result page. The design is ready; therefore, I need to create the tickets for developers. Creating tickets means that I need to describe the technical requirements from the user's point of view. However, I need to work closely with one of the software architects to separate the requirements for frontend and backend.

After these two meetings, I started inspecting the user manual that I have created for our big client since last week. I fixed grammar mistakes and modified the instructions to ensure that they are

clear and easy to understand. After that, I sent the user manual to the general manager from client's company and waited for feedback from their internal users.

I spent about 2 hours reading and replying to some support tickets that came during the day. There were two tickets where I needed to log in and check carefully from our Mascus admin system. After that, I delegated these tasks for developers in team Two.

After this, I started checking testing progress of M2R project features. After the UAT deployment last Friday, all the changes should be visible in the UAT environment. However, these changes are not presented there. I investigated with our senior engineer from team One and we realized that the release manager had forgotten to include some of our changes to the release. This means our QA will not be able to test these features immediately. Because of the urgency of the matter, I contacted our release manager instantly and asked for support. We worked together for about one hour to resolve these and by the end of the day, we managed to make these changes available on UAT environment for testing.

Tuesday 24th May

In the morning I discussed Volvo, one of our big clients, with the PM from the US. One of Volvo's dealers aimed at renewing their used equipment website and due to our long-term business relationship, they have made Mascus their webshop solutions provider. However, the requirements for timeline and quality are especially demanding, therefore the project needs to be completed with great attention to the schedule and general value. This led to the discussion between me and the PM, because he wanted to know team Two's speed and capability as well as consult me about different options we can offer to the customer. I provided him with suggestions for the proposal and we agreed to revisit the team's capability after I have checked their current workload.

After this, I started to check team Two workload and project their upcoming week's work. It appeared that they would be able to follow the timeline that the PM from US had asked for, but I discussed with the team lead from team Two one more time to get his insights. To my opinion, it shows respect for the team but more importantly it provided me with essential information to arrange their workload and deliver the proposal for customer more efficiently.

I spent the afternoon checking the current tickets and communicating with account managers and salespeople about the status of pending tickets. Because the weekly server deploy is on Wednesday morning, I also reminded developers in team Two to work on their requests. If the requests need to be in production by Wednesday morning, their code changes must be reviewed the day before. It is important to pay attention to the timeline of the deployment and coding review process.

For the rest of the day, I spent time reviewing tickets in the sprint of team One and checking the testing status of M2R project on UAT environment with our QA.

Wednesday 25th May

Wednesday seemed to be the most fully booked day for me this week. I had 6 meetings for the day.

In the morning we had the weekly support meeting between me, the project support coordinator and our PM. The meeting was supposed to be on Tuesday morning, but it was rescheduled due to the request of the PM. We talked about current customers' requests and new development plans for some of them. The customer support requests are not tremendously large, but there were a few ongoing developments for some key clients. One of our clients asked for some modification on their own IMS solutions, and they were under the impression that these customizations appear similarly on all platforms: Mascus marketplace, their IMS solution, and their webshop. The project coordinator had promised them these changes without consulting me, which led to a challenging situation. The reason was this customer's request was limited to only their internal platform (IMS) and their webshop – which are fully customized. However, Mascus marketplace is a platform that is used by other dealers, too. This indicates that Mascus.com has its own standard fields and configuration that cannot be changed for a specific client. However, the project coordinator was not aware of this complication, which eventually led to miscommunication with the customer. Because of this, I had explained to her technical obstacles behind and defined the estimation to what can be offered and what should be discussed internally before informing external recipients.

After this meeting, I was in another meeting with one senior key account manager from Sweden. She had troubles accessing Jira, our issue tracking system, but she had a webshop order from one of her clients. I received her request by email the day before, but some information was missing, which encouraged me to have a conversation with her directly for better transparency. She had provided me with essential information and after that meeting with her, I created the ticket immediately and sent it to one of the developers in team Two.

I then joined Jupiter daily meeting. We discussed a few ongoing tasks that need to be done for Mascus Admin to fully prepare for the changes in Jupiter project later. The project was going well with setting up, but it has not entered the busiest phase yet. However, we have agreed on the timeline for September, therefore we agreed to create a skeleton of the marketplace. For this to be done, two front-end developers in the team should collaborate efficiently.

After lunch break, I started the discussion with the QA developer for M2R project. While testing at UAT environment, he has found several defects. However, after investigating and asking for further

details, I discovered that some of them were not defects. Defects happen when software performance fails to meet the requirements or expectations (Jira Align, 2022). In these scenarios, RBAS Business inadequate performance originated from the fact that some of the code changes were not properly deployed to UAT environment. This indicated that the deployment from the release manager in the US might have encountered errors, or failure. Because of the importance of the project, I decided to send an urgent email to the US team and asked for their support. For the other defects found, I advised the QA developer to forward them to developers in team One and I would help with configuring the tickets so that they appear correctly in our Sprint board.

The next meeting was between me and two account managers for the UK region. They have had an unprecedented problem with their clients' contract type. Usually, one parent company or organization pays for its own as well as its child dealers Mascus subscriptions, service package and solutions. The contract type is defined based on the type of services that Mascus provides for the client and its child companies, but it usually is invoiced or pre-paid. For Invoiced customers, they will be billed monthly (or yearly) with a fee called maintenance fee, and they are often granted access to unlimited Mascus platform services, as well as IMS service. For pre-paid customers, they pay a certain amount of money, and this money will be deposited in their account. When they use any services, the fee for this service is subtracted from the deposited value. However, the client of these two account managers has decided to pay only for IMS solution for its own child companies. For other Mascus services, the companies must arrange and pay themselves. This causes a difference and confusion between the two systems: IMS and Mascus. The expectation of these two account managers is that the contract type defined in Mascus admin would overwrite the value of that from IMS system, however it does not work as they expected. Therefore, they have asked me to join the meeting and explain the reasons why as well as consult for practical solutions. The meeting lasted for more than 1 hour. I proposed one solution and they agreed. I created one ticket for the case and assigned it to one senior developer from team Two.

The last meeting of the day of mine was with a new sales team member from the Netherlands. He was new to Mascus and thus I gave him a brief introduction to our IT solutions and steps to take after signing a contract with any customer.

Thursday 26th May

Thursday 26th May is Ancestor's Day, a national holiday so I do not work.

Friday 27th May

I spent most of the day validating and communicating with developers and QA from team One, and the PO and the release manager from the US. During testing progress of M2R project on UAT

environment this week, besides the defects found on Wednesday, our QA developer also detected other defects. These defects needed to be fixed and included in the UAT release urgently, so that they can be tested again because the production release for RBAS happens next week. Some parts of the defects were fixed and moved to UAT on Wednesday and Thursday, but on Friday there were two more found. Friday is the last working day of the week, thus the situation required immediate reactions to serve the testing purpose.

Weekly analysis

This week had only 4 working days, therefore the working time is shorter than usual. Nevertheless, many valuable lessons are learnt during this week.

First, fulfilling customers' expectations can be challenging, and when it is not carefully managed, catastrophic consequences can happen. Few of those can be named such as profit loss, company notoriety and negative brand image (Davis, 2020). A repetition of these in the long term might eventually put the organization out of business. For this reason, fulfilling and maintaining good customer relationships is heavily prioritized and focused to ensure the company's business position and growth. This can be achieved through multiple ways, such as setting realistic expectations from the initial phase and keeping constant communication with the client through the entire process (Davis, 2020). Excelling customer service relies heavily on effective communication both internally and externally. Misinterpretations and negative impressions can also be avoided by proper communication (Ukens, 2007). This brings the topic to another point: adequate internal communication is critical in managing customer relationships and satisfaction. Only with clear, precise, and updated internal communication can the representatives have the material to manage and foster good customer relationships.

For Mascus customers, new requests from customers are usually discussed at length between the account managers and customers' representatives before they are implemented. In these meetings, understanding the technical requirements for the request is essential, because it directly impacts the proposal to customers and the development team's workload and capacity. As a person whose work serves as a bridge between business requirements and technical capability, I need to be able to demonstrate and explain which requests can be met, and which requests surpass the team's competency or the company's technology (see figure below). This information needs to be delivered to my colleagues who work directly with the clients. That is the reason meetings with co-workers such as accounts managers or project coordinators are appreciated.

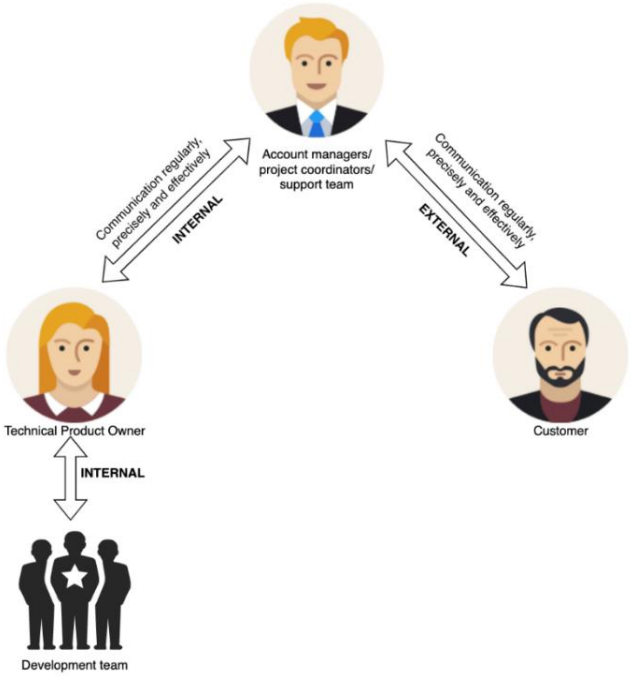

Figure 10 Communication flow to enhance customer satisfaction

During this week's meetings for example, when expressing the limitation to what can be offered to customers, I had to be cautious because I understand that limitations to what our services offer can affect our customer's experience and feelings. However, such information needs to be communicated with the account managers/ project coordinators so that they can transfer this to the customer. Similarly with the other meeting with the account manager on Wednesday, there are plenty of things to tackle because these account managers misunderstood the capabilities of Mascus system. Their misinterpretations happened through no one's fault, but simply because technological understanding is not part of their job. This led to their false promises to customers about solutions that could be applied to the situation. However, as a technical product owner, I have the essential technical knowledge and communication skills that could benefit them. By communicating with each other directly and accurately, our meeting served its purpose: to clear things up and determine what should be done to solve the problem. It also benefited both parties participating in it from a professional point of view: the account managers gained knowledge about how Mascus products cooperate with each other, and I learnt to prevent a new case that could happen and cause confusion among my colleagues. After this meeting, our internal communication was enhanced, and our clients can expect their issue to be sorted out.

