

**Human Resource Demand Planning – tools and processes for visa processing of
Ministry for Foreign Affairs of Finland**

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This thesis has been done as a case study for Ministry for Foreign Affairs (MFA) Information and Documentation unit. The target for the study was MFA visa process and especially the visas applied from Russia to Finland and Schengen. There is high seasonality in the visa application demand causing challenges especially for the resource management. The aim and objectives is to study the current state of the visa operations resourcing process to Russia, tools for controlling the demand growth and for more efficient resource planning. In addition, the aim was to recognize possible bottleneck in the process and find tools for more efficient process.

In spring 2017, 12 key personnel were interviewed from MFA in Finland and Russia. The data presented in this study is based to the interviews and different document sources. The results were analyzed with the analyzing tools for qualitative data, to find resulting patterns and themes.

This study is covering visas as short term entry permits to Finland and Schengen. Part of this study's scope is Russia. Visas are processed mostly in MFA unit Kouvola Service Centre for Entry Permits, which is also part of the scope among Russian consulates.

The supply of the visa production consists of permanent human resource for visa processing in Kouvola and Russia. The supply should be in balance with the visa application demand from Russia, which is creating the visa application backlog for production.

As the demand is varying, there should be tools to answer to the sudden demand peaks. Efficient reporting is supporting the foresight coming from the new visa systems. RPA can also help combining information from different resources and reports and form analysis. Efficient visa information system will help in the demand planning and improve the operations in production.

Keywords

VISA, RUSSIA, SEASONALITY, RPA, FORESIGHT

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Acronyms

C-VIS	Central Visa Information System
ELVIS	Electronic Visa Information System
ESP	External Service Provider
MFA	Ministry for Foreign Affairs
N-VIS	National Visa Information System
RPA	Robotic Process Automation
SUVI	Name of Finland National Visa Information System
VAC	Visa Application Centre
VAF	Visa Application Form
VIS	Visa Information System

1 Introduction

The background, aim and objectives, and scope of the study will be introduced.

1.1 Background

According to the European Commission a Schengen visa is a short stay visa or permit which allows the person move around the area that covers 26 countries, the "Schengen States". "A Schengen visa is an authorization issued by a Schengen State with a view to:

- transit through or an intended stay in the territory of the Schengen States of a duration of no more than 90 days in any 180 days period ("short stay visa"),
- transit through the international transit areas of airports of the Schengen States ("airport transit visa")."

(European Commission 2018)

In general, the residents of the certain countries must apply for a visa to EU, and the application to "the Consulate with territorial competence for the country" in where the person is legally residing (European Commission 2018). The consulate of Schengen State will be chosen according to the country where the applicant is planning to visit, or where the applicant will visit the biggest length of the time, or will visit first during the journey (European Commission 2018)

Most of the applications Finland is receiving are coming from the territory of Russia, and especially from the area of Saint Petersburg. The biggest year of visitors in Finland was in 2013. After that the visits according to the border crossings and stayed nights in the accommodations decreased, until they have started to grow again after 2016. (HS 2017)

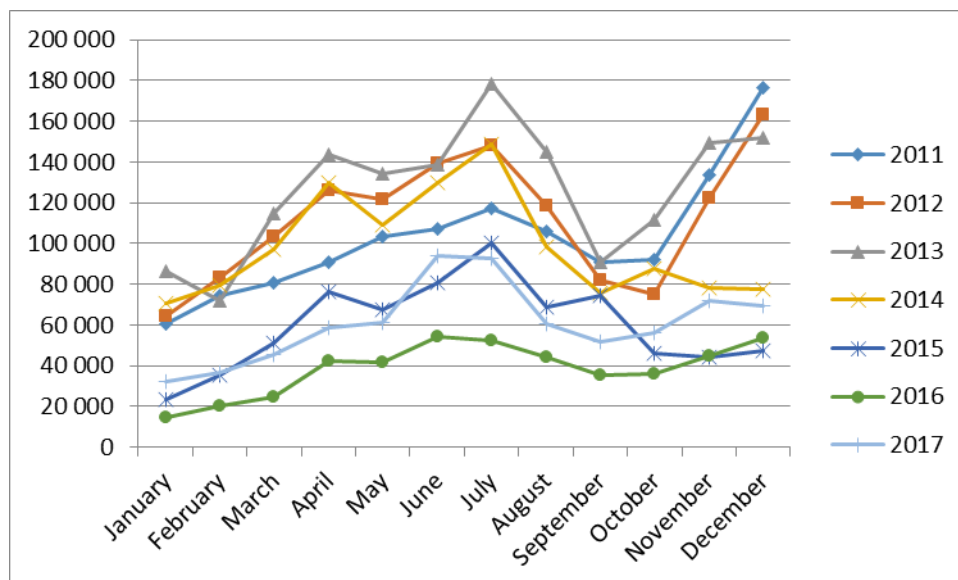
In 2017 Finland accepted nearly 600 000 visa applications to Finland from Saint Petersburg, and the amounts have been increasing 58 % from previous year. Finland is close, easy to travel and offering environment and shopping possibilities many people in Saint Petersburg are looking for a short visits. (HS 2017)

Information for human resource demand planning in Finland visa processing is fragmented and stored in several systems and sources. Forming operational reports and dashboards requires manual work to manage operations. The operational environment with visa processing is changing constantly and there are peak seasons with more demand (Picture 1). With the interview survey the peak seasons will be studied, and the most efficient ways for covering them investigated. It is important to be able to foresight the situa-

tion of required employees any time, and the amount of the permanent staff around the year.

The subject for this study is to find out what kind of tools and processes are needed for the monitoring, measuring and more efficient human resource demand planning with Finland's Russian visa process with a view of foresight. Higher demand of visa applications to Finland creates visa application backlog and if there are not enough resources processing them the processing time will dilate. If the information systems do not scale for higher demand with possible system failures this will affect with even longer processing time, which should not exceed 10 days in Russia by the EU regulation (Agreement between the European Community and the Russian Federation on the facilitation of the issuance of visas to the citizens of European Union and the Russian Federation).

Picture 1. Unofficial amounts of all visa decisions made and collected in Russian consulates 2011 - 2017. (Finland consulates in Russia & Process Owner 2018)



1.2 Aims and objectives

The biggest amount of the Schengen visas Finland is issuing are applied in the territory of Russia, and especially in the area of Saint Petersburg. Most of them are processed in Finland, Kouvola Service Centre for Entry Permits. As the demand is varying the balancing of the work load is challenging. Overtime work is done with possible seasonal workers. The information of the operations is fragmented in different tools and places. The purpose of the work is to study the current state of the visa operations resourcing process to Russia, find operational peak seasons, and tools and processes in helping to foresight the demand and cover the demand peaks. With the study results the current state of the visa

resource process is reported and documented. Purpose is also to be able to investigate how correct up-to-date operational information for the management could be delivered, any time required, for better control of the processes. That would help management to make decisions and foresee the demand situation more clearly and wider to the future. This can be seen as more efficient operations and with possible cost savings.

Resourcing and its management is the main part of the study for covering the demand peaks and increasing amount of visa application backlog. It is not flexible to hire seasonal workers for public sector for Ministry for Foreign Affairs of Finland (MFA) due to local norms for example lack of zero working contracts. If the hiring of new seasonal workers would be easier that would bring more efficiency to the human resource processes and management of the human resource demand planning. A lot of the information related to resourcing in Finland visa process is silent tacit knowledge and not necessarily documented. The aim of this study is also to document this information.

There is a lot of information in the visa information systems and applications. This information can be used for Reporting and analytics for:

- Daily operations and resource allocation and management of the personnel
- Meters for operative effectiveness
- Seasonal predictability of the operational load and short and long-time scale resourcing of the personnel

Finland Russian visa processes are heavily standing to information technology. This includes Finland national visa information system where the visa decisions are made, and other supporting information systems, for example to support location independent visa processing. If there are usage breaks in the information systems, they are effecting directly to the whole visa decision process.

Robotic Process Automation RPA will be studied as a possible technological and information management way of improving the human resource demand peaks by manual work automation. Manual work is automated over night by software and human personnel can focus on more productive work where humans are needed. RPA might be also used for reporting to decrease manual processing of the reports and collecting information from several locations.

The idea for this study and proposal for thesis comes from my current employer Ministry for Foreign Affairs of Finland's Unit for Information and Service Management (Tietohallinto). The author has been working with the Russian visa process and visa issuing since 2010, later in development of the visa processing applications and information systems in St Petersburg, Russia, and in Finland in Kouvola and currently in Helsinki. I am also familiar with the whole process and locations in Russia part of it: The embassy in Moscow, general consulate in St Petersburg and consulates in Petrozavodsk and Murmansk.

Objectives:

O1: To find guidelines and best practices for setting the optimal permanent amount of personnel and reasons effecting to the resource planning.

The first objective aims to find guidelines and instructions for setting up the optimal permanent amount of personnel, which can take care of the application demand around the year. Tools and methods for taking care of the sudden peaks and changes in amounts of applications in the queue, and seasonal demand peaks and growth will be discussed in other objectives. Guidelines and reasons will be searched by interviewing personnel with strategically setup questions, studying existing material, thesis and other publications especially for the public sector. Especially reasons effecting to the resource planning and their background for understanding them will be investigated with the interviews of the key personnel.

O2: To be able to prevent and cover the sudden and operational changes in the amounts of visa applications within Finland visa process for Russia.

When the optimal amount of permanent personnel is set up, the second objective will discuss the tools and methods for taking care of the demand growth and the growth in the application queue which the permanent personnel is not able to take care in the set timeframe. Also the background and introduction of the demand variation will be discussed within this objective.

O3: To be able to measure and control the resource planning more efficiently in Finland visa process for Russia based to the forecast done in the MFA.

The process owner is finalizing the forecast which is given to the financial planning for making the final decision of the required resource. Within this objective the theory of foresight and methods will be studied for intensifying the forecasting part of the resourcing

process. This objective covers also other meters and tools for optimizing the resourcing process and finding the possible constraints.

1.3 Research questions

Rq1: How the resource planning should be planned and estimated to meet the application demand?