During this week, I was also happy to learn about Mascus admin. While investigating client's issues, I discovered the logic behind the new Mascus admin. This logic was later confirmed by our senior software architect. The new Mascus admin is not completely built from scratch with

innovative technologies. Instead, it used the old Mascus admin platform's backend. By hosting new Mascus admin with cloud computing platform from Amazon web services, we can partly reuse the backend from the old Mascus admin platform and build a new user interface for it. To me, this is complex but informative and impressive, and I felt glad to acknowledge this fact.

Another thing that I learnt during this week is the testing methods that can be used in software development. I researched it while having a discussion with our QA developer. Testing is one of the most important tasks of a software project and it should be done even from early phases of implementation. During this phase, the software product is validated and verified to ensure that it functions as it is supposed to, and detect any bugs, errors, or faulty performances (Camacho, 2022). Testing can be done by quality assurance specialists (QA developer, QA engineer), end-users, project members or project/ product managers.

The figure below shows one perspective on different types of testing. There are several different points of view on how many types of testing there are, but as Mikhailau (2019) pointed out, testing can be categorized based on criteria such as testing aims, automation level, and formalization level. (Figure 11.)

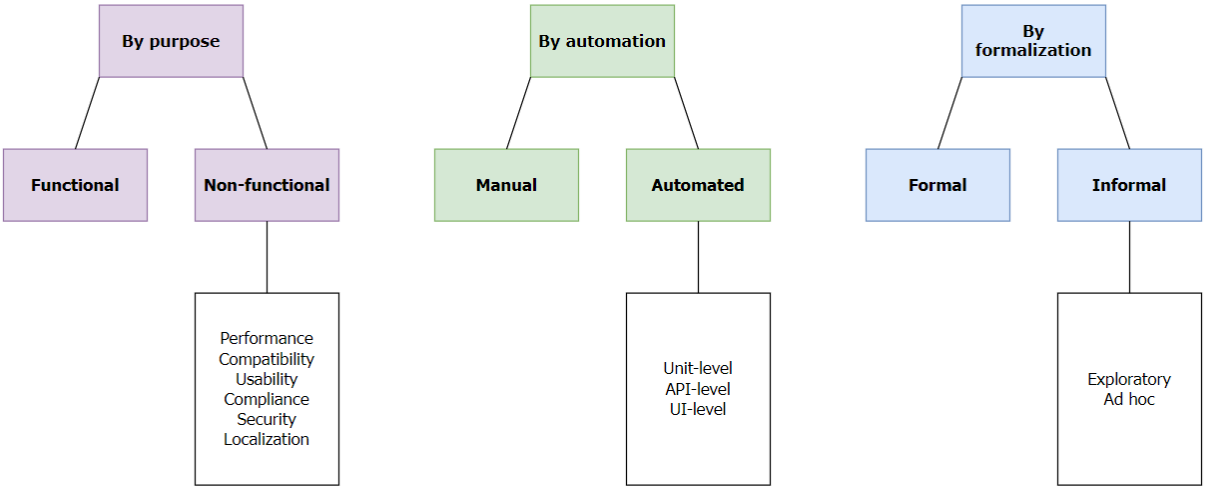

Figure 11 Types of software testing. Source: https://www.scnsoft.com/software-testing/types-of-testing

By aims, there are functional and non-functional testing. Functional testing focuses on ensuring that the features implemented for the application work as expected by initial requirement. Non-functional testing, on the other hand, focuses on other aspects of the software product which are not related to the functionality. Some of those are:

- Performance – validating software response time, reliability, and resource consumption under regular and unexpected circumstances.
- Usability – validating application's user friendliness and ensuring that the application is of easy use for end users.
- Security – ensuring that the application is safe from cyber-attacks, data leaks, and other security threats.
- Compatibility – verifying that the application performs similarly regardless of devices, operating systems, or network configurations.
- Compliance – validating an application's status related to certain standards and regulations.
- Localization – validating whether an application successfully uses information about targeted country or user's geological data to adapt with its language, currency, time settings etc. (Mikhailau, 2019)

By automation level, there can be manual testing and automated testing. Manual testing is often carried out by the quality assurance specialist, with written test cases and the testing process itself to be done by human's work. Automated testing, in contrast, is carried out not directly by human but by different testing tools and programs. This could be done in various levels: unit level, API level, or UI level. (Mikhailau, 2019)

Finally, by formalization level, there can be formal and informal testing. In formal testing, or test case-based testing, test cases are written beforehand by testers, and they are used as a compass during the test process. Based on the expectation in the test cases, testers compare reality with that and give conclusion whether the application passes the test or not. For informal testing, there can be exploratory or ad hoc testing which are less formal and do not require designed test cases or certain workflow. (Mikhailau, 2019)

Choosing testing methods for Jupiter project can be difficult because of several reasons, and the decision involves discussion between team members. During our meetings, it was suggested by one of the front-end engineers to use unit testing and later when the project has a more defined structure, we can ask for help from one QA developer in the company to perform manual testing in UAT (user acceptance test) environment. There are concerns regarding this opinion, but there have not been any decisions yet. Nevertheless, I found it interesting and informative to learn about these testing methods and it helped me to have a better understanding of the project's technical aspects. In the future, whether we choose to follow this suggestion or not, I believe it would nevertheless strengthen my knowledge of testing methods in software development.

I think this week has taught me incredibly good lessons which contribute to my professional growth in both levels: technical / domain knowledge and soft skills. For technical understanding, I learnt about testing methods for Jupiter project and the architect of Mascus admin platform. While improving my communication skills, I also learnt how to coach and guide others, especially when the other is a new worker to the company or when they lack certain technical knowledge. I believe that in the future, these skills can help me become a better, more helpful employee.

3.6 Observation week 6

Monday 30th May

As usual, my morning started with the Monday Kickoff meeting for all Mascus employees in Helsinki office. Today the meeting was longer than intended because the number of employees attending the meeting was many more than usual. I spoke about my week, which would include the release of M2R project for pilot customers, and some other client's projects.

After this meeting, I started the Jupiter Daily. I made a few tickets from the design early in the morning and we spent time breaking the tickets down to smaller tasks and subtasks for frontend and backend side.

At 11:00, I had another meeting which was also the last meeting of the day. This meeting lasted only 30 minutes and it included team One and our PM. We talked about the current testing progress of the M2R project before the launch. Everything seemed to align with the proposed timeline before. We had all the defects fixed, and they were all properly updated to UAT environment to prepare for production deployment. The pilot officially starts on 1st June, therefore, we tried to keep everything as its current condition and avoid any unnecessary modifications.

In the afternoon, I spent time checking the customer requests and replying to some of our key clients about their questions or concerns.

Tuesday 31st May

Today is the last day to check everything in the UAT environment before we have production release for RBAS Business. In the morning, I had a brief discussion with team One and the PM on our communication channel. We went through everything together and talked about one odd behavior of the interface which was discovered by the PM. We were worried that it might affect the release. The defect turned out to be a feature which was not implemented because it was not required by any of the business managers. After communicating with them, the PM announced that this feature needed to be included in this release to production for RBAS Business. However, there was not enough time to write the code, test it on both build and UAT environments, and then push

it to production by the end of the day. I proposed to the team and to the PM that the feature would be delayed until the next release to production, which is in three weeks from the current release on 1st of June, but the PM disagreed. At the end, we compromised and agreed that we would push this change to production with a dot release. A dot release, also called a point release, is a minor update to the current version of a product. It usually does not introduce major changes to the product, but rather small improvements (EasyTechJunkie, 2022). The agreement over the feature was that we would write the code for it, test it on lower environments and then upload it to production during the week.

In the afternoon, I spent several hours working on other clients' requests and emails. One of our clients encountered a problem where user permission settings prevent users from seeing specific inventory.

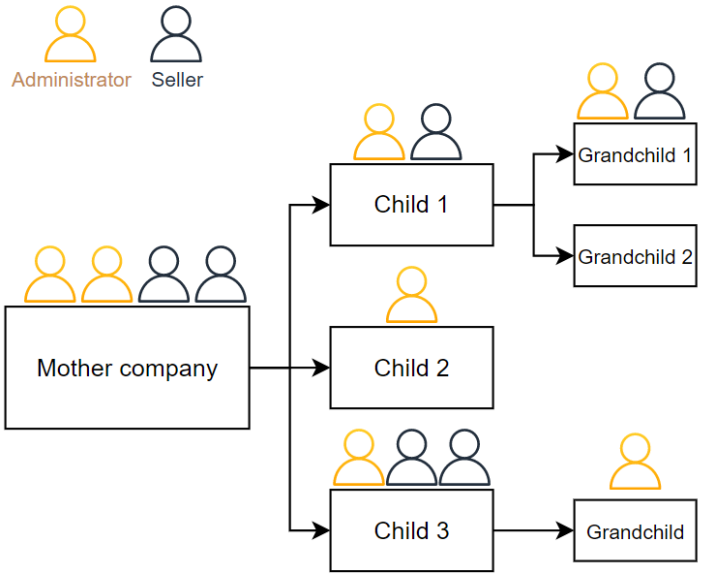

Figure 12 User visibility problem for customer with complex hierarchy

The problem is the user visibility (see figure 12 above). The default configuration is that administrator users from one level will only be able to see inventory in their own organization and their child organization. For example, administrative user in Child 1 will be able to see assets of Child 1 and Grandchild 1 and Grandchild 2, but this user will not be able to see the inventory of Child 2 and Child 3 companies and other companies under these. The business case is that for this client, users in Child 1 would like to be able to cross check all assets in other organizations (Child 2, Child 3) too. Therefore, we need to check our configuration and discover a sustainable method to allow this behavior in the system. I investigated the use case and discussed it with our senior developers

in team One and we tried a few implementations. We push the changes and wait for the update so that the implementation can be tested.

After this, I also sent some emails to sales managers. One of them asked for technical advice and I consulted them to help provide the best solution for their proposal to customers. For the problem, I proposed two technical solutions, but they cost differently in terms of development hour. For each solution, I also presented the advantages and disadvantages to help the manager understand better about the suitable choice for their client.

Wednesday 1st June

Today the production release for RBAS Business is conducted, meaning that all the changes for M2R project that we have been working on for the past few weeks are pushed to production. Early in the morning I checked the status of the pilot companies for M2R project. The Mascus server must be updated too for these changes to be shown. Further than that, there are also other tasks such as moving the workflow template - one configuration of RBAS Business - to production environment; migrating pilot companies to have access to RBAS Business, and finally rerunning the procedure for index search on production. All these tasks are essential to secure the success of the pilot launch. Only senior engineers can perform these tasks. Therefore, in the morning I was in contact with them to ensure that everything was going well and conformed with the timeline of the project. Besides, I also contacted the PMs and POs from both side US and EU to communicate with everyone about the status of our project.

At 12:15, all procedures were successfully performed, and the pilot companies were completely transferred to RBAS Business platform. I then informed marketing employees about it so they could produce marketing content. I also informed our PM, business managers and the clients who were our pilot companies. The launch was done, and we needed to continue working on small issues to prepare for the dot release.

After this, I was in a call with one sale support person. He needed help because his client did not know how to link to our address in their main site so that they could show their visitors the webshop. I gave him technical recommendations and guidance to help with the situation. After this I delegated the tasks for developers in team Two. We had translation issues for one customer. The translation issue has created a false translation for their main webshop. Instead of showing the Finnish translation for “Spare parts” (Varaosat), the site was showing “Thief parts” (Varasosat). This was an unfortunate incident and we needed quick action on it, therefore I asked for the help of one senior developer from team One and the issue was fixed. This incident has made me

reconsider the severity of misspelling words. This indicates that small mistakes can have a significant impact on customers and reduce our work quality and professionalism.

For the rest of the day, I spent time working on the Jupiter project. I gathered information and created a few tickets for front-end developers. I also created several backend tickets by breaking down the main requirements into smaller requests with the help of one senior software architect. I also configured the Kanban board of the project so that the tickets are shown in a clearer and more informative way for developers.

Thursday 2nd June

Thursday was a long and busy working day for me. I was able to resolve many problems.

I spent a large part of the day working on the KPI report for the support work and webshop solutions that we have made for May. I needed to research and use that information to fluently use PowerBI tool to create the graphs. After that, I sent these graphs to Business Managers and our PM for them to gain a perspective of our KPI for webshop solutions.

After creating and writing analysis for these graphs, I sent them to suitable audiences and went to check several support tickets and customer requests that I have not had time to investigate since yesterday. I spent about two hours working on these support requests. There are plenty of different requests and questions, ranging from various change requests to clients' webshops, to webshop orders, or IMS solution change requests and some error reports. I commented on the tickets that need more information and tried to clarify the requests to make sure developers can work on the ticket immediately. After that, I delegated these tasks to developers in team Two based on their workload and their technical skills.

In the last 30 minutes of the day, I received an announcement from the US team that the dot release for RBAS Business has been successfully deployed and the changes that we needed have been pushed to production environment. I communicated the good news to team One, our PM and the QA developer.

Friday 3rd June

As the previous days in the week were busy and I tried to resolve my tasks the days before, I had a Friday with a few simple tasks.

The sprint would reach its end in 5 days, but we still had 6 tickets in testing progress. I felt worried if we would be able to have all these tickets tested before they are pushed to UAT environment when the sprint ends. I talked to our QA developer to check the current situation. Because this

sprint aims at developing extra features for phase 1 of M2R project, it is important that all these features would be tested in build environment before they are sent to UAT. The tester (or QA developer) understood my concern and he stated a few reasons why testing progress has been decreased. We talked about few solutions to help speed up with quality assurance work and came up with a detailed plan to make sure the schedule would be tightly followed.

I was in touch with another sales support employee to discuss few requirements for customers before coming to a meeting where we discussed the new design of product card page for new Mascus.com marketplace Jupiter project. The design was sent from our interface designer agency to the business development manager. Many different comments and suggestions were made to help the designers create a better appearance for the product card.

Weekly analysis

Several weeks have passed since I started recording my daily tasks and responsibilities. Valuable lessons in different aspects have been acknowledged, which contributed greatly to the personal growth of myself as a Technical Product Owner. One thing that I have noticed during the past weeks in general and this week specifically, is how occupied a product owner/ technical product owner timeline can be. It can be seen from my meeting schedule from this week or from other weeks. Communication plays a great part in succeeding at work; thus, meetings and calls are essential to achieve this. However, a fully occupied schedule might be a source of stress for employees in the case of improper time management. The struggle to attend all the meetings and extract valuable information while still managing to finish one's job efficiently can be overwhelming for some individuals.

Time management is the process of organizing and planning one's time resource for different activities (Mindtools.com, 2017). Because the bandwidth each day is limited, time management aims at making the best possible use of available time (Managementstudyguide.com, 2015). This process can sometimes become challenging for professionals working in a corporation due to tight working and meeting schedules. There are certain benefits to it besides boosting productivity. For example, good time management help improve efficiency and reduce stress (Mindtools.com, 2017). It also enhances one's reputation in the company for being productive and reaching their goals, which

eventually leads to better growth opportunity and promotion chances. Overall, it can help with achieving both life and career goals (Mindtools.com, 2017).

Certain consequences can result from poor time management, and some of them can be severe. Kashyap (2019) has pointed out the few most profound impact listed below:

- Employee can miss deadlines and important meetings
- Result in procrastination and losing focus
- Reduce productivity and professionalism
- Negative feelings for the employees, including stress, guilt, exhaustion
- Strained relationships at work
- Work and life imbalance

It is evident that time management is difficult but crucial to the success of not only one individual but the whole organization. To sufficiently achieve excellency in this skill, the key lies in tasks prioritization, responsibilities delegation and staying committed to one schedule for the whole team (Chang, 2016). Ensuring and committing to each step among these will help accomplish work and monitor the progress. Among them, the importance of staying organized and prioritizing tasks can be considered the most tremendous. Understanding what should be prioritized and what can be done later will help employees to successfully establish an order to which they should handle their

tasks, while being able to attend important meetings and events and acknowledge crucial information.

While Change (2016) has only few rules and tips for time management, Managementstudyguide.com (2015) provides us with a more extensive list of tricks for proper allocating one's schedule. Their techniques include:

- Establish the priorities
- Ensure the timely completion of one's assignments within the given timeframe
- Distinguish and categorize important tasks and urgent tasks, and give them appropriate treatment
- Stay focused during working
- Include small breaks for the brain to recharge and prepare for more challenging tasks
- Set realistic and achievable goals
- Say no when necessary to avoid overwork oneself
- Stay punctual and organized
- Use organizer system or time management tools

For a technical product owner, the key thing lies in prioritization, and stay organized. As the bridge between business development and engineering team, product owner must deal with a large amount of communication every day. Even though working as one for a short period of time, I can observe the frequency of meetings and discussions. Some meetings are unproductive and unnecessary. I have, however, implement several techniques for time management to properly set my goals for each day based on the urgency and important of the tasks. For example, to prepare for the production release for RBAS Business on Wednesday, I have listed the tasks that must be completed before the push and organize them by their importance and by the order that they should be done. I then determine whom should be contacted and when, to make sure the release can be done without any obstacles. Looking back, I have succeeded with the release this week particularly in term of time management. Another example where I believe I implement my understanding about managing my schedule was how I arrange workload to prepare time frame for the day after the month ends for the KPI report. It could have been improved in a way if I could have prepared the graphs and reports on Tuesday 31st May and sent them out on the next day. However, I was not able to do so because Tuesday was spent for checking every features on UAT environment before the production release the next day. This resulted in the delay in the KPI report for two days (they were done on 2nd June). This signaled that more improvements can be considered in the future. The most difficult thing can be that it is sometimes challenging to stay focused while doing my work, because as I communicate with various colleagues during the day, I get

constantly new messages, emails and meeting invitations. What I have done well is to set goals for each day, prioritize them, and commit to achieve the goals. What I think can be improved are to stay focus, learn to delegate tasks, and learn to determine which meetings or tasks require my presence. In that way, I can spend my time more efficiently and work better to produce more valuable result, as well as improve the quality of communication with the team. In the long term, managing time well gives me better growth opportunity

3.7 Observation week 7

Monday 6th June

The morning started with the Weekly Kickoff for Mascus in Helsinki office. This week seemed to be a busy week for everyone. For me particularly, it is extremely busy. I have at least several meetings with clients for their feedback. Besides, I also have feedback from M2R project to proceed as well as customer requests to respond. Furthermore, the sprint will end on Thursday this week, therefore I need to communicate with team One and our QA developer to make sure that when the sprint ends all the tickets will be properly implemented and tested in build. Then I also need to create some tickets for the Jupiter team.

After the kickoff meeting, I joined Jupiter meeting. Last week was a productive week for members of Jupiter team. Everyone has completed a few tickets for the project, and we were in the process of recreating the design for Search page and Landing page. I briefly introduced to the team about the configuration changes for Jira boards that I made last week and how these changes helped the board to have better visualization.

Shortly after this meeting, I had a call with a senior developer from team One. She needed my help. In RBAS Business, we have an ellipsis menu button for a product list view in my stock page and in the product card page for each product. There was a difference between these two menus: the menu in my stock page has fewer features compared to the one in product card page. There was one request from our PM to mirror these two interfaces and features of the two menus to enhance user experience and reduce the confusion for them. However, when the senior developer checked the code base to implement it, she found out few complications which prevented this feature from being implemented in a quick way. To do this, we must spend at least one week on implementation and testing, which was not possible considering the time left for the sprint. The risk of doing the feature at the current moment was considerable. Therefore, I communicated this to the PM and after presented the arguments, my proposal was that we delay this feature for the next sprint. From a user’s point of view, initially he was not able to contemplate why this was necessary, but after I explained the situation, he had a better understanding.