Rq2.1: How to describe the peak seasons and demand peaks in Finland visa process for Russia?

Rq2.2: How to prepare for the operational peak seasons, and take care of the unpredicted/sudden changes in application counts?

Rq3: How to enhance the resource management of Finland visa process for Russia and prevent the problems and bottlenecks within it?

1.4 Scope

This study is covering visas as short term entry permits to Finland and Schengen. Asylum and other permanent entry permits, or permits for living, working and staying in Finland are not part of the study. The Finland visa process is confidential. It will not be opened in details publicly. Finland visas are issued globally but part of this study's scope is Russia. Visas are processed in Kouvola MFA unit (Maahantulolupa-asioiden palvelukeskus) Kouvola Service Centre for Entry Permits, which is also part of the scope among Russian consulates. Most of the visa applications are submitted in visa application centres (VAC) which are operated by external service provider (later ESP). The internal processes of ESP are not part of this study. Scope is to study the Finland Russian visa decision making process and what aspects are affecting into human resourcing part of the process. The visa applications demand cannot be very well predicted so there have to be tools to react to the demand change quickly. The scope is also to study the fast changing demand of visa applications.

Especially from the results of the interviews it might be seen that some ideas or comments are not in line with the management policies. This might be due to the congested visa situation in the time of interviews when the processing time was lacking and people were in a hurry.

This study does not take into consideration the cost correlation of the process costs for the ministry for foreign affairs.

1.5 Introduction to the Finland visa process in Russia, visa information systems and applications.

Within the visa process in Russia most of the Finland visa applicant interface has been outsourced to external service provider (ESP). Applicants can fill in visa application form (VAF) online, or if willing so, leave the handwritten form in the visa application centre of external service provider (ESP) of MFA Finland. Most of the applicants in the country will visit and submit their visa applications and documents to the visa centre. ESP is taking care of the applications, electrification of the applicant data, biometrics acquisition, document and passport logistics to the missions and back to the visa centre and the passport transfer to the applicant with the decision. There are also supporting information systems for the processes of contacting the applicant, appointment scheduling, and a sophisticated solution where all applicant data and biometrics is transferred automatically to the Finland visa information system from the ESP's system. This solution was designed especially for the big amount of Russian visa applications and storing the applicant data and biometrics to Schengen central visa information system C-VIS overnight, and to fasten visa processing. Finland consulates and embassy in Russia have to accept few applications per week also locally.

In Russia location independent concept is used. The concept means documents including passports are being scanned and digitized in the visa application centres' back offices. Then it is possible to observe the scanned images within special Electronic visa application system (ELVIS) in any location where local independent concept is in usage, especially in the Finland Kouvola unit of MFA, Kouvola Service Centre for Entry Permits, and Russian consulates. The visa decisions are possible to be made location independently out of the country, and only the visa stickers are being printed in the consulates of the origin country of the applications. The visa applications are processed and decisions made in exactly same way in all locations of Russian consulates and Kouvola unit. Outsourcing partner is taking care of the circulation and logistics of the passports and archived document material in Russia. The ELVIS concept also enables application categorization to different groups according visa type, and common working queues and controlling of them with load balancing methods. When all the documents and passport images are stored in the ELVIS database, this creates electronic archive. So far the ELVIS concept has been used in Russia, Ukraine and China.

1.5.1 Finland visa information system and Schengen central visa information system

The current Finland visa information system is called SUVI. In the system the visa application data is processed and visa decisions made. This is called national visa information system, N-VIS. The system has many interfaces to fetch application data and biometrics from the ESP, for national and Schengen security registries, and to Schengen systems. Some of the application information including biometrics are sent and stored to the Schengen central visa information system, C-VIS. This means the applicant data, application C-VIS history and decisions can be observed in any Schengen country and Schengen external borders within any officer stakeholders accessing to the system. The fingerprints are used to identify the person travelling to any Schengen external borders. EU IT Agency eu-LISA is taking care of the C-VIS and its development together with the member states of Schengen. This means the N-VIS systems have to be continuously communicating and compatible with the C-VIS. The development is continuously and there are requirements coming from C-VIS to be developed in the N-VIS. The SUVI information system is in the end of its life cycle. The new N-VIS is being planned and the development has started. It has been seen that implementing the new system will benefit also the process and issues described in this study.

Eu-LISA will also take care of the future project Entry-Exit-System, which means Smart Digitized Boarder systems. The system will record traveler's visits electronically and the information will be available for national visa systems among EU. The solution will replace the traditional stamping to the passports and monitoring the visits will be easier as the system will automatically record and count the visa usage.

1.5.2 Other Finland visa applications and systems

ESP and outsourcing partner is the vendor for ELVIS application and other applications used for the Finland visa processing. These applications are online visa application form (VAF), appointment scheduling and pending module. Within the online VAF the applicant can fill in the visa application in the internet electronically, print it out and take it to the application submission in any visa application centre (VAC) in Russia. The online VAF is also used within every location where the outsourcing has been done. ESP can then directly process the applicant's data in their systems. Appointment scheduling is used for the visa applicants to book time slots for visa application submission in the missions. Appointments can also be scheduled for the visa applications centres, and the maximum time for applicant to wait is 15 minutes. Pending module was designed to be a special communication tool between visa officers and visa application centres' personnel for

communication. If the applicant needs to be contacted for any reason, for example delivering a missing document, the reason can be filled in to the tool, and the action will be done accordingly. The application also allows tracking of the passports in the circulation between consulates, Kouvola Service Centre for Entry Permits and visa application centres.

System failure in Finland visa applications and systems will impact negatively to the processing of visa applications, and will increase the application back log. For the resourcing point of view and keeping the visa supply stable it is crucial that there will not be long maintenance service breaks, or system failures during production working hours. Visa applications are processed globally all over the world, and applications from China are also processed in Kouvola. Therefore the maintenance and service breaks need to be carefully planned.

2 Theoretical framework

In the theoretical framework especially Robotic Process Automation will be studied from the technology and business opportunities and impacts point of view. If possible, examples from public sector will be used. LEAN practices will be studied that can be applied for more efficient process, and especially from the process improvement point of view. Foresight has been recognized to be important part of the resource process and foresight methods together with concepts of forecasting and futures studies will be introduced. Finland visa process is standing heavily to the human resource, and HR management and planning tools will be introduced. Understanding of demand is important for the study.

2.1 Demand

In the literature demand is defined to be the amount of products or services what consumers are able to or willing to purchase on the market in certain time with certain price (Swain and Mishra 2012, 398). Services can be also immaterial electronic commodities, or a mixture of physical product and service.

Purchasing power is important factor and demand is also defined as human basic needs (Kotler, Armstrong, Harris and Piercy 2013, 6). Demand is the estimated amount of sales or supply, and the realized amount of products and services actually purchased is consumption. (Bergström & Leppänen 2015, 58; Lahtinen & Isoviita 2001, 20.) The total market demand can be divided according to the markets for consumer and business markets (Bergström and Leppänen 2015, 56). Demand is always dependent to the factors in the operational environment. They can be divided into consumer factors, company factors, societal and global factors (Bergström and Leppänen 2015, 55). The consumer factors to the demand are already mentioned purchasing power, and willingness to buy. To factors impacting to the willingness to buy are psychological factors as needs, attitude, motives and life style, social factors as family, friends and other small groups and the marketing actions of the suppliers. The factors impacting to the purchasing power are available amount of money and other assets as credit. (Bergström & Leppänen 2015, 55; Lahtinen & Isoviita 2001, 21.) The marketing actions how suppliers can affect to the consumer behaviour are for example price and marketing communications, brand and image (Bergström & Leppänen 2015, 55).

Demand is not stable around the year and varies. The changes of the demand are demand variations which can be divided into short and long term variations. The long term variation includes economic cycles, long term trends as impact factors. The short term variations include fashion trends, unusual variation and seasonal variation (seasonality).

Economic cycles are changes in the economic development. Different economic situations are recovery, boom, and recession and depression. Some products and services are more sensitive for economic situations. Long term trends mean demand development in a time of several years which are affecting to the consumer habits of people. The short term trend changes are called fashion trends. They are for example certain quality and look & feel of the product. Unusual variations are short term and hard to predict. This kind of phenomenon such as weather, trouble between people, epidemics and threat of terrorism and war might affect to the demand rapidly and effectively. Seasonality is part of short term variation. They are changes in demand in time of a year, and typically are continued similarly annually. The usual reasons for seasonality are variations in demand caused by different seasons, holidays, weekdays, and day hours. (Bergström & Leppänen 2015, 61, 62, 63, 64)

2.1.1 Seasonality

In this section the seasonal variations are described especially from the services point of view. Seasonal variations or seasonality has several impacts to the demand. In their research Lee, Bergin-Seers, Galloway, O'Mahony and McMurray (2008, 5) introduce seasonality impacts from the demand and supply point of view. In supply the impacts are related to economics, resources, workforce and environment. The demand impacts are affecting to the consumers or consumption. Seasonality impacts can be negative and positive. Usually there are more negative impacts so to prevent these it would be essential to get rid of negative seasonality impacts. (Lee & others 2008, 5)

In the services business usually the most negative impact from seasonality is the capacity problem of over or under resourcing (Ojasalo and Ojasalo 2010, 214 – 215). Services like products cannot be stored and the capacity problem can be covered from the productivity point of view (Grönroos 2009, 285). It is essential that the demand is in balance with the resources of supplier and this leads to the best productivity. If possible, the control of demand would lead to the balance of quality, internal effectiveness, income and expenses. (Lee & Others, 2008, 5; Grönroos 2009, 286.)

Seasonality affects also to the need of workforce and especially need of seasonal workers. That also causes different kind of problems for example in the quality of service if the seasonal workers are not well trained or motivated enough. But then it is not economically profitable to keep too large human resource in the low season. The low season might give a chance to work with other tasks or keep holidays. (Lee others. 2008, 5.) Grönroos (2009, 300).