After lunch break, I created several tickets for Jupiter team based on the feedback of users about Mascus admin. I configured these tickets to the correct board and assigned them to developers in the team. This process took me about one hour to one hour and 30 mins. At this point, one customer asked me about the reason why their webshop solution does not have the updated version of the header in their main site. I explained to them the reason behind, which was the TLS 1.2 and TLS 1.3 TLS is short for Transport Layer Security, one kind of security protocol in transferring data securely between the website and the servers and browsers (Internet Society, 2018). There can be different versions to it, namely 1.0, 1.1, 1.2 and the latest version 1.3 was introduced in 2018 (Jackson, 2021). The key point is that for TLS 1.2 usually we can crawl our clients' header and footer automatically, meaning whenever there are changes, the header and footer of our solution will be able to instantly copy that. For TLS 1.3, it's a newer and more secure technology (Jackson, 2021), but it also prevents partly automatic updates on the webshop due to privacy restriction. I advised the client to inform us when there are changes and informed them that Mascus constantly tries to improve our technology to be better compatible with the modern technology of TLS.

For the rest of the day, I checked the status of the tickets in sprint 72 and explained to our QA developer about a few complications that confused him during the progress of testing. After that, I set up a meeting with team One and the PM to inform them about the status of our sprint and answer questions from the team.

Tuesday 7th June

Today was an exceedingly long and busy working day for me. For today I had 4 important meetings and several calls with developers, QA developer and the PM. I also had many emails from clients and colleagues.

The morning started with the meeting at 9:00 with support team including the PM and project support coordinator. In recent days, there have been many requests from customers, and with three developers in team Two, it was challenging to keep the quality and speedy customer service. An especially important client of our company has asked for changes in the interface of their webshops. For this particular customer, we have built at least 15 solutions for their child companies, therefore there is the risk of making mistakes if we change the look of their whole 15 webshops/ solutions. Thus, these requests must be carefully processed to evaluate whether there is any technical challenges ahead. Team Two is also very occupied with support requests until the end of this week at least, therefore this can only be done later next week. This will be my task within the day or the next working day to investigate their requirements and inform them about the proper estimation. Besides this, we also discussed other bugs and small mistakes for the solution of this client. For example, one critical bug was that when the user sends the ad from their internal inventory

system (IMS) to the listing platform in North America, the ad does not appear there. For this issue, I needed to check it immediately and after that I forwarded it to a senior developer.

Last week, there was miscommunication between developers and the project coordinator about one customer's SSL certification. The problem originated from the project coordinator's lack of technical understanding about necessary files and information we need for the SSL installation. This resulted in poor customer service and reduced satisfaction, therefore I also explained to her the steps to follow when these requests from customers come in. I created a short documentation to help avoid the same situation in the future. After this, I discussed with PM and business manager about one strange behavior for Mascus customer who is using RBAS Business as they are pilot companies. Users under these companies found it confusing the way we displayed auction information section and the price section (price with or without reclaimable value added tax). We also talked about the priority for the tickets which were currently put into team One's backlog and briefly defined what should be done for the upcoming sprint.

After that I was in a meeting with team One and M2R team, including the PM and the QA developer. There were a few complications preventing the developers from implementing one ticket and me and the PM tried to help everyone to understand on a general level about these complications. The meeting lasted for about one hour and by the end of it we were able to resolve few issues. The sprint was looking promising, and we were confident that we could get all the tickets properly tested in build environment and all the bugs to be fixed.

Right after this meeting, at 14 I had one meeting with the Sale Director who oversaw one big client. The client signed a contract with us several months ago and they asked for their webshop solution to be built, and we delivered this solution on UAT environment few weeks ago. The meeting aimed at discussing feedback for the webshop. In general, the customer was satisfied, and they had only small feedback and comments for our development team.

After this call, I contacted one developer in integration team to send him two tasks from customers that only the integration team can help. For the rest of the day, I spent a lot of time reading and checking the new tickets from sales. There were 10 tickets that came to Jira system and the amount of time for investigation was considerable. By the end of the day, I was able to check and proceed with 7 tickets. For the other three tickets, I decided to do it on Wednesday as they were not urgent requests.

Wednesday 7th June

Early in the morning I had a call with a sales support person who wanted to ask few things about one webshop. We discussed the speed of delivery for this webshop, and he stated that our IT team

has had a decrease in our delivery timeline recently. I explained that the situation originated from the unusually large number of tickets. With one developer leaving the team last April, it was challenging to allocate the resources for team Two and still maintain the same quality of our customer service. After this, I spent about two hours checking the situation of all the tickets for support team (team Two). As the server deployment happened early in the morning, I needed to ensure that sales support team and account managers were informed about the situation of their customers' requests.

At 10:30 I had the Jupiter meeting. The header and footer of the new marketplace was being built by the two frontend developers in Jupiter team. For the backend side, the work was completed partly by the backend engineer, and he was working on another ticket.

For the rest of the day, I spent time working on the sprint tickets. The sprint is closing tomorrow on Thursday and we still have quite a few tickets in incorrect status. I moved them to the correct status, added information about fixed versions and left comments on the tickets that need more clarification. By the end of the day, I was able to move most of them to correct status. I also proceeded several support requests that I did not have time to check yesterday. There were five more tickets coming during the day and few of them were about the client's expired SSL certificate, so I sent these urgent requests to developers immediately.

Thursday 8th June

I delegated tasks for developers in team Two in the morning and discussed with each of the team members to understand their current workload. As I was busy with M2R and Jupiter project for the past weeks, I also asked about their inputs, especially if they see any obstacles. However, everyone seemed to focus, and they have a clear path to complete their support tasks.

As today is the last day of the sprint and all the code must be thoroughly tested in build environment and moved to correct status, I checked each ticket in the sprint very carefully. In this sprint, we were able to discover many bugs and defects, and we were able to implement some new features for M2R customers. I had a meeting with team One including two senior developers and the QA developer to clarify the status of tickets. Most of them were tested in build environment and they were put in related workflow (Ready for UAT). There were, however, a few tickets that we were still testing. I talked to team members and asked them to have a clear test plan or fix plan so that these tickets would be done by the end of the day. During the meeting, I also answered questions from the QA. He mistook two tickets with each other, and I differentiated them for him to avoid any confusion that may affect testing progress.

At 15:00, every ticket in the sprint was tested or implemented. There was one bug which related to a styling problem with a different language. The problem originated from the number of characters that each language uses for the same phrases. For example, in English the term has 10 characters, however in Italy that same word when being translated takes space of 20 characters. This caused the problem that the longer words overflow the box for it, leading to unappealing interface and bad user experience. However, as this bug was not urgent (it does not stop the system from its functionality), we decided to move it to the next sprint.

I closed the sprint and started the new sprint. I moved some issues to the freshly started sprint. As the new sprint has already started, there were few tickets selected for development. However, these were not estimated, meaning that we were not clear about the timeline estimation for these tickets. We will have an estimate meeting on Friday to talk about this.

At 15:30, I joined Mascus Town Hall. Mascus Town Hall is a conference occurring once a month. In this virtual conference, the latest updates about business activities of the company are announced, as well as other information about KPI (key performance indicators). The meeting also informs employees about the plan and current focus of different departments in Mascus. For this time, we have received good news about our performance in the first two quarters of year 2022. Although the economy is entering a rough phase with political happenings, Mascus managed to reach its target in most of the goals. However, there are two more quarters before the year ends and we understand that we need to work hard to reach our KPI this year.

After the Mascus conference which lasted about one hour, I had another Global IT Town Hall. This is the regular conference for all information technology department employees within Ritchie Bros. The conference gives updated information for IT department about Ritchie Bros' current activities and plans for developing modern technologies.

Friday 9th June

As the pilot phase of M2R project has passed, we entered a new phase 1. We had a lot of feedback and comments from customers as well as other employees in our company. Our PM has gathered all the suggestions and created a list. In the morning, team One, the PM, me and few business development managers had a meeting to evaluate the changes needed for RBAS Biz based on this list. The meeting was organized in the conference room, and we had a long discussion over the urgency and impact of each suggestion. Overall, we chose about 15 small topics to implement. On some level, this could be considered similar to a backlog grooming session for team One.

Besides this feedback, we also need to develop new features for RBAS Business called support clickwrap terms. Overall, we had 2 epics and about 30 tickets to be created in Jira. This was what I worked on for the whole of Friday afternoon. I created these tickets, put the correct information into them and then sorted them into suitable boards. There was much information needed, such as sprint number, fix version, mockup for description, impact on business value and technical background of RBAS Business, the team that will work on the ticket, etc. Because the number of tickets was large, creating them in Jira took me the whole afternoon.

Weekly analysis

During this week I have been working with Jira system for most of my time, especially on Thursday and Friday, which resulted in a deeper knowledge about Jira system on a general level. Moreover, this has led to investigation about Scrum as well as agile methodologies from a broader perspective. Not only in software development, even in other industry agile methods are becoming more favored compared to the traditional “waterfall” method. The waterfall methodology is a development process which has its process flows similarly to a waterfall. This means that the process is sequential, and each phase in a project must be completed fully before the whole team can move on to the next phase. For example, developing a mobile application with waterfall methodology requires complete analysis before a design can be worked on. Only when the design is completed and approved, development work can begin, and only after engineering team has finished developing the app, testing can be started (Adobe Communications Team, 2022). This requires an intensive effort on upfront planning. Agile methodology, on the other hand, focuses on incremental and iterative process while being flexible, with the goal to adapt to the evolving business needs and fast pace of changes of complex market requirements (Adobe Communications Team, 2022). With agile development, the release cycles are shorter, and the product is being continuously developed and modified based on the input of customers and stakeholders. This is delivered by release fast and react flexibly.

In recent years, agile methodologies have become more popular and widely used by many organizations due to its effectiveness, flexibility, and adaptability for markets. 75% of companies mentioned that accelerated software development has motivated them to switch to agile method (Petrova, 2017). There are several approaches to agile methodology, however it is without doubt that Scrum is the most popular agile framework at the moment, being leveraged by 56% of the teams (Petrova, 2017). Other frameworks can be named such as Kanban, SAFe (short for Scaled Agile Framework), XP (short for extreme programming), or Lean.

The reason for this popularity lies in the transition of how business organizations adapt with users’ needs and product development changes. For ordinary products, when one is completed, it is

delivered to user and since then serves its purpose until reaching its lifetime expectancy. However, for software products, it can and should be continuously developed to cope with everchanging business requirements (Denning, 2015). That is even more important nowadays considering rapid market changes. The need for product quality enhancement is constant to ensure that companies stay stable on the competition with their rivals (Zoric, 2020). Agile mindset allows individuals to produce value and innovation for the product with faster time-to-market, hence better satisfy users' requirements, which is crucially essential especially for developing software products. This will eventually generate more business value for the product and help secure the position of the company in the market.