If the resource capacity is limited and hard to change, it is essential to balance the demand either increasing the demand in low season or with demand shift in high season

(Ojasalo and Ojasalo 2010, 217). In their research Lee, Bergin-Seers, Galloway, O'Mahony and McMurray (2008, 6 – 7) introduce strategies for service business to balance seasonality. The strategies are pricing, diversification of the services supply, management or control of the target groups, and marketing communications. According to Croxton, Lambert, García-Dastugue and Rogersin (2002, 51) the demand control means a process where supplier is trying to balance the demand with ability of supply chain to produce. Important part of the control process is the foreseen of demand and balancing it to the organizations ability to function.

2.2 Human resource planning

In Finnish State Treasury research 2016 it was investigated how to strengthen HR management and HR expertise in the public sector agencies and institutions. The research lists many guidelines and best practices to into actions. Here are summarized some of them.

- Digitalization can be seen opening new possibilities in HR strategy and management.
- In the processes and working methods the processes have been standardized and overlapping work minimized.
- Flexibility in the organizations, roles and responsibilities gives possibilities to use HR resources over agency limits and external resources can be used with flexibility. HR management is working over organizational limits.
- New, digital tools are used for service production which will improve user centricity and efficiency. Individual content will be used in the trainings, which is available any time and place.
- Analytics will be used in the measurement, reporting and knowledge management. This allows knowledge and data based management and foresight. Analytics can be used in HR planning and optimizing, recruiting, learning and rewarding. It can also enhance commitment to the employer and decrease turnover and absences. The optimal usage of resources now and planning of them will decrease costs, improve operations and increase job satisfaction.

2.2.1 Process thinking and measuring process efficiency in HR organization

Lahti University of Applied Sciences thesis Financial and personnel administration processes –resources, productivity and effectiveness by Pirjo Halinen, 2008 studied how to improve productivity in Employment and Economic Development Centre in Häme region.

The theoretical part of the thesis discusses also processes in general, and how to measure effectiveness of the processes. The main idea of activity based accounting is explained. Here are the introduced the main findings.

A process is repeating actions linked to each other and resources which allow inputs to be processed into products and services (Laamanen, 2005, 19). The process can be named according to the outputs it is producing, for example business processes, functional processes, and HR processes. Organization's nuclear processes develop, produce and deliver material, products and information to the external customers. Supporting processes bring preconditions for the main processes and support the functionality of the organization. Examples of supporting processes are management, communications, finance, personnel and information related processes. (Karimaa 2002, 10)

The performance of the processes can be measured by a single process or by the whole organization. The measurement of the processes is part of the process development and will produce information for improvement. (Virtanen & Wennberg 2005, 130).

Productivity has at least three important sections: Productivity of the work, return of investment and total productivity. The productivity of work can be measured by the relation between amount of production and work contribution. (Lumijärvi etc. 1995, 14)

One of the most commonly used key indicator in process efficiency is process outputs divided with costs. The process inputs can be shown as process outputs or incomes divided with the main factor of the process, for example outputs divided with working hours, or service actions divided with amount of personnel. Productivity is the relation between outputs and inputs (production factors). Economy is the relation between costs and output. (Laamanen 2005, 180 – 181; Meklin 1997, 130.)

Activity based accounting helps to understand the relation between organization's resources and for example product, service or customer project costs. The results of activity based accounting helps to improve processes and understand costs in complex environments. (Lumijärvi etc. 1995, 19).

Public administration can use activity based accounting for streamlining the organization and maximizing process functions. Activity based cost accounting can help to decide what can be done in house and what is more profitable to purchase externally. (Torppa & Wallin 1996, 64 – 68).

2.2.2 Case study of increasing human resource efficiency

The ScienceDirect article Increasing human resource efficiency in the production process of Petruta Blaga and Boer Jozsef from 2013 studied technical, conceptual and native skills of the management in a Romanian manufacturing company and how to achieve positive results in HR efficiency. Many organizations are faced to increase productivity with limited resources. To increase productivity is the means of increasing work quality, information and capital, and how these factors are combined. The effectiveness of a group is defined as the capacity of the group to proceed with the assigned tasks and to allow the group members to obtain satisfaction by following collective activities. Factors identified for increasing group's effectiveness are the characteristics of the group like size, composition etc., the tasks to be fulfilled, and the internal and external environmental factors, including resources and recognition of the group's presence and activity. These internal and variable factors can be modified to increase effectiveness with actions like management style, and how the group adopts the common processes and procedures. The latter includes group motivation, task functions, social relations and group development. The work performance refers in the study to the practical activity. The factors associating with work performance are interacting in the company level are listed as following: Skills, personality features, value systems, physical qualities, interests, motivation, age, sex, education, cultural horizon, working social environment, salary and reward system, training system and control, enterprise policy, work methods. Motivation was mentioned as special factor influencing to work performance. (Blaga & Jozsef 2013)

The study lists the following actions to increase work productivity. Improving human resource and training by raising the level of culture and knowledge, technical and professional skills, and the general skills of the human resource. The technical processes that use automation and promote new technologies and techniques raise productivity of work. Quality of work can be increased with production renewal that will raise the productivity. These factors include as an example constructive, functional and ergonomic features. Offering material incentives increases productivity with the income depending of the work results. Increasing the number of staff produces more costs. The quality of the work and continuous training are important for the efficient productivity of human resource. (Blaga & Jozsef 2013)

2.2.3 Zero working contracts

Tampere University of Applied Sciences bachelor thesis from 2014 Zero Hour Contract as a Contract of Employment Studying the Validity of the Working Hour Condition between the Parties, Jenni Pulkkinen studied zero working contracts. Zero working contracts mean

working contracts, where the minimum working hours in a week has been agreed to be 0, when the maximum hours of a week are for example 30 or 40 hours. Usually the contracts include condition “will be invited to work on demand”. In 2012 this kind of employees were in Finland 23 000. For the companies and organizations the zero working contracts enables usage of seasonal workers in a flexible matter when the workforce I needed. For the employee point of view zero working contracts eases combining work and studies. In the thesis legal aspects of the contract for employer and employee are discussed and answers found out for questions what the obligations for both parties are. (Pulkkinen 2014)

2.3 LEAN methodology

General introduction to LEAN and LEAN IT principles

The idea of LEAN is to minimize waste and maximize the customer value, creating more with less resource. In the LEAN organization the key processes are optimized to continuously increase customer value and this is understood by the every part of the process unit.. LEAN ultimately means that the perfect value creation which has no waste will provide the perfect value to the customer. The management has to move the focus from separate vertical silos of business functions into the flow of horizontally formed value streams. The business processes will be optimized by eliminating the unnecessary waste from entire value streams and will be seen as savings example in human resource, space, capital and time. The products and services will be less vulnerable for defects and have more variety and quality. That will also be seen as a more simple and accurate information management. LEAN is not only for manufacturing as its origin comes from Toyota Japan and the book *The Machine that Changed the World (Six Sigma)* but it is applicable for all businesses and processes, even for project management. It is a way of thinking and acting. The organization is described in the book *LEAN Thinking* by Womack and Dan Jones, who are also founders of the LEAN Enterprise Institute and LEAN Enterprise Academy. In their book Womack and Jones recommend that LEAN transformation of organization is started by three fundamental elements which are purpose, process and people. (Lean Enterprise Institute 2000) In this study the introduction to LEAN IT practices and thinking, and process improvement view of point in LEAN will be handled.

Womeck’s and Jones’ five step process for LEAN improvement:

1. Specify value from the perspective of the end customer.
2. Identify all the steps in the value stream, eliminating those activities, processes, and policies that do not create value.

3. Flow products and service smoothly toward the customer.
4. Let the customer demand pull value from the next upstream activity.
5. Pursue perfection through continuous improvement.

(LEAN IT 2011, 311)

2.3.1 Theory of constraints & continuous improvement

In 1984 Dr. Eli Goldratt introduced a book *The Goal and Theory of Constraints (TOC)* where bottlenecks of the processes could be identified and improved (LEAN IT 2011, 310). In the theory the bottlenecks are identified and managed as pacemakers to regulate production. When the bottlenecks or constraints are eliminated resulting as increased speed of information and materials, also the quality, cycle time, customer satisfaction and cash flow will improve. (LEAN IT 2011, 310)

There are many ideologies and methods within LEAN with different names to describe process improvement, for example Business Process Reengineering, driving organizations to remove old systems, methods and processes not supporting the goals. In LEAN IT book of Steven C. Bell and Michael A. Orzen use the term continuous improvement for all improvement theories including LEAN, Total Quality Management, Six Sigma, the Theory of Constraints, and the Toyota Production System. (LEAN IT 2011, 15)

From all the theories in a broader perspective is seen that continuous improvement began with a scientific focus on efficiency and later moved to a humanistic focus of creating quality through respect of people. "Significant lasting improvement is achieved by engaging the hearts and minds of everyone in the organization." There are differences in all improvement methods but they are complementary, and have a lot of ideas to be used. (LEAN IT 2011, 312)

2.4 Foresight methods

In the beginning the concepts foresight, forecasting and futures research will be covered and explained. Then different qualitative methods and tools will be introduced suitable for the case organisation. The objective of this section is to give development ideas for the methods of foresight in the resourcing process of the case organisation. Foresight tools can be seen as tools for intensification of the forecast which is the base for resourcing process.

2.4.1 Foresight, forecasting and future research

Predicting the future is hard and to make accurate predictions in most of the business areas even impossible. In the rapidly changing operating environment the past internal and external data will not help in planning the future. It is recommended to use “future-oriented methods such as the scenario analysis for rapidly changing conditions”. Accuracy of the forecasting will diminish if it is assumed that future is a continuation of present circumstances. When the past data in changing environment is unreliable it is useful to use foresight instead of forecasting in managerial planning. Foresight is a strategic tool for management to make a vision of the future for today decisions, and usually the details of methods are confidential. (Mohamad S. Hammoud & Douglas P 2015)

During Second World War Hermann Kahn developed a model called scenario planning for exploring events of the future to likely happen, developed by US Department of Defence and later evolved for business purposes. Currently many global corporations use corporate foresight and planning efforts in the uncertain and changing industry environment. The goal is to notice the change and challenges early enough to be able to respond for them effectively, and to find opportunities.