On a broader viewpoint, the success of Scrum and agile also lies in the method's ideaology compared to traditional waterfall method. At the initial look, agile methodology seems to be a management process for projects and for developing products in complex environment. However, Denning (2015) argued that Scrum and agile are more than just management processes, because they constitute an ideology that differs from the common one. Contrary to the traditional bureaucracy, agile ways of working aim at a more horizontal level of contribution from individuals at work with less vertically hierarchical control (Denning, 2015). Essentially, the ability to create devotion without managerial obstacles also brings a more positive and more encouraging working environment for employees, which increases their satisfaction at work as well as their productivity level.

With these points above, implementing agile methodology is suitable for software company regardless of industry. As described in section 1.3, Mascus/ RB is not an exception for our company also focus on properly adapting agile method to our current development process. For any company product generally and for RBAS Business specifically, we aim at providing our customers and dealers with adaptive and high-quality inventory system while keeping up with the ever-changing business requirements. Another motive is to effectively increase time-to-market, which is one of the key advantages of agile methods (Why, 2021). Our company has considered multiple choices like Kanban, Scrum and SAFe. For RBAS Business product, a combination of Kanban and Scrum is in use. The reason for choosing Scrum instead of SAFe was that it is more suitable for our team size and organizational structure. Furthermore, despite the large scope of our business organization, only IT (information technology) department requires agile methodologies adoption. Other departments have different working method without essentially requiring agile or Scrum implementation.

Scrum and Scaled Agile Framework (or SAFe) are both popular approaches to implementing agile values and principles. There are certain differences between the two, and the difference can be described mostly in the scope of each framework (Knowledgehut.com, 2022). Scrum is a framework which is based on the values and principles of Agile, while SAFe is a framework which implements

Scrum at an enterprise level (Knowledgehut.com, 2022). Scrum is proven to be the most productive for small teams (under 10 people), according to Scrum.org (n.d). Some other differences between Scrum and SAFe can be seen in table below (Source: https://agilemania.com/scrum-vs-safe/)

Table 2 Scrum and SAFe differences

Criteria	Scrum	SAFe
Characteristic	Focus on independent and self-functional Scrum team, usually less than ten people.	Implementation happens for larger team, most often with different geological locations.
Scope	Team level	Whole organization
Management involvement	The team is self-organizing without major interference from middle management level	Management is involved, shown by the necessity of implementing the role of Program and Portfolio management
Core element of construction	Scrum team	Agile Release Train (ART)
Coverage	Because of the scope of its effectiveness, Scrum lacks proper retrospect and release planning at organizational level	Retrospective for enhancement and release planning are fully covered

For a technical product owner, Scrum framework knowledge is as essential as regular practicing of the agile mindset. At Mascus/ RB, I have the chance to practice agile and Scrum everyday which helps strengthen my understanding about it. From my point of view, choosing Scrum as the development framework is suitable for the current scope of the product and team structure. However, as RBAS Business grows, there might be more collaboration needed between two teams: team One and team US. If this happens, the team scope can become larger than it currently is, with different locations, leading to the possible necessity of SAFe framework. More observations and planning must be done before making decision about changing the agile framework in use, however I believe keeping an eye on the development path for RBAS Business to determine the best working process will be beneficial for both teams as well as for the business value of the product.

3.8 Observation week 8

Monday 13th June

Monday started with the kickoff meeting as usual for the whole Helsinki team. This week I focused on developing improvements for M2R projects and the support clickwrap terms, which were the two epics that I worked on last Friday. After the meeting I joined Jupiter daily meeting where we discussed the current progress of Mascus marketplace. We have an updated design for product

card; therefore, we gathered team members' feedback about the design. A few good comments were made.

After this, I started checking tickets from support board. There were 2 more tickets came in during the weekend and I needed to check them. I spent about one hour working on these tickets and communicating with sales team.

In the afternoon, I spent my whole working period to read the tickets that I created last week for the two epics. As these would be worked on this sprint, I needed to organize an estimation meeting for developers to read and understand the requirements of these tickets. The meeting was scheduled for Tuesday afternoon. The number of tickets is considerable, therefore I needed to read them carefully and noted down my comments so that we could discuss about them tomorrow in the meeting.

Tuesday 14th June

Today was a busy day with 5 meetings about different topics. At 8:30 I had a meeting with the PM and a senior developer about some issues with RBPR tool for RBAS Biz customers. RBPR is short for Ritchie Bros Price Results, a tool built to help users estimate the value of their equipment by calculating and analyzing the data of thousands of machines (Rbassetsolutions.com, 2021). For customers in M2R project, we have incorporated this tool to RBAS Business so that user could see the price of their machines when being calculated by RBPR. The modal will pop up in several places: in my stock view (where all machines are listed), in product card view (where only one machines is listed) and in add asset view (when user add asset to the system). However, there were a few problems with the implementation. The most critical issue was that there is a difference between the price displayed in my stock view and in product card for each equipment. After discussing the problem, we found one potential reason, but the senior developer needed to check the code to confirm our theory. We planned to have the issue fixed during the day in UAT environment for our QA to retest it.

After that at 9:00 I joined the support weekly meeting with the PM and the project coordinator. We talked about some customer requests. Last week one customer asked for their webshop to change the UI, and this customer has many webshop solutions. Last Wednesday I gave the estimation of development hours on this and in the meeting, I explained the reasons behind my decision for the estimation. The proposal was sent to customer, but there was no response yet.

After this I spent about one hour investigating the problem with the price result (RBPR) with the senior developer who was in the morning meeting. We confirmed our thoughts about the possible cause for the defect. The senior developer proposed to have it fixed by the end of the day, but we

would have the solution pushed to UAT environment on Wednesday. This was because the solution required the help of our US team to update the servers and there was considerable time difference between Helsinki and Chicago.

During the day I was able to tackle one problem. RBAS Business encountered a lot of speed issues which affect the performance of the system. This has a considerable impact on sales team, especially when they show the demo of RBAS Business to potential customers. For that reason, I talked to our IT Director and senior software architect to understand the basic assumption about this situation. I proposed to them that this issue must be worked on with high priority, especially when new customers from M2R project start to use the platform as their managing system. The final decision was that one of our senior server and database engineers will start working on it as soon as possible.

After this, I spent about one hour preparing for the sprint planning meeting. I read all the tickets and made sure their descriptions were detailed and informative.

At 13 we have the planning meeting. There were many things to discuss, but we focused on critical bugs and two epics. The first one is support terms and agreements for users when they log in to RBAS Business, and the other one is new development and features for M2R project at phase 2. We went through the tickets one by one, but because the timeframe was not enough, we decided to continue tomorrow.

At 14:00 I have a meeting with marketing department, business development manager, our developers in Jupiter team and the designer for the new Mascus.com marketplace. We talked about the new design for product card, and it was helpful and interesting for me to see all inputs from different professionals on the same product. We made a lot of good comments and suggestions for interface so the designer can improve the current layout.

The last meeting of the day was a meeting with our QA developer. We discussed testing progress in UAT for M2R project and I answered some questions of his about the tickets in epic that we talked about in the previous planning meeting. After this, I spent about one hour and 30 minutes checking our support work, proceeding with new tickets, and delegating them for developers.

Wednesday 15th June

The focus of today was the sprint planning continuation and new design of Mascus marketplace. In the sprint planning, we discussed and estimated tickets that we were not able to go through with our previous planning meeting. Most of them concentrated on improvements for RBAS Business to better serve customers migrating from Mascus.com platform. The requirements for most of the

tickets were simple and feasible. However, one of them described the need to add registration number of the vehicle into one of the hits for free text search in RBAS Business. This one required change to our established procedure to include the field registration number to fields that can be found from free text search. Another ticket described the request to change default sorting of asset to created date instead of brand. This change affects globally, meaning that not only for RBAS Business users in Europe, but also for those who reside in the US or for RBAS Enterprise customers. Therefore, it must be communicated with the US team to ensure transparency and unity between two teams, and the PM would oversee this.

For the new design of Mascus marketplace, we discussed the balance between technology, user experience and SEO good practices. Achieving all of these to the full extent at the same time is not possible, therefore we need to reach a compromise to ensure that the new platform will be fast, reliable, but still have good exposure to search engines without sacrificing quality of coding. Few decisions regarding how we need to program the site were made, but not everyone in the team agreed with proposed solutions and more discussions needed to be conducted.

As today was Wednesday, our server deploy was successfully executed by our senior developer in the early morning. For the rest of the day after other tasks, I checked our board, filled in necessary information, and communicated with sales and developers about changes that were made.

Thursday 16th June

As the final design for product card for new Mascus.com marketplace has been mostly decided, I started to create some tickets for Jupiter team in Jira tracking system. This took me plenty of time because the tickets needed to be written carefully and with adequate details. Besides, the tickets needed to be configured in a specific way to ensure that they would flow to the correct board with appropriate workflow. For each ticket, images and mockup were attached and clearly defined for both desktop and mobile view. I worked on this for the whole morning but did not finish writing all the tickets. I spent time checking more important notes for Jupiter project from business development manager from email. I noted some down and discussed with Jupiter team through our communication channel.

In the afternoon, I worked on customer projects and few tickets for M2R project. Two sales support specialists needed to consult me for technical matters about clients' webshops, therefore I had two separate calls with each of them. As usual, I tried to provide my colleagues with detailed information so they could create proposals and send them to clients.

Friday 17th June

As there were many tickets from new product card, I started writing them in the morning. This process took me few hours because the number of tickets is big and for each ticket, I need to write a clear, well-defined ticket with adequate information so that developers can work on it. In the afternoon, I created a Gantt chart to show the progress of Jupiter project. Besides, I created a presentation to show the expected timeline for Jupiter project to present in the road-map meeting with business managers and vice presidents of the company next week.

After having done with these, one senior developer contacted me about an issue in the team. There have been conflicts between her and one of the project support colleagues. The communication between the two has not been effective, which has caused stress for the senior developer because she felt that her working hours are not being spent wisely. I talked to her and encouraged honest discussion between her and the project coordinator. Another suggestion was I recommended her to talk to her direct manager.

Weekly analysis

This week there are two lessons for me which I believe help me widen my knowledge a lot.