“The staff of the European Foresight Monitoring Network (EFMN) report that foresight is used by public and private organizations to

- (a) foster innovation, provide input for policy formation,
- (b) encourage strategic thinking,
- (c) identify investment opportunities,
- (d) generate visions of the future,
- (e) anticipate significant challenges,
- (f) trigger actions, and
- (g) promote public debate.”

(May GH (2009) Foresight and futures in Europe: an overview. Foresight. J Futur Stud Strat Think Policy 11:57–67.)

“The staff of EFMN confirmed that foresight exercises project one to two decades into the future. Foresight outputs include policy recommendations based on trend analysis, identification of underlying forces, and generation of likely scenarios.” (TNO 2017)

In the survey among European companies the main noticed characteristics of foresight were long-time planning, management early warning system, inputs for innovation, faster reaction to environmental change. “Successful foresight activities must be of good quality,

highly relevant to current strategic issues, and engage a high level of internal participation. Critical foundations for a successful foresight culture included managerial commitment and ongoing internal communications about the foresight processes and outcomes.” (Daheim C, Uerz G (2008) Corporate foresight in Europe: from trend based logics to open foresight. *Tech Anal Strat Manag* 20:321–336.)

According to the European Commission foresight is described as systematic and participating process for estimating the development scenarios of future and preparing for them. The future is challenging and gives problems. With foresight techniques alternatives of the future can be explored and when it is done in a structured way it can be faced better. With foresight the current policies can be evaluated and future policy directions better understood. The impact of possible policy decisions can be better understood and linked together with other range of sectors. With structured foresight methods the possible future directions, emerging technologies, societal demand and challenges can be identified. Future developments, disruptive events and opportunities can be better seen and prepared before. In the beginning of the foresight the information is gathered about the possibilities. The information is processed with strategic-intelligence and sense-making techniques. This will give supporting information for the decision makers to help decision making and help to predict the future. (European Commission)

Qualitative forecasting methods are based to the subjective data, for example opinion of the people. Delphi method is an example of qualitative forecasting. Quantitative forecasting uses past numerical data and can be used when it is expected the data patterns will continue in the future. Judgmental methods use intuitive judgment, opinions and estimates of probability. They are often used when the past data is lacking or in the completely new environment conditions. Delphi method and scenario building are examples of judgmental methods. (Hyndman & Athanasopoulos 2018)

According to the European commission, future research is a systematic, comprehensive, multidisciplinary and critical long term analysis of themes of the future and the scenario paths of the future. Foresight is part of the future research and it is using the techniques and methods of future research. As a concept foresight is wider than future research which can be divided into utilization of future research, planning and networking. (TNO 2017)

2.4.2 Observation of the operating environment

Qualitative methods are observing the significant environments for the organization, sociological, economical, ecological and technological environments. The meaning of the examination is to notice early enough weak, or strong signals, which tell about the new ways of development and need of changing the strategy and ways of operation. To make the environment examination meaningful the present state of the organizational operating environment must be clear. That can be done with SWOT analysis and categorizing the positive and negative aspects of the internal and external factors of the situation. (European Union research in foresight 2014)

The weak signals are important to be followed as they might arise into trends and even megatrends. Megatrend is a great phenomenon, which have a clear and recognized aim. These aims of development are also believed to continue in the future. Megatrends consist of smaller trends, which should be observed and recognized, the arising and downward trends, and those which stay stable. The counterforces of the trends, called “antitrends” also need to be taken part of the observation. . (European Union research in foresight 2014)

2.4.3 Scenario thinking, futures table and the futures map

Scenario is a development path, story, or description based to the present knowledge and continues as a process from present to a possible picture of the future. Scenario consists of analysis of the present state, prospect of the future, and description of the processes connecting present to prospect. Scenarios can for example be expectable, desirable and avoidable scenarios that work as a tool for strategic decisions and prepare for the different futures. Scenarios consist of cause and results, consequences for helping decision making, and they should be logical, interesting and sociable credible. (European Union research in foresight 2014)

Futures table is one of a tool for scenarios working. In the table the essential aspects and variables are listed in the left hand side, and every variable will have alternative possibilities listed. Usually the table will represent certain problem of period of considered time. Megatrends and weak signals can be included to the table. Futures table can help creating development trends and paths for future in three ways based on the values of the variables, future prospects or backcasting. In backcasting way the alternative possibilities are named as variable scenarios of the future before the development paths are built. . (European Union research in foresight 2014)

The article Quality Criteria for Scientific Futures Research discusses the quality criteria for forecasts and in the frame of Futures Map. Futures Map is the outcome picture of the future of forecast process. The Futures Map can have high internal validity meaning the process is well-organized, or high external validity meaning the wellness of constructed Futures Map. The main idea and the most important part of the article are six pragmatic external validity criteria, and also the choice of research methods. The Futures Map includes all possible futures identified during the research process. Every future has two parameters. First when the future will realize and how the users will appreciate the realization, and secondly the possibility of the realization of the future. The scenario working can be also connected to the Futures map where the current state is connected to at least one possible future with scenario. (Kuusi, Cuhls & Stenmuller 2015)

In the Futures Map the final endpoint depends on the actions and choices the actors make on the way there, but also it depends on the capacities and purposes of the actors or organizations, or trying to avoid the worst case scenarios, or trying to maximize the expected desirability and probability of the future picture. The different future pictures can be divided into easy to achieve, difficult, or impossible to achieve with the available resources. (Kuusi, Cuhls & Stenmuller 2015)

According to the article the futures research should always be based on the whole big picture instead of selected facts, trends weak signals what might tell the particular future. There are always similar facts that point in another direction. The whole big picture can be validated with six external and practical criteria introduced in the article. It should be also always keep in mind how scientifically the whole picture has been researched, and does it serve the interests of the customers and users of the forecast. (Kuusi, Cuhls & Stenmuller 2015)

Answering to the following questions will help to increase the internal validity of the forecast activity listed in the article of Kuusi & others:

- What is the objective of the forecast activity?
- What kind of activity the issues, time spans, knowledge require?
- What is the scope of relevant intelligence, strategic intelligent or sense-making projects?
- What are the methods to make use of the strategic intelligence of the specific actors?
- What are the results of the process and how they are presented?

The article suggests six validity criteria for Futures Map, originally presented by Osmo Kuusi in 2011. Two Futures Maps are compared. They have the same topical focus and

they are equally valid in other criteria. I here modify the criteria to four common statements.

- The more possible futures give the better vision. There are more possible paths to the accessible futures.
- The most relevant and important futures must be identified.
- The scenarios must be interpreted and in line with causally relevant facts.
- Customers must understand the Future Map.

The idea is to identify what is needed to be known and to show the gaps in the current knowledge. The validity of the Futures Map increases with more relevant possible futures. The known facts might not be the most relevant, but all causally relevant past or recent facts and weak signals must be taken into account. Causally linear trends and weak future signals are not enough for a valid Futures Map. The customers might be the best expert and they have to understand the relevant messages in the map. A good scenario is also believable, trustworthy and interesting. This is challenging if the possible futures challenge the recent values of the customers and what they believe. A highly relevant issue is that the experts believe in the judgements especially related to the Delphi processes. Sometimes an expert is not ready or not willing to give his/her true belief. (Kuusi, Cuhls & Stenmuller 2015)

2.4.4 Delphi as participating method

Delphi, or the Delphi method, is an inquiry survey, also called controlled debate. In the method the chosen specialists are interviewed or information collected of their estimations of the future. Collecting the information qualitative or quantitative tools can be used. In the first round all specialists will have similar questions, and in the second round the answers are commented by others. Delphi can be based on the anonymous discussions and people don't know whose arguments they are commenting. With following rounds the purpose can be to cumulate knowledge and target to a commonly accepted compromise of the target. Also with the method the wider understanding of the target problem can be formulated by collecting different opinions. (Wikipedia 2018)

2.5 Robotic Process Automation - RPA

In this part Robotic Process Automation concept will be introduced, and the market and technology aspects covered. There is also discussion of the opportunities of RPA, and can it be a threat for an employee? What is the future and where RPA and computerization will develop?

2.5.1 Introduction

The case of this report is to study Robotic Process Automation (RPA) and also introduce Artificial Intelligence (AI). These topics are close to each other. With RPA is possible to automate routine work processes with information communication work. The technology is based on software robots or artificial intelligent that can replicate the work of a human through the user interface of a computer or information system. Traditionally IT integrations have been done based on Application Programming Interfaces (API) and with RPA the software robots can operate similarly on the user interfaces. (Wikipedia 2018)

The best tasks for software robots are routine work, which include many manual data transfers and queries. Especially the tasks which are too small, sudden and rapidly changing with their content to be automated with traditional information system development are great for RPA. The software robots use the third party systems and applications as humans and they do not require any software development. According to Sanna Kaarlejärvi from Efima Oy the processes of the organization planned in to the RPA should be taken care of first. RPA is not good for fixing broken or not clear processes and they should be first harmonized and developed so that they are easy to be automated. It is clever to ask is the task wise to be automated or not and not force them to be taken care by RPA. Planning of the software robots' tasks needs to be done carefully. All the actions of the robots will be stored in log files so tracking of them will be possible in problem situations. Software robots require a dedicated person to take care of them. The person should know what the robot is doing, monitor the quality, and correct the situation if there are any deviations in the functions. In the beginning the robots are part of the teams, but can be developed to form teams of their own. Robots can also take care of totally new tasks when humans do not have time to take care of them or they would be too expensive for human work. (Talouselämä 2018)

TIVI journal interviewed Jaakko Lehtinen, leader of Finnish knowledge centre of Nordic Intelligent Automation of CapGemini. In the Europe first British big companies started to utilize RPA but Finland and especially large public organizations have followed. According to Lehtinen Finland is a leader especially in the public sector process automatization. The Finnish Government Shared Services Centre for Finance and HR has been a forerunner with these technologies, followed by different agencies, health care organizations, and big cities. "At the moment there are many ongoing competitive tendering negotiations". (Talouselämä 2018)

The topic is important for my thesis and has been recognized as an important background technology to be studied. In the thesis I study the resourcing of the Ministry for Foreign Affairs visa process and how to balance it with changing demand situation. RPA as a technology could balance the demand peaks and help to proceed with manual work when there is a need for bigger human resource demand. This report is not concretely dealing with the issues how RPA can be taken into use with this specific process but generally introduce RPA, and its possibilities from the view of public sector.