The first lesson relates to how to build a product that is sustainable and able to be scaled up. This insight occurred to me during our discussion about RBAS Business. When the product was firstly built in 2018-2019, it was not designed to be used by several thousand clients. The initial intention was to build a solution which aims for modest or low user activity. This led to the technical set up that for each client, there is at least one user and there is no limit for the maximum number of users that can access the platform. This is not an uncommon situation. In early development stages, development team tends to overlook the importance of product scalability and focuses on the functionality and the speed. This can affect proper research for product potential and interfere with prioritizing a strategy for long term growth. (Acropolium.com, 2022). This seemed to be the situation with RBAS Business. The product was built to quickly meet user needs and user base growth estimation was not precisely made. Because of wrong anticipation, it does not own a stably strong infrastructure which can endure the access of more than 4000 clients and more than 10000 users. This indicates that RBAS Business lacks scalability, or application scalability. In software development, scalability of a software system means its ability to serve demand that significantly varies in size and intensity (IntexSoft, 2022). Sharing the same view, Fanchi (2022) stated that application scalability means one software product’s capability to deal with growth in user base and handling more users when the business expands. The application must be able to allow access from more users without losing its stability, speed, or security. This brings several benefits in various ways. Preparing a product for its future growth state helps a smooth transition in business size while ensuring that current requirements are met without non-essential complications (Conceptatech.com,

2022). Scalability allows the product to grow and generate more revenue while maintaining the product quality and customer satisfaction. Without a stable infrastructure, when user growth exceeds a product's capability, the product is no longer able to consistently provide value for users which eventually affects their experience and loyalty (Volchek, 2021).

With this understanding, it can be said that scalability should have been one of the key features of RBAS Business. Nevertheless, RBAS Business evidently did not possess strong scalability potential, because only about 4 years after the product was released, our user base has exceeded the capacity of the app. This indicates room for improvement in building other products in the future. To build and maintain a stable and valuable product, scalability should be made one of the top priorities at the early stages. As stated above, it enhances user experience, saves money, provide better performance, and can handle a surge in user activity. It also ensures the long-term growth for the product. To achieve this characteristic, there are different opinions about what can be done. According to Hidden Brains (2021), building large scale application needs several practices, such as choosing the proper technology to go with scalability, use asynchronous communication, automate everything (including deployment and testing) to run everything continuously, etc. These practices are practically useful, but on a more detailed level of software development. From a more general perspective, Adam (2020) has pointed out that the four initial steps for establishing scalability can be: choosing the right technology stack, picking a well-designed software architecture, setting up solid infrastructure and streamlining software deployment. Volchek (2021) seemed to share the same point of view with both sources above, stating that choosing the right architecture and choosing the right framework are critical to develop a scalable product. The former can be done with considering microservices and serverless while the latter discussed framework such as Node.js.

For RBAS Business, the temporary solution was to optimize the code to make the application run faster and consider moving the host of the product to cloud, which is also one of the suggestions from Volcheck (2021) which was stated above. Code optimization can be executed and tested while investigation for cloud possibility is being conducted. Nevertheless, in the long term, further discussion must be organized with input from senior engineers with deep understanding about the system. In situation like this, effective collaboration and timely decision making are critical to the development of the product. Furthermore, to define the right path for scaling, not only engineering team but also business professionals' perspectives are considered. In this scenario, the role of a product owner is vital as he/ she serves as the bridge between business value and engineer principles (Productplan.com, 2021). As for me, I see this as an opportunity to grow and learn. By initiating discussion about scaling up the technological capacity of RBAS Business, I believe I will help

maximize the value of this product to our clients and support cooperation between development team and other product managers.

Another thing that I have learnt during this week was how to resolve conflict with your colleagues. Conflict is not a strange concept for people, regardless in daily life or in professional life. However, unlike with daily life conflicts, workplace conflicts cause a deeper level of frustration and anger. Once conflict happens, it can damage team synergy and cause challenges in collaboration between team members, or even demotivation (Hotjar.com, 2022). Maintaining team harmony, therefore, plays an important role as it does not only keep the team members' motivation but also ensures that the productivity level remain stable. However, this task can be challenging in working culture nowadays. With the diversity of people and culture in professional environment, miscommunications and conflicts can happen anytime for various reasons (Cloud, 2021). With multiple personalities at work, keeping the overall harmony requires a certain amount of effort. Myatt (2015) has stated that two major causes for conflicts at work are communication and emotions. When this happens, it must be dealt with professionalism and calm attitude. Steps to follow to resolve conflicts can be: clarify the source of conflict, talk to each other directly in a safe and private place, listen actively and carefully, identify agreements and disagreements, find ways to meet the common goal, determine each other's responsibility in the resolution and evaluate the progress (Cloud, 2021).

Despite not being the one in the conflict directly, I must pay attention to the conflict because it affects the quality of work and reduce team spirit. For the situation between the senior developer and the project coordinator, the issue originated from inefficient communication. The project coordinator wanted to have some work done but she is not available when the senior developer needs more information to complete the task. This process repeats multiple times, leading to the developer feeling that her time are not being valued and appreciated and she felt demotivated to work on the task. In this case I have advised the senior developer to talk to the project coordinator directly and reach out to her direct manager to ask for advice. During this process of resolving the conflict, they must be respectful, patient, and motivated to solve the conflict. My plan is to contact the project coordinator if needed and try to help arrange a meeting between them in order to solve the problem and avoid repeating the same situation in the future.

From what I can observe, I also reflected on myself and my role as a technical product owner. To my understanding, this conflict can be classified as both a task conflict and a relationship conflict. A task conflict occurs when there are difficulties in reaching the final accomplishment as a team, and a relationship conflict happens due to emotional driven differences, or challenges in achieving interpersonal common grounds (Hotjar.com, 2022). The senior developer felt irritated as she did not

have enough information but cannot reach the project coordinator, while the project coordinator needed urgent task but she was not available to provide further details. From this point, frustration was formed, and negative emotions affected the final result of the task. Since the conflict can have major impact on the team harmony and productivity, one can encourage the team synergy by suggesting open discussion and honest feedbacks (Hotjar.com, 2022). As for me, I also understand that to prevent this situation to happen in the future between me and other colleagues, clear and timely communication is vital. It is evident that an engineer should be equipped with detailed and adequate information before he/ she can complete the task. To save engineering team members' time, this factor should be considered when the request is being sent out. This does not only help prevent similar conflict, but also enhance the team harmony and efficiency.

4 Discussion

The observation period for this thesis happened for two months and was finished by July 2022, but discussion and completion of the thesis was completed few months later in the same year. The reason for this was the summer period as well as problems with health conditions of the author and modification of the thesis. However, delay in completion does not affect the fact that I have learnt a tremendously large amount of knowledge in various fields, and I have developed myself from both soft skills and technical skills.

For technical skills, there can be two major aspects. The first is my knowledge of Mascus and Ritchie Bros' products and systems, and the second is technical knowledge from a general point of view.

As a large organization, we provide a wide range of products, services, and solutions for clients: from simple webshops to financial services for big dealers. In the beginning when I started writing the thesis, I had very limited understanding about systems such as Mascus Admin and RBAS solution. Furthermore, I was not able to recognize the connections between these products and services from a broader perspective. However, after the thesis, not only did I gain significant amount of knowledge about Mascus Admin and RBAS, I also deeply understand how they collaborate with each other and with other products and services of Mascus and RB, such as the marketplace Mascus.com. Understanding the system, different products and how they interact with each other has helped me to visualize, correlate and learn about the company's vision and mission. For each product, I have also learned their limitations and their capabilities. With insights into the ecosystem of Mascus and Ritchie Bros, I can provide my coworkers and our clients with more precise information and advice. This comprehension has also enabled me to learn and understand to a greater level about my work and the significance of it. Furthermore, I also gained knowledge about my colleagues' work and how that and my work can contribute to the success and growth of our company.

For general technical skills, I have acknowledged important lessons for project management, product development, agile methodologies, and improved my knowledge about .NET framework and C# programming languages, and PowerBI tool.

From project management prospect, there are different phases in managing a project, from initiating, planning, to executing and closing. Each phase has its own impact on the final outcome of the project, and what I have concluded is that careful planning and precise monitoring play a vital role in ensuring the success of the project. During several incidents while managing M2R project, I was able to see how a project runs in real life and how changes commonly happen during the execution

process. Dealing with these changes has sharpened my knowledge about the importance of risk management and how effective collaboration can reduce the impact of unwanted changes.

As for product development, understanding customer's needs and defining a product strategy are two of the things I learnt. Most of the products nowadays use customer-centric approaches for building their product strategy and this has been used also at Mascus and RB. Prioritizing customers' needs while balancing between the business requirements and technical challenges can be complex. It is challenging for a product owner to maximize the value of the product, but it is one of the important things that I learnt during the past 8 weeks and will continue to learn every day. By repeatedly implementing Scrum framework, I also became more fluent in agile methodologies and was able to adopt a more flexible, agile mindset. My experience while working as a Technical Product Owner has helped me understand the necessity of being adaptive, intuitive, and customer-oriented in an evolving software development industry.

There is also other helpful knowledge that I have gained during writing the thesis, such as different testing methods and how choosing the right testing method can also contribute to the success of the project or the feature rollout. Other understandings, for example taking part in the onboarding process of the quality assurance tester, was insightful for me and has helped me to become a better teammate and better employee in general. Deeper understanding about Jira system is also one of the advantages during working as a Technical Product Owner for me. Jira is one of the most popular tools serve the issue tracking purposes, and Jira has many powerful features. Familiarizing myself with the functions and the interfaces of Jira not only improved my daily work but also benefited my future career growth.

For programming languages, I did not improve greatly as my daily work does not require coding. However, by discussing our system's architecture with our software engineers on a daily basis, I still broadened my knowledge about .NET and C# language. My plan for the future is to continue learning and developing my technical skills to have better insights and decisions.

As for soft skills, one of the key lessons is the significant importance of communication and collaboration when working as a team. It goes without saying that communication between team members helps accelerate productivity and team spirit, but it has an even more immense impact when dealing with difficult times when executing the project. Under chaotic conditions, stress and anxiety can be emotional obstacles to defining the solution. For a large corporation, it can be even more difficult to ensure the team stays informed due to hierarchy and organizational structures. Often in these situations, clear, timely and concise communication between business managers, developers and product managers is the key to resolving the challenges and leading the team towards the best paths. As a Technical Product Owner, I am aware of the impact of facilitating proper

communication between team members and enhancing cooperation between technical and business sides. This acknowledgement has been utilized to face some challenges during the M2R project.