2.5.2 Market facts and adoption rate

According to Gartner research, worldwide deployment of RPA will happen in few years. In Finland many organizations and companies are ahead of that estimates Mrs. Valli from the consulting company Knowit. Software robots are safe workers for routines, but require a safe environment hence they are also vulnerable for data security attacks and they do not like surprises in the processes. Starting to use of RPA might cause bias among personnel. Some are worried about the reliability of the results, some of their work placements. RPA should not decrease amount of personnel, but affect to the work and how it is organized. Some tasks are no more needed but in place of them new possibilities will come. (Talouselämä 2018)

According to the report of ETLA, Research institute of the Finnish Economy, one third of the employments in Finland could be affected by the computerization in the next two decades. (ETLA 2018) Tero Salminen does not see so dramatic change in his article. In the research among business directors and decision makers in Finland 62 % of them does not believe to the ETLA report in next 10-20 years. The ETLAS report mostly concentrates on that how current work will disappear due to the automatization. More optimist view is that digitalization should instead enable creation of another kind of more interesting and productive work.

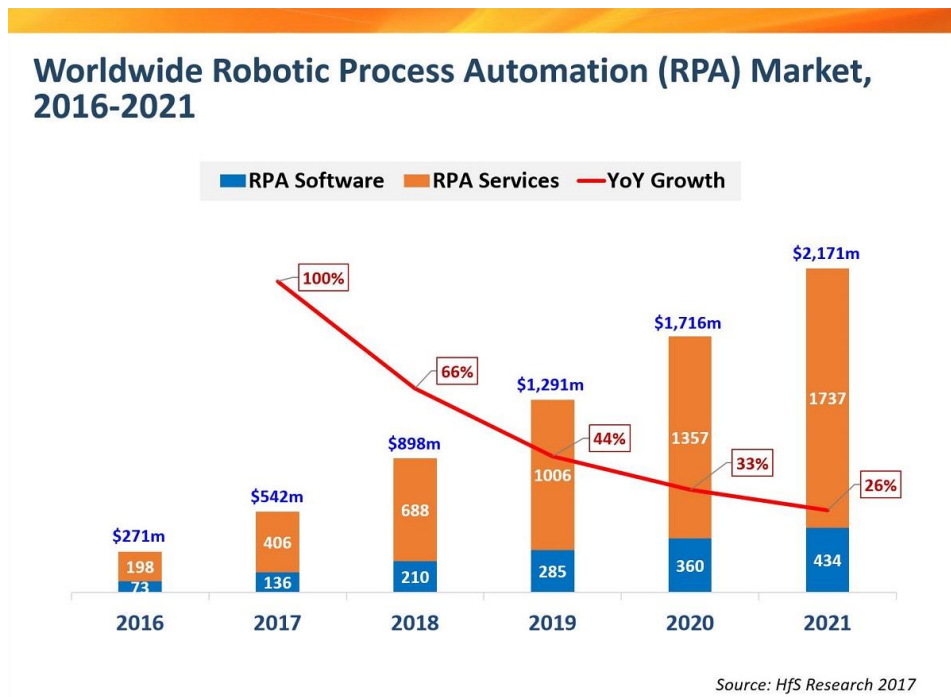
According to the presentation (2016) of Mrs. Pirjo Pöyhiä, Managing Director of Palkeet, The Finnish Government Shared Services Centre for Finance and HR the unit has been taken RPA into usage fully in 2017. They will see the technology and automatization will bring savings of 6 million Euros by year 2020 and the investments in RPA will become profitable in one year. This requires the automation is fully integrated to the organization part of all personnel's work and participation into the development of the automated processes. The unit has seen that investments in Robotics automation are lighter than traditional software development investments and the new technology is supporting the investments in digitalization. It has been seen that in the next 10 to 20 years RPA utilization

will be part of successful operating model related to digitalization and will also effect to the development and structure of the society. RPA technology will develop and get more inexpensive. Robots will replace 47 % of USA workforce, and 36 % of the work force in Finland. Benefits of using RPA are the more efficient processes with lower expenses which will be seen as higher customer satisfaction. Overall process quality will improve when human errors decrease and the processes are redesigned. Personnel can concentrate to the customer service and more complex specialized tasks when robots are taken care of the routine traditional tasks of the personnel. The knowledge management will develop within processes and human resource when he processes are better monitored and analysed. In 2016 76 % of companies were planning to investigate in RPA for the operations during the following year according to Deloitte global market observations of 2016. (Valtioneuvosto 2018)

According to the Deloitte research of RPA over half of the companies responding were using RPA or had been investigating to start using the technologies. Almost fifth of the respondents was considering starting using the technology in next two years. Companies have been also considering usage of cognitive automation, machine learning technologies which support RPA and are usually based on analytics to increase the benefits of RPA. (Deloitte 2018)

According to HFS forecast from December 2017 the global market for RPA software and services will reach 898 million US Dollars n 2018 and will grow with more than 50 % annually.

Picture 2. (HFS 2017)



© HFS Research 2017

2.5.3 Technology description

Before RPA tools and software, organizations were using similar automation tools. Simple processes were automated with Excel, macros and simple hacks. They helped productivity of simple employees but were not scalable or sustainable for larger use. First generation RPA software was programmable bots with specific inputs. Next step is cognitive and intelligent automation bots which are programmable and use advanced technology like Nature Language Processing, image recognition and machine learning. These bots can utilize unstructured data and can enhance decision making. Solution providers usually have to connect to other service providers to provide these functionalities. Self-learning tools are coming soon and being developed at the moment. These bots monitor employees tasks, start to understand processes and can ask for human input if needed. (Applied AI blog 2018)

RPA technology is different from traditional software used for automation as it is capable to recognize and adapt deviations in data and process large volumes of data. It can be also programmed to analyze data and triggered to make new actions and communication with other systems. With RPA toolkits non-technical employees can create easily and quickly software robots, bots, automate business processes by defined rules. Bots will imitate human actions using the internal IT systems and require only a minimum integration to the existing systems. Software robots can take over human tasks from processes where a lot of human intensive transactional functions are needed but they require human

work for tasks where human judgment or governance is needed, or to make changes or improvements to the bots. RPA can also help companies or organizations with lack of employees. Costs can be saved and resources better allocated with automation. Usually the RPA service providers will offer implementation and consulting services to build the automated capabilities within organization. Very often the wide deployment of services will require operational business process management services. (HFS 2017)

Other similar technology using enterprise robotics software is Robotic Desktop Automation RDA. With this especially surface automation the data can be for example transferred from one system to another. RDA can automate data flows on application, storage, operating system and network layer levels. The workflow between these layers requires interoperable technology but provides efficiency, reliability, performance and responsiveness. In the beginning these processes require significantly lot of human inputs for passing tasks to bots, but machine learning can decrease human attendance and intelligence of automated processes will increase over time. Humans are also needed to make changes to the processes and to solve tasks with require human judgment. (HFS 2017)

Leslie Willcocks, professor of technology, work, and globalization at the London School of Economics' department of management, tells in the interview about his work on robotic process automation. Willcocks describes four streams of RPA. The first is where the highly customized software works with certain processes. The more general streams he describes as three lane motorway. The slow lane can be called as web or screen scraping. Data is collected, synthesized, and put in to a document on a desktop. Second lane is a self-development kit with customized robots. Third and fast lane is scalable and reusable software robots. Instead of simple tasks RPA software can do, cognitive automation can work with language, reasoning and judgment tasks, creating context and meaning of things with insights. (McKinsey 2016)

First RPA focused vendors were founded in 2000s and they provide programmable RPA bot solutions, and developing them with intelligent technology and cognitive automation capabilities. Examples are Blue Prism and UiPath. In 2010 founded RPA vendors are focusing to provide latest RPA solutions with cognitive and intelligence automation capabilities. These companies started already when first generation RPA tools were boosting and they have concentrated on more complex situations within organizations. Example from this kind of companies is WorkFusion offering chatbots with their RPA bots. Indian Infosys is an example of a company which has automated business processes which it has already taken over from its customers. Most this kind of companies do not have their own RPA solutions but are using them for their outsourcing partners and are often called as

Business Process Outsourcing (BPO) providers. Examples of such BPOs are Telemarketing services, Appointment scheduling, Customer support, IT helpdesk and Call answering, etc. (Applied AI blog 2018)

There are many RPA vendors for different kind of requirements for different kind of processes and cost structures. The costs usually consist of setup costs, vendor license fees and maintenance costs. Ease of use and control can be very important for some of the organizations including training and support. Technical criteria includes features like security of the RPA bots, integrations to the different systems, screen scraping features and compatibility to the current systems and technological environments, and future's intelligent needs of the RPA bots including cognitive automation capabilities and roadmap into these. Like generally, overall vendor experience, support and relationship define the partnership for many organizations. (Applied AI blog 2018)

Blue Prism software is used usually in the virtualized environments based on cloud computing and control of the robots can be done by the service providers, and they are operating in the virtual work stations inside the client company network. This software is meant for large organizations wide background processes automatization. According to TIVI journal study, Blue Prism is more suitable for strictly ruled banking sector and health care. As an example a better solution for individual and skilled users is SikuliX software. SikuliX and WorkFusion software for example are based on graphic-surface-automation and searching for graphic elements on the screens. This software usually requires programming background from the users. UiPath software as an example can also read html elements or other deeper user interface elements so it is suitable for both individual user and larger organizations and is easier to use than other compared software. (TIVI 2016)

2.5.4 Opportunities and impacts

Palkeet, The Finnish Government Shared Services Centre for Finance and HR has been using RPA for more than a year. Using of software robots to automatize has been started with finance and HR processes where the customer benefits can be realized and seen faster. Digitalization of such processes is a part of government key initiatives for public sector (Palkeet 2018)

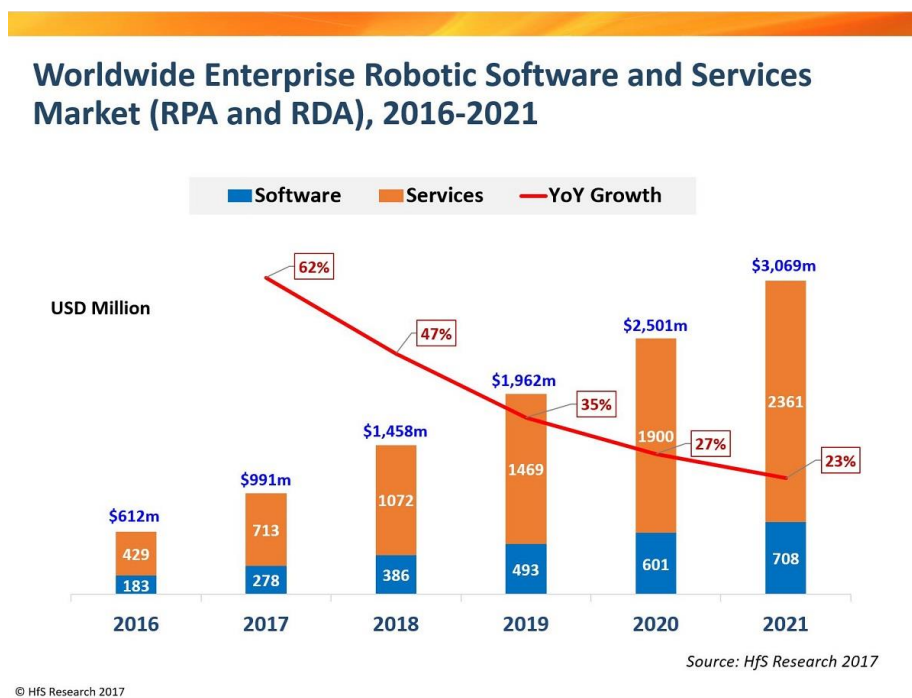
A report from the end of 2017 shows the results of the investment project. According to the unit, automatization has been improving the internal operations efficiency and service quality that can be seen better and faster customer service. Palkeet has 13 software robots in different processes and one testing new possible targets for automatization. In

March 2018 they were processing 22 different tasks in finance and HR processes. (Palkeet 2018)

Software robots have been for example balancing changed details of receipts and transforming details between systems. Robots have also been checking and reviewed customer purchasing invoices and later they will be processed automatically. In the beginning checking were made also manually and robots were discovered to be working well and correctly. Software robots are mostly working during nighttime and in the morning the results are ready. Robot can handle a line of information in couple of seconds and in some tasks 2000 lines of information was transferred in an hour. 90 % of the data was processed during the night. (Palkeet 2018)

According to Deloitte, RPA is expected to replace about fifth of the current work force. Similar figures have been seen already in the organizations which have started with RPA solutions. The organizations have seen that over half of the work force could be robotized. According to the study the usage of RPA supported the current tasks of the human resource so that personnel were able to concentrate to more valuable and meaningful tasks. This in time increased the job satisfaction level in the organizations. CEA Tomi Pitkänen from Deloitte Finland sees that in time people want to educate them to be able to work with more advanced tasks if robots will replace the old manual processing tasks of them. (Deloitte 2018)

Picture 3. (HFS 2017)



RPA is about digitalization of processes. The digital strategy of organizations should include intelligent process automatization. Digitalization of processes will create new jobs and opportunities, while old ones will disappear. (HZS 2017)

According to Leslie Willcocks the major benefit of RPA is the short term financial return of investment between 30 and 200 percent in the first year between the 16 cases they studied. This should not only be looked, especially in the results in saving labor costs and there are other business benefits as well as freeing staff for other more complex tasks like better customer service which can be seen in more powerful processes. This can be seen also as a benefit for employees and RPA can help organizations with stressful bureaucracy and employees can also concentrate to the business tasks instead of routine administrative work. (McKinsey 2016)

Before RPA the cost efficiency advantages of business process management and process improvement for reducing costs have been done by centralizing and standardizing the processes. This might reduce the organizations ability to react changes and business opportunities. Business has to make choice between cost, efficiency and business agility. As an example the Business Process Management streamlines the process flow by eliminating waiting time between process steps, the actual process execution will remain manual. Process Transformation will require massive changes and process redesign. RPA can be built within separate business units, rapidly customized solution with digitized processes, short delivery of value, and reduced overall risks. Usually organizations have to deal with local labor costs, labor supply, and local labor legislation. With RPA organizations can change from being a labor centric operating model to a technology enabled operating model. (PwC 2016)


RPA can also give an opportunity for an organization to get back outsourced tasks, or remain in-house. This will allow organizations to better keep the control and ownership of processes. This requires the organizations to reevaluate the existing outsourcing and vendor contracts how beneficial and relevant they are. (<https://www.pwc.com/us/en/outsourcing-shared-services-centers/assets/robotics-process-automation.pdf>)

Also the outsourcing providers have started to use RPA for cost savings and to remain competitive with business benefits. RPA might also help the outsourcing model to evolve. (CIO 2018)

Picture 4. (PwC 2016)

Implementation of RPA usually begins with a Proof of Concept. End-to-end POC takes approximately one to two weeks to complete (see Figure 1).

Figure 1: Proof of Concept

Phase	 <i>POC Selection</i>	 <i>Process Re-engineering</i>	 <i>Programming and Testing</i>
Activities	<ul style="list-style-type: none"> • Determine Complexity • Confirm SME Availability • Estimate Value Impact 	<ul style="list-style-type: none"> • Interview Process Stakeholders • Evaluate Process Efficiency 	<ul style="list-style-type: none"> • Install RPA Software • Develop Automation Solution
Level of Effort	1–2 Days	2–3 Days	5–7 Days
Stakeholders Involved	Business SME/ RPA COE	Business SME/ RPA COE	RPA COE

SMEs - Subject Matter Experts COE - Center of Excellence

Once that is complete, business leaders undertaking an RPA deployment should focus on a few key principles to maximize value from the initiative.

Automate as much as possible. Evaluate current processes with an end-to-end, cross-functional lens and maximize automation across processes.

Focus on frontend processes. Maximize the use of automation during initial steps of a process and work in coordination with other departments or functions because upstream process improvements have a magnified impact on downstream steps.

Maximize productivity. Evaluate process dependencies between the traditional and digital workforce and schedule RPA solutions intelligently to optimize uptime while not overwhelming production systems.

Aim for 100% auditability. Consider applying automation to processes to create a complete digital trail and improve controls for tasks that are otherwise too labor intensive to fully audit.

When the organizations scale of RPA increases, also the automation algorithms will be improved and will help them to move to the next level in future. The next step will be cognitive computing, artificial intelligence and more autonomic processes in the more autonomic organization. (PwC 2016)

With other cognitive technologies such as machine learning, speech recognition and natural language processing the organizations can automate tasks which have traditionally required perceptual and judgment thinking of humans. Some RPA suppliers are already cooperating with cognitive computing vendors, such as Europe based Blue Prism with

IBM Watson. RPA will show practical applications for companies of cognitive computing and shows a clear path into usage of it. Cognitive computing will also increase the intelligence of the RPA technology. (CIO 2018)

Machine learning as a topic is part of artificial intelligent and cognitive technologies which recently has been started to use more widely within organization. Machine learning is analyzing and foreseen based on large amount of data which is done fast and huge scale with efficient technology. Not all data is suitable for machine learning and the technology has to be taught to select and search correct data. Currently especially transfer learning solution based technologies do not need any huger amount of data and smaller systems can learn based on large data systems. Some big companies are using reinforced learning solutions but in the real life solutions their significance is still limited. In this technology based machine learning the software is learning from mistakes and correct selections. Machine learning can be seen as a solution to enforce automation and human based work. This can also give more business opportunities and like RPA improve the current processes. (TIVI 2018)

2.5.5 Challenges

The biggest consideration for an organization starting to use RPA is the strategy. Using RPA not only for cost savings but as a larger strategic tool it gives much more benefits. The start of using RPA must be very well planned, and the right processes chosen. The process has to be stable, mature, optimized, rules-based, repetitive and high volume. It is recommended to start with controlled bottleneck or pain point. It also requires change management inside the organization to start using RPA and to be able to adopt it. Organizations also have to build mature enterprise capability for RPA, preferably with center of excellence to be able to configure, install, develop, and plan the robots tasks. The employees should have experience with IT, governance, security and improving them continuously. (McKinsey 2016)

Organizations which will start using RPA must prepare well for the technological and cultural challenges and what the automation of process will mean to the work force. Senior management need to be ready to answer to employees what it will mean to them, the shift to other more challenging tasks. The RPA ownership has to be well defined and addressed and the role of the Global Process Owner is critical to ensure how to make processes error free and efficient. (PwC 2016)

Challenge for an organization is also to consider if IT solution is better than RPA. Usually RPA pays back the investment in a year compared to few years payback time in IT solution which also takes long time to be implemented. The business case must be looked and choose the best way to tackle it. There might be also other ways of approach from business than the IT. If business wants something small, IT function might get worried because of the potential of lack of knowledge of the people without understanding the impacts of RPA and risks within the infrastructure. Business might also see IT solutions busy and frustrating. (McKinsey 2016)

Business units should own the automated tasks in order to have agility but work closely with IT department to manage the change and impact within IT strategy and roadmap, and to be able to define the changing role of IT. Business units can get benefits by collaborating to share processes with each other with RPA. This will require the senior management to see the collaboration as a key priority of the organization. (PwC 2016)

3 Methodology

3.1 Strategy for research and data collection plan

Qualitative questions were conducted in spring 2017 for key personnel within the Finland visa operations for Russian visa applications to find out background information and answers to the objectives and ideas to answer into the research questions.

The aim was to find actions and ideas for the objectives set in the beginning of the work and to the research questions which were finalized together with the orderer of the case study and work. This included action research tasks related to the own work.

The data presented in this study is based to the interviews and different document sources. The people to be interviewed were chosen together with the orderer, process owner of the Finland visa process.