Some other skills that I have learnt during this past 8 weeks can be named such as conflict management, dealing with stress and large workload and coaching other people. Working as a team sometimes requires adjustments and compromise to avoid conflicts and balance the harmony between teammates. Knowing how to express my ideas without offending others while keeping an open-minded, solution-oriented attitude has been one of the skills that I had the chance to sharpen while working in Mascus. As a result, I believe I have made progress in improving my negotiating skills and making compromises for achieving the goal without sacrificing the synergy of the team. When the teamwork quality is improved, I also manage stress and exceptionally large workloads better because I understand more precisely from the perspectives of my teammates. My coaching skill, on the other hand, was only slightly improved and mostly during the onboarding process for our quality assurance specialist. However, it was truly one of the most pleasant experiences for me as it improved my patience and my ability to express ideas and systems. It is one of the skills that I hope to advance later in my career growth as a product development professional.

There are plenty of new approaches and methods that I have used during the time writing my thesis. Labeling the tickets in Jira system was one of the ways that I tried to innovate and improve my work. Using PowerBI to create charts and graphs for the KPI report was another approach that I wanted to use to contribute to my team and company. I have also observed and thought about ways to improve communication and enhance collaboration in the team and between teams to sales managers or product managers. While writing a diary-based thesis, what I have noticed is that keeping track of daily work builds up an excellent resource of information on incidents, systems relations. It also allows troubleshooting problems and serves as an insightful knowledge base that can be utilized to onboard new members of the team. Furthermore, it is also a great way to reflect on one's own development and professional growth. It is an incentive to be more productive and motivated at work, which can be challenging sometimes for professionals.

However, despite newly acquired knowledge and skills, there are certain areas for improvement. For example, technical knowledge is one of the weaknesses of mine. As a Technical Product Owner, the specialized understanding about technical decisions and architecture is not mandatory, however owning this domain knowledge can be of greatly advantage for advancement in the job. Acquiring technical knowledge demands one’s patience and focus, but gradually leads to higher work quality and better perspectives. With deeper technical understanding, I will be able to produce constructive and valuable opinions for any product that I own. Furthermore, several other aspects

for improvement can be named such as product requirements definition, time management and communication flow enhancement. Some knowledge has been leveraged during the observation period for improving these skills, however with continuous finetuning and self-development, I hope to reach a further seniority level of my profession to contribute greater value for the business organization. In the next three to five years, I aim at professional development through acquiring knowledge on various aspects of product development, for example operational metrics, scalability approaches, technical frameworks, release cycles and development methods.

To conclude, I believe that the past 8 weeks have contributed greatly to my technical knowledge and soft skills, which not only deepen my knowledge about my company but also provided me with valuable opportunities to develop myself as a professional. Product development as a discipline involves knowledge and practical application of a multitude of important concepts and ways of working. Such concepts include release cycles and delivery regularity, suitable development methodologies and frameworks, and establishing and tracking the operational and delivery metrics of the product. A product owner must have a profound understanding of how to keep a product maintainable and scalable, while keeping the team motivated and engaged. Maintaining efficient communication with both engineering teams and business stakeholders requires a set of strong soft skills. As a liaison between the business and engineering you must be empathetic but still able to negotiate an outcome that satisfies the requirements of business without jeopardizing the wellbeing of any team members.

References

Acropolium.com. (2022). *How to Scale a Software Product in 2022*. [online] Available at: https://acropolium.com/blog/scale-software-product/ [Accessed 26 Oct. 2022].

Adam, J. (2020). *How to Make Your Web Product Scalable from Scratch | K&C Blog*. [online] K&C. Available at: https://kruschecompany.com/make-product-scalable-from-scratch/ [Accessed 27 Oct. 2022].

Adobe Communications Team (2022). *Waterfall Methodology - A Complete Guide | Adobe Workfront*. [online] Adobe.com. Available at: https://business.adobe.com/blog/basics/waterfall [Accessed 5 Oct. 2022].

Agilemania (2020). *PSM Certification Training*. [online] Agilemania. Available at: https://agilemania.com/scrum-vs-safe/ [Accessed 5 Oct. 2022].

Agilemanifesto.org. (2022). *Manifesto for Agile Software Development*. [online] Available at: https://agilemanifesto.org/ [Accessed 23 May 2022].

Atlassian (2019). *What is kanban?* [online] Atlassian. Available at: https://www.atlassian.com/agile/kanban [Accessed 27 Sep. 2022].

Atlassian (2022). *Importance of Documentation | The Workstream*. [online] Atlassian. Available at: https://www.atlassian.com/work-management/knowledge-sharing/documentation/importance-of-documentation [Accessed 6 Aug. 2022].

Atlassian (2022). *Learn versions with Jira Software | Atlassian*. [online] Atlassian. Available at: https://www.atlassian.com/agile/tutorials/versions [Accessed 8 Jun. 2022].

Barnhart, B. (2021). *How to prioritize tasks (and stop getting crushed by your workload)*. [online] Teamwork.com. Available at: https://www.teamwork.com/blog/how-to-prioritize-tasks/ [Accessed 29 Oct. 2022].

Beach, S. (2020). How To Communicate Organizational Change Through Various Mediums. *Forbes*. [online] 8 Jan. Available at: https://www.forbes.com/sites/theyec/2020/01/08/how-to-communicate-organizational-change-through-various-mediums/?sh=13e2b79a5eee [Accessed 7 Aug. 2022].

BillWagner (2022). *A tour of C# - Overview*. [online] Microsoft.com. Available at: https://learn.microsoft.com/en-us/dotnet/csharp/tour-of-csharp/ [Accessed 24 Sep. 2022].

Botis, S. (2015). *A simple approach for Risk Management in Scrum*. [online] Available at: https://www.todaysoftmag.com/article/1367/a-simple-approach-for-risk-management-in-scrum [Accessed 5 Aug. 2022].

Brown, J. (2021). *Cross-Team Collaboration: 7 Strategies to Improve Team Productivity*. [online] Helpjuice.com. Available at: https://helpjuice.com/blog/cross-team-collaboration [Accessed 31 Oct. 2022].

Camacho, R. (2022). *Software Testing Methodologies Guide: A High-Level Overview - Parasoft*. [online] Available at: https://www.parasoft.com/blog/software-testing-methodologies-guide-a-high-level-overview/ [Accessed 6 Aug. 2022].

Chang, J. (2016). *What are effective corporate time management strategies? Some effective corporate time management strategies a*. [online] Financesonline.com. Available at: https://financesonline.com/10-tips-effective-corporate-time-management/ [Accessed 5 Oct. 2022].
Cloud, H. (2021). *7 Strategies on How to Resolve Conflict In The Workplace | HR Cloud*. [online] Hrcloud.com. Available at: https://www.hrcloud.com/blog/7-tips-on-how-to-manage-and-resolve-conflict-in-the-workplace [Accessed 8 Aug. 2022].

Cobb, C. (2016). *Agile Project Management Training*. [online] Agile Project Management. Available at: https://managedagile.com/what-is-agile-risk-management/ [Accessed 5 Aug. 2022].

Conceptatech.com. (2022). *The Importance of Scalability In Software Design*. [online] Available at: https://www.conceptatech.com/blog/importance-of-scalability-in-software-design [Accessed 26 Oct. 2022].

Coursera. (2022). *Kanban vs. Scrum: What's the Difference?* [online] Available at: https://www.coursera.org/articles/kanban-vs-scrum [Accessed 8 Aug. 2022].

Davis, R. (2020). *Client expectations: What happens when they aren't met, and how to fix it*. [online] Philadelphia Business Journal. Available at: https://www.bizjournals.com/philadelphia/news/2020/03/12/client-expectations-what-happens-when-they-arent-met-and-how-to-fix-it.html [Accessed 6 Aug. 2022].

Denning, S. (2015). Agile: The World's Most Popular Innovation Engine. *Forbes*. [online] 24 Jul. Available at: https://www.forbes.com/sites/stevedenning/2015/07/23/the-worlds-most-popular-innovation-engine/?sh=5841f5d87c76 [Accessed 6 Nov. 2022].

DigiCert, n.d. *What is a SSL certificate?*. Available at: https://www.digicert.com/what-is-an-ssl-certificate (Accessed: 28th April 2022).

EasyTechJunkie. (2022). *What is a Point Release?* [online] Available at: https://www.easytechjunkie.com/what-is-a-point-release.htm [Accessed 1 Jun. 2022].
Fanchi, C. (2022). *What Is App Scaling and Why It...* [online] Backendless. Available at: https://backendless.com/what-is-app-scaling-and-why-it-matters/ [Accessed 8 Aug. 2022].

Fechter, J. (2021). *What Does a Technical Product Owner Do?* [online] Product Manager HQ. Available at: https://productmanagerhq.com/technical-product-owner/ [Accessed 8 Jun. 2022].

Gani, F. 2021. *Internal Communication Best Practices for Customer Support Teams*. Available at: https://hiverhq.com/blog/internal-communication-best-practices-customer-support (Accessed: 11th May 2022).

Gani, F., 2022. *Internal Communication Best Practices for Customer Support Teams*. [online] Hiver. Available at: https://hiverhq.com/blog/internal-communication-best-practices-customer-support [Accessed 11 May 2022].

Gantt.com. (2022). *Gantt.com*. [online] Available at: https://www.gantt.com/ [Accessed 8 Jun. 2022].

Gough, J. and Nettleton, D. (2010). *Managing the Documentation Maze: Answers to Questions You Didn't Even Know to Ask*. [online] O'Reilly Online Learning. Available at: https://learning.oreilly.com/library/view/managing-the-documentation/9780470467084/08_chapter-02.html#ch002-sec001 [Accessed 5 Aug. 2022].

Hall, E. and Johnson, J. (2002). *Integrated Project Management*. [online] O'Reilly Online Learning. Available at: https://learning.oreilly.com/library/view/integrated-project-management/0130674494/0130674494_ch06lev1sec1.html#ch06lev1sec1 [Accessed 6 Aug. 2022].
Harvard Business Review. (2022). *3 Strategies for Managing an Understaffed Team*. [online] Available at: https://hbr.org/2022/05/3-strategies-for-managing-an-understaffed-team [Accessed 22 May 2022].

Hidden Brains (2021). *Large Scale Web Application Development Best Practices | Hidden Brains*. [online] Hidden Brains - Discover possibilities. Available at: https://www.hiddenbrains.com/blog/large-scale-web-app-development.html [Accessed 8 Aug. 2022].

Hotjar.com. (2022). *Product Conflict: Resolving Product Management Conflicts*. [online] Available at: https://www.hotjar.com/product-forge/conflict-resolution-tips-for-product-teams/ [Accessed 3 Oct. 2022].

iDalko (2018). *Getting Started with Jira*. [online] iDalko. Available at: https://www.idalko.com/jira-guide/ [Accessed 8 Aug. 2022].

Indeed Career Guide. (2022). *3 Reasons Why Documentation Is Important | Indeed.com*. [online] Available at: https://www.indeed.com/career-advice/career-development/hr-documentation [Accessed 6 Aug. 2022].

Internet Society. (2018). *What is TLS & How Does it Work? | ISOC Internet Society*. [online] Available at: https://www.internetsociety.org/deploy360/tls/basics/ [Accessed 6 Jun. 2022].

IntexSoft. (2022). *Software Scalability: How to Keep Up With Business Growth*. [online] Available at: https://intexsoft.com/blog/software-scalability-how-to-keep-up-with-business-growth/ [Accessed 26 Oct. 2022].

Jackson (2021). *Compare TLS 1.3 and TLS 1.2 Certificates: Which is Stronger? | Venafi*. [online] Venafi.com. Available at: https://www.venafi.com/blog/why-tls-13-radically-different-tls-12 [Accessed 6 Jun. 2022].

Jira Align. (2022). *10X: Create Defects*. [online] Available at: https://help.jiraalign.com/hc/en-us/articles/115002421607-10X-Create-Defects [Accessed 30 May 2022].

Kashyap, S. (2019). *Importance of Time Management In The Workplace In 2022 - All You Wanted To Know*. [online] ProofHub. Available at: https://www.proofhub.com/articles/importance-of-time-management-in-the-workplace [Accessed 5 Oct. 2022].

Klinghoffer, D., Young, C. and Haspas, D. (2019). *Every New Employee Needs an Onboarding 'Buddy'*. [online] Harvard Business Review. Available at: https://hbr.org/2019/06/every-new-employee-needs-an-onboarding-buddy [Accessed 7 Aug. 2022].

Klipfolio (2022). *What is a KPI? Definition, Best Practices, and Examples*. [online] Klipfolio.com. Available at: https://www.klipfolio.com/resources/articles/what-is-a-key-performance-indicator [Accessed 27 Sep. 2022].

Knowledgehut.com. (2022). *Scrum vs SAFe :What are the key differences to consider?* [online] Available at: https://www.knowledgehut.com/blog/agile/scrum-vs-safe [Accessed 5 Oct. 2022].

Linkedin.com. (2022). *LinkedIn*. [online] Available at: https://www.linkedin.com/company/mascus/?originalSubdomain=fi [Accessed 8 Feb. 2022].

Lucidchart. (2020). *How to Implement New Work Processes Successfully*. [online] Available at: https://www.lucidchart.com/blog/how-to-implement-processes [Accessed 7 Aug. 2022].

Mascus. (2017). *Agricultural Machinery | Construction Equipment & Farm Equipment*. [online] Available at: https://www.mascus.com/ [Accessed 5 Feb. 2022].

Microsoft. (2022). *ASP.NET | Open-source web framework for .NET*. [online] Available at: https://dotnet.microsoft.com/en-us/apps/aspnet [Accessed 27 Sep. 2022].

Mikhailau, A. (2019). *Types of Software Testing: 3 Classifications with Explanations and Practical Tips*. [online] Scnsoft.com. Available at: https://www.scnsoft.com/software-testing/types-of-testing [Accessed 6 Aug. 2022].

Mindtools.com. (2017). *What Is Time Management?: Working Smarter to Enhance Productivity*. [online] Available at: https://www.mindtools.com/pages/article/newHTE_00.htm [Accessed 5 Oct. 2022].

Myatt, M. (2015). 5 Keys of Dealing with Workplace Conflict. *Forbes*. [online] 13 Dec. Available at: https://www.forbes.com/sites/mikemyatt/2012/02/22/5-keys-to-dealing-with-workplace-conflict/?sh=81176791e95c [Accessed 8 Aug. 2022].

Nielsen Norman Group. (2018). *Using Prioritization Matrices to Inform UX Decisions*. [online] Available at: https://www.nngroup.com/articles/prioritization-matrices/ [Accessed 22 May 2022].

Northeastern University Graduate Programs. (2020). *The Project Risk Management Process | 5 Tips for Success*. [online] Available at: https://www.northeastern.edu/graduate/blog/project-risk-management/ [Accessed 31 Oct. 2022].

Parlor. (2021). *How to Prioritize Product Features, According to Experts - Parlor*. [online] Available at: https://www.parlor.io/blog/product-features/ [Accessed 22 May 2022].

Patil, J. (2021). *9 Tips On How To Prioritize Tasks Effectively At Work | Toggl Blog*. [online] Toggl Blog. Available at: https://toggl.com/blog/how-to-prioritize-tasks [Accessed 29 Oct. 2022].

Petrova, S. (2017). *Adopting Agile: The Latest Reports About The Popular Mindset*. [online] Adeva. Available at: https://adevait.com/blog/remote-work/adopting-agile-the-latest-reports-about-the-popular-mindset [Accessed 5 Oct. 2022].

Pmi.org. (2013). *Project Management Uncertainties Discovering Opportunities*. [online] Available at: https://www.pmi.org/learning/library/project-management-uncertainties-discovering-opportunities-5939 [Accessed 3 Aug. 2022].

Productplan.com. (2021). *5 Key Responsibilities of a Product Owner*. [online] Available at: https://www.productplan.com/learn/responsibilities-product-owner/ [Accessed 3 Oct. 2022].

Productplan.com. (2022). *Quality Assurance*. [online] Available at: https://www.productplan.com/glossary/quality-assurance/ [Accessed 7 Nov. 2022].

ProjectManager (2022). *Gantt Chart: The Ultimate Guide (with Examples) - ProjectManager*. [online] ProjectManager. Available at: https://www.projectmanager.com/guides/gantt-chart [Accessed 6 Aug. 2022].

Projectsly. (2022). *Importance of Gantt Charts in Project Management*. [online] Available at: https://projectsly.com/importance-of-gantt-charts [Accessed 6 Aug. 2022].

RB Asset Solutions, n.d. *Track, valuate, and sell – All in one platform*. Available at: https://www.rbassetsolutions.com (Accessed: 14th January 2021).

Rbassetsolutions.com. (2021). [online] Available at: https://app.rbassetsolutions.com/rbpricereSults/register_mk1.aspx [Accessed 14 Jun. 2022].

Ritchie Bros, n.d. *About Ritchie Bros*. Available at: https://www.ritchiebros.com (Accessed: 14th January 2021).

Scrum.org. (2020). *Home*. [online] Available at: https://www.scrum.org/ [Accessed 8 Jun. 2022].

SplashBI (2020). *Importance, Purpose, and Benefit of Data Visualization Tools!* [online] Business Analytics Platform with Pre-Built Insights | SplashBI. Available at: https://splashbi.com/importance-purpose-benefit-of-data-visualization-tools/ [Accessed 7 Aug. 2022].

Stein, M. and Christiansen, L. (2010). *Successful Onboarding*. [online] O'Reilly Online Learning. Available at: https://learning.oreilly.com/library/view/successful-onboarding-strategies/9780071739375/intro.html [Accessed 7 Aug. 2022].

The Drip (2022) *What is Pardot Used For? [10 Frequently Asked Questions Answered]*. Available at: https://www.salesforceben.com/the-drip/what-is-pardot-used-for/ (Accessed: 8th May 2022).

Tutorialspoint.com. (2022). *Scrum - Estimation*. [online] Available at: https://www.tutorialspoint.com/scrum/scrum_estimation.htm [Accessed 8 Jun. 2022].

Ukens, L. (2007). *101 Ways to Improve Customer Service: Training, Tools, Tips, and Techniques*. [online] O'Reilly Online Learning. Available at: https://learning.oreilly.com/library/view/101-ways-to/9780787982003/ [Accessed 6 Aug. 2022].

Volchek, A. (2021). *Why Your Business Needs Software Scalability to Achieve Success*. [online] Small Business Bonfire. Available at: https://smallbusinessbonfire.com/why-your-business-needs-software-scalability-to-achieve-success/ [Accessed 26 Oct. 2022].

W3 Schools, n.d. *SQL Injection*. Available at: https://www.w3schools.com/sql/sql_injection.asp (Accessed: 29th April 2022).

W3schools.com. 2022. *HTML iframe tag*. Available at: https://www.w3schools.com/tags/tag_iframe.asp (Accessed 18 May 2022).

Why (2021). *Why is scrum the most popular agile methodology?* [online] Zeolearn. Available at: https://www.zeolearn.com/magazine/why-scrum [Accessed 5 Oct. 2022].

Wrike.com. (2022). *What Is Cross-Functional Collaboration?* | *Wrike Guide*. [online] Available at: https://www.wrike.com/collaborative-work-guide/what-is-cross-functional-collaboration/ [Accessed 31 Oct. 2022].

Zoric, N. (2020). *Why is Agile so popular?* [online] DEV Community. Available at: https://dev.to/neshaz/why-is-agile-so-popular-56ao [Accessed 6 Nov. 2022].

Table of figures

Figure 1 Interaction with different professionals at work for technical product owner 8

Figure 2 Monitoring Risks Efficiently. Source: https://www.todaysoftmag.com/article/1367/a-simple-approach-for-risk-management-in-scrum 18

Figure 3 Progress towards KPI for Mascus webshops (April 22) 21

Figure 4 Number of webshops by country (April 22) 21

Figure 5 A diagram showing how Jupiter and M2R project integrate in Mascus and RB ecosystem 22

Figure 6 Mascus ecosystem from a high-level perspective 25

Figure 7 M2R project Gantt chart - revised version 26

Figure 8 Search function and logic behind for Jupiter project 28

Figure 9 A prioritization matrix helps decide which tasks to prioritize based on value to user and effort by organization. Source: https://www.parlor.io/blog/product-features/ 42

Figure 10 Communication flow to enhance customer satisfaction 48

Figure 11 Types of software testing. Source: https://www.scnsoft.com/software-testing/types-of-testing 49

Figure 12 User visibility problem for customer with complex hierarchy 52