Interview questions were used in semi-structured qualitative interviews between key personnel in key locations. The interviews include few management persons in the ministry in Helsinki, in Kouvola Service Centre for Entry Permits, and one manager in all Russia unit locations responsible for the visa process. Kouvola is the most important unit for operations, and there the operational management in different levels will be interviewed including team leaders and managers. In the results shortened title, or title head of visa unit will be used to a person interviewed in the consulate. The official titles are variable and can be seen below:

The following 12 persons from MFO were interviewed:

Administrative Officer, Murmansk office of the Consulate General of Finland

Administrative Officer, Petrozavodsk office of the Consulate General of Finland

Administrative Officer, Service Centre for Entry Permits

Deputy Head of Visa Unit, Consulate General of Finland in Saint Petersburg

Director for development projects, Ministry for Foreign Affairs

Director General, Consular Services, Ministry for Foreign Affairs

Director, Service Centre for Entry Permits, Kouvola

Head of Consular Unit, Embassy of Finland, Moscow

Head of Financial Planning, Resource Planning Group, Ministry for Foreign Affairs

Process Owner, Consular Services, Ministry for Foreign Affairs

Team Leader, Service Centre for Entry Permits, Kouvola

Team Leader, Service Centre for Entry Permits, Kouvola

People part of the survey are the stakeholders, consisting of team leaders and managers of the operations, directors and personnel of another units related to the operations, missions in Russia, financial department of the Ministry. Steering group of this study consists of the author, customer contact and thesis supervisor.

The results will analyzed with the analyzing tools for qualitative data. Resulting patterns and themes will be found form the data. Similar structures and themes will be used to withdraw conclusions.

The interviews and discussions were conducted in few months period between 21st of March and 3rd of May 2017. It is important to notice the time of the interviews.

3.2 Interview questions

To be able to find answers and background information to the research questions for this study it is investigating, the key personnel in the case organization were interviewed with qualitative methods with the following interview questions:

The first part of the interview questions were pointed to find answers for the objective 1 and research question 1, and background information for the work. The relevant answers are covered in the results of the survey and research questions answers in the conclusions part.

How many employees are needed currently to cover the work load in Russian visa process in different states of the process and in different units part of it?

What reasons are impacting to the human resource process?

How the resource planning is done/should be done?

The second part of the interview questions were pointed to find answers to the objective 2 and research questions 2.1. and 2.2. and to get background information for the whole research work.

What are the operational peak seasons/changes in application counts in the Russian visa process, the reasons impacting to them, and what is the most efficient way to cover them?

The third part of the interview questions were pointed to find answers to objective 3 and to the research question 3, and background information for the work.

What are the current follow-up and measurement tools and meters of the effectiveness of Russian visa process and their problems/challenges?

What are the most suitable metrics to measure and plan the human resource demand? What kind of metrics and information or reports the management is lacking currently?

The interview questions were sent beforehand to the interviewed people, for thinking and looking for the more specific answers. This also helped the interview event making it smoother and faster.

3.3 Data analysis plan

Recorded interviews were written open to word documents. From the written texts common themes and patterns were found out and grouped manually to find out common answers and categorize texts in order to be able to answer objectives and research questions.

4 Analysis and results

4.1 Optimal amount of the personnel in process

The first part of comments is covering the views of the management of MFA from the point of view of consular services, financial planning, and development projects.

In the first theme the questions were related to the optimal amount of personnel, and how the interviewees feel the amount of personnel and how it should be changed for covering the current amount of visa applications. From the beginning of the year 2017 the amount of visa applications and the demand has increased rapidly. For this reason most of the answers supported increase for the personnel processing visa applications and making visa decisions. The demand was growing during the time period interviews were conducted. There were also technical problems which affected to the processing time. This might have seen also in the answers of the last interviews.

The Director for development projects of MFA stated that the Finland Russian visa process has been in general seen as a process, where the personnel and the amount of it is playing a big role. Only Finnish citizen personnel can make visa decisions so the human resource has significant role in the process. At the moment the amount of personnel has been fixed and within this fixed amount of human resource people are having holidays and other leaves. Usually the high demand is at the same time with Finland holidays, in summer and around Christmas. This was also noticed in many other answers of the interviewees.

The Director General of the Consular Services of MFA said it has been seen very problematic in the public sector to hire seasonal personnel or make short period working contracts. Laws and norms, and in the "Collective Agreement for State Civil Servants and Employees Under Contract" (VM 2017). So called zero working contracts are not possible to be made similarly to the private sector. Zero working contracts means when an employee can be called any time for periodical work.

According to the Director of development projects one of the targets for the ministry has been to find technical solutions in order to decrease manual working and the process dependence to the human resource and amount of it. So far this has not been reached and the work continues. The amount of optimal amount of human resource is hard to be set. During the high demand season the setting of optimal amount is managed poorly, if the amount is set so that the high demand will be well covered and usually this means that

most of the time of the year there will be not enough work. Head of the Financial Planning of MFA stated that over resourcing of personnel is costing a lot if there will be not enough work and this is tried to be avoided. Director General of Consular Services said at the moment a visa officer can process around 50 visa applications in a normal working day, which is not seen satisfactory by the management. The general amounts of visa decisions will be more covered in the measuring part of the research.

According to Process Owner of Immigration Processes of Consular Services the amount of personnel in the missions in Russia should be aligned with the amount of visa applications. At the moment there has been pressure of increasing the human resource in Russia, hence the amount of visa applications has been increasing steadily. This was also seen in the answers from mission contacts. The opinion of Financial Planning is that it is not supportable to increase amount of personnel in missions hence the contracts are also harder to control. Process Owner said last year in 2016 when the demand for visa applications was low, the Kouvola unit of MFA was over resourced with personnel. It is important to investigate what kind of tasks the personnel are doing and how is the human resource working with visa decisions. Some of the personnel have started to work with other tasks than visa processing, which is influencing to the amount of whole resource. This was also seen from the answers from Kouvola unit. It has been also seen that one angle of the resourcing is not the amount of personnel, but efficiency of the personnel making the visa decisions. That was stated in almost every interview of the key personnel. The view of the management is that people should be more efficient, and with the current resource there should be more processed visa decisions, especially in Kouvola unit. There are different comments should the amount of personnel be increased in the missions, if application demand is growing. The management of HR contracts is seen more difficult in Russian missions than in Finland. According to the Director of Consular Services the fact that the processed visa application material is not homogenous is well known. Some visa decisions, especially processed in consulates require more time. This will be more covered in the meters and measuring part of the survey answers.

The opinion of the Financial Planning and other management of MFA is that the aim of the personnel resourcing and HR management has been to find technical solutions so that manual processing work could be decreased. The current fixed amount of visa officers in Kouvola unit is about 50. When there is more work the technical system should scale-up the supply for the demand so that fixed amount of personnel would suffice. Current technical solutions have not been able to answer into the demand increase. Earlier the amount of fixed personnel has been around 70. This amount was seen as too big hence in the low season demand there was not enough work for all of the personnel. According to the Di-

rector for development projects the work will continue and there is a lot of pressure for the new visa information system to support the development.

4.1.1 Kouvola

In the following part the answers of the Kouvola MFA unit are covered for the first theme of the questions. What is the optimal amount of personnel working within the Finland Russian visa process? The management of the Kouvola unit and team leaders were interviewed. It is important to notice the timing of the interviews, spring 2017.

According to the management of the unit in Kouvola the amount of visa applications is monitored constantly and estimations for the HR demand and amount of the personnel are done. The demand of the spring season was a surprise and the growth was foreseen but the amount of it has exceeded the expectations. In the beginning of the spring a proposal for seasonal personnel was made, 26 people for four months. In the unit it was seen realistic. The technical problems of the visa information systems have been affecting to the resource planning. When the interviews of this survey were conducted, the amount of promised seasonal workers was less. Many of the permanent personnel are not working with visa processing. Few are in other tasks and positions within MFA, or are on periodical leaves. It was not known if substitutes can be hired. Some are working with other tasks in the visa process or supporting administrative tasks. This has been seen a possible muddling factor of the complete visa processing and decision making.

A comment of a Team Leader was that the current amount of personnel in the unit is seen sufficient if the amount of visa applications in Russia and St Petersburg itself is maximum of about 2000 a day. It was seen that the growing demand cannot be done without extra workers.

Similarly to Kouvola unit, it has been seen by the Team Leaders and other management that missions in Russia would need more personnel. The focus is in St Petersburg, but there is demand also in other missions. At the moment the amount of personnel was very critical and there were not possibility for sudden leaves of the personnel. When the demand grows rapidly, they cannot be covered with current resources. The mission personnel in other locations than St Petersburg should be able to cover their local demand on their own. Kouvola would help with possible demand peaks. That should be the driver of amount of personnel and planning of the HR. In the peak season there are about 1000 applications more a day than normally. It was seen that this would require about 20 more officers taking care of them and preparations have to be started early enough. Recruiting

personnel is very slow process and there would be place for improvement to fasten and simplify the process.

4.1.2 Consulates in Russia

Especially in St Petersburg and also in other locations in Russia it was seen that in the missions the amount of visa officers at least cannot be reduced anymore and should be possibly increased if Kouvola is not able to help and the demand remains stable. Many workers in the Russian mission locations are doing special tasks out of visa processing including administrative tasks, interviews of the applicants, residence permits and stand-ins of the leaves. The basic amount of the HR in visa processing should be set that there would be no need for overtime work. There has been rapid growth of the demand in visa applications in Russia compared to the previous year, but amount of personnel has been decreasing. (When interview was done the increase of demand was +24%). Kouvola is monitoring the visa process and in the location independent visa process the extra personnel should be hired to Kouvola, which is taking care of the extra demand. But at the moment Kouvola is not able to do this with their current human resource, officers are continuously on leaves of absence, go for official journeys to another missions, and substitutes are not hired. In the consulates the amount of personnel is in the minimum and taking care of the daily tasks is seen hard if there are sick leaves or other leaves. Also the holiday seasons are seen challenging.

4.2 Operational peak seasons of application demand

The second theme of the survey handled questions around the operational peak seasons in demand, the reasons affecting to them and why they happen, and the best practices and tools for taking care of them. The text is formed from all the answers from MFA, Kouvola and Russian missions.

The peak season or peak in demand is recognized as sudden increase in demand, which also comes down pretty quickly. The peak seasons are also cyclic repeating same time every year. When the demand is growing and decisions are not made in the same scale, usually the visa processing and customer waiting time becomes longer. There are EU rules that the time cannot extend 10 days with Russia visa decision (Agreement between the European Community and the Russian Federation on the facilitation of the issuance of visas to the citizens of European Union and the Russian Federation) and this is the time frame controlling the Finland visa process for Russia.

From all the answers in the survey, the biggest peak seasons for demand were recognized in spring and in December. There are many holidays in spring time in Russia, for example Victory Day in May. Also during the late spring the visa is usually applied for the summer holidays. Another, even clearer peak in demand happens in the end of the year, November-December when the visa is applied for the New Year holidays when also the Russian Christmas is held in the beginning of the year. These operational peak seasons in demand are most clearly seen in St Petersburg. According to the consulate contacts, however, there are differences between Russian cities. In Moscow the demand is more stable during the year, but the peak demand before New Year is very high. In Petrozavodsk and Murmansk there are not so visible peaks than in St Petersburg and Moscow. In Petrozavodsk there are some amount of seasonal workers, who come to work in Finland as berry pickers in the summer season and they naturally apply for a visa in spring months. This is according to the new law of seasonal working starting from the beginning of 2018. The law is based to the EU seasonal work directive (2014/36/EU) and in Finland it is applied for seasonal work in Finland, but not for berry picking in the forests.

New phenomenon is not only the peak seasons in demand changing, but longer changes in demand, that might last for several months, or years. As an example the trend in visa demand in Russia was in high growth till the year 2015 when a significant decreasing started, which lasted till the end of year 2016. In Kouvola unit especially it was assumed that reasons for this were political and economic which decreased the overall travelling from Russia to abroad. At the moment there has been rapid unexpected growth in the visa demand for the whole beginning of the year 2017. Reasons for this have been assumed to be the more stable currency, believe in the more strength future and consumer economics in Russia, and willing to travel again. It is hard to predict such trends for the future. Usually this kind of smooth increase or decrease in demand lasts several years.

According to the consulate contacts and team leaders in Kouvola there are many reasons effecting to the demand peaks. St Petersburg is a high volume location of visa applications and the peaks around national holidays in Russia are clear. Also in Moscow the biggest peak is before the time when people apply for a visa to the New Year holidays. Usual amount is about 150 applications a day, but in December it can be about 600 applications a day. In Moscow many one entry visas are applied exactly for the period of holiday and travelling to Finland. In St Petersburg people do a lot of shopping travelling to the cities in Finland near the border. Finland is also close to the city of St Petersburg so it is rather easy to travel to Finland and back to Russia even during the day by own car, busses or train. This creates a trend when Finland visa which is also similarly a visa to the whole Schengen is kept valid all the time around the year. People do not need to plan trips and

can travel any time. This is also creating demand in the peaks, when people renew their visas every year around the same time. If the first visa was first applied and submitted for the half a year, then the next annual visa will be applied immediately after the first visa validity is finished. This is making an annual curve when visa is applied around the same time every year. Very often the visa is renewed in spring for the summer, and in the end of the year for the New Year. It has also been seen that visa is often applied close to the planned travelling, or the trip is not planned. This can affect to the peak demand just before national or school holidays. Also the summer and beginning of the year are the traditional holiday season for visiting Finland. Finland is easy location to travel from Russia for people especially in St Petersburg, Petrozavodsk and Murmansk. Recently it has also been noticed in missions and in Kouvola that there are many visa repeaters who want to renew their visa when there is a demand for travelling. Around the year 2016 there were not so high demand, but in 2017 the demand for travelling has increased in general. Finland has been traditionally seen as attractive travel destination. There might be travel bans to some locations, for example Egypt at the moment for Russians, and these people might divert to Finland instead.

4.3 Traditional tools and best practices for taking care of the peak seasons of demand

Among many answers of the management it was seen that the traditional efforts for handling the peak seasons in demand have been overworking of the existing personnel in visa decision making and hiring extra resources for the summer and Christmas seasons. According to the Director for development projects during the previous 8 years the whole Finland visa process has been developed with outsourcing the visa application receiving, electrification of the process and decision making together with the ESP, own MFA information system development and instructing and training of the visa officers making decisions. The effectiveness of the Finland visa process in Russia has been improving which can be measured as the amount of made decisions by visa officer which has increased.

Already in the first part of the survey the problem in the public sector of hiring extra resources for visa decision making was covered. Especially in the comments of Kouvola Team Leaders it was highlighted, that process for hiring extra workers should be rebuilt. How to ensure there is always enough budget for hiring people fast? Is it possible to get some kind of reserve of personnel who could be called quickly for visa decision working? Financial planning should be done in keeping mind the need for seasonal visa workers, or would it be possible to have some kind of reserve money or fund which is only dedicated for seasonal hiring? The decisions for hiring extra people, and amounts of them should be

done early enough, in the first part of the year for the summer. It was mentioned especially in St Petersburg and Kouvola that every year the decisions are made too late, that is creating congestion of making visa decisions.

According to Director for development processes there have been also efforts to influence to the consumer behavior when the visa is applied. Tools for this would be lengthening the visa period of validity; for issuing longer visas, or changing the visa length with one or couple of months. This practice has not been widely used hence it created confusion at the borders and especially counting the used days of the visa, 90 days per every half of the year.

Director for development projects and Process Owner said as a new possible ways of controlling the demand peaks could be a service promise for some of the applicants. At the moment it was not clear what could be the service promise? Some reliefs in visa applying process or in price could be seen as one way for influencing the consumer behavior. In practice this is not possible for MFA when the visa price is fixed and coming from the EU. Only way would be the outsourcing partner's price. Even a small price differentiation could move the consumer behavior little. There has been some evidence of that, when applying a visa in the mission has been seen very popular because this gives cost savings with the service fee.

According to the management of MFA the technical ways for taking care of the peak demand with more efficient information systems have been seen very attractive for MFA and will stay in focus in the future. There have been projects for improving the decision process. At the moment the Finland's national current visa information system (N-VIS) is coming into end of its life cycle and new is planned to be developed. In the development work it is kept in mind that the systems and processes should scale up for the higher demand and not so many extra personnel would be needed for the peak demand seasons. It is also important that the information systems and processes are working without any service breaks. It was often commented that unfortunately very often there are technical failures especially when the demand is high with a lot of work. The influence of the system failures has been investigated, service break times collected. This information should be used and part of the operational reporting.

According to the Director for development projects the smooth process and location independent visa processing has brought productivity of the work load, common working queues, relief of management of the process and load balancing between different work queues and locations. These all actions have already been seen as improvement of the

overall situation. This work is important to be continued and so far it has not been the solution for the seasonal demand variation and peaks. It has been also seen, that it should be investigated how automatic robotic processing could be used in visa processing. That would help to make the information system more flexible and even out the differences between applications and officers, and demand peaks.

Especially with Kouvola team leaders it was mentioned that people are not machines, different people and officers work in a different way. Some are able to make much more visa decisions in the same amount of time than others. According to Kouvola management this people's efficiency has also been monitored and tried to get the efficiency up in general. Ways of doing this are training, instructing, personal discussion and trying to effect to the problematic points of work, collecting best practices from other officers, and development of the applications ease-of-usage and automation for supporting the fast visa decision making. In the human resource management there could be ways for motivating the people, Within MFA it has been noticed that motivating financially is hard and even impossible to have target oriented salary or bonus salaries tied to the targets. Visa officers also have personal part of the salary, and the amount of this part can increase in time and is linked to the officer's results. This can motivate for better results little but has not so big effect in the overall salary.

In overall answers it has been seen that overworking cannot be the continuous way of taking care of the peak demands, it is stressful for the personnel and expensive for the employer. Usually not all officers in Kouvola unit are making over work. It has not seen so tempting as for example in Russian locations, where people traditionally work with fixed contracts, and do not have other so great commitments than work. According to the Kouvola management in Finland people are more committed to families, and other activities outside of working life.

The Kouvola unit was commented to be the place where the big masses of especially St Petersburg decisions are done. There should be enough resources working with the visa decision, and from the current permanent staff, not with other tasks. In discussion with Kouvola team leaders and with process owner it came out that some of the people are working with other tasks than visa decisions, for example assistant, administrative, or other projects. The management of the Kouvola stated that they cannot be part of the headcounts of the resource working with the visa decisions. Also it was seen in Kouvola and St Petersburg that if a person is working half a day with something else, and the day becomes very fragmented with different tasks, it might be difficult to start working efficiently with visa decisions, and that is affecting to the results of them. Holiday scheduling and

rotation is one used tool for the demand peaks. It has been discussed and agreed with the personnel that not all would be same time on holidays, especially having long four week holiday during the peak season. This might be seen problematic because Finland holidays in summer and Christmas are often same time with the demand peaks. According to the Kouvola Management this practice was used to be able to solve processing problems this summer.

4.4 Measurement of visa process efficiency and planning of human resource management

The last theme of the survey and the questions were related to the measurement of efficiency of the visa process, what are the current meters and tools to measure, their challenges and problems? How the human resource management and the resource can be measured and planned and what kind of meters, knowledge and reports would be needed?

From all the answers it was noticed what are the main tools of measuring the efficiency of the visa process, and individual officer making the visa decision? They were the amount of visa decisions done in the certain period of time, and quality of the decisions. Also the whole process can be measured with the lead-time of a single application from the point when applicant leaves the visa application to the point when he/she receives the visa decision and passport back.

The efficiency of making visa decisions can be measured in many ways. How many decisions have been made in an hour, day, week, or month? Working days are different and so are the applications and decisions which are processed. Some of the application categories require more time for investigating the attachments and other issues than some others, when the decision is very straight-forward. All the resources are used so that there is no need for overwork or scheduling the holidays. According to Director for development projects one way to measure officers' work is how long they are working with visa systems during the working day, and how much doing something else on their work stations. Foreseeability and predictability in HR management is important, and in the whole process to prepare for the upcoming peaks and increase in demand. Do we want the shortest lead-time, or make the most of the optical lead-time of the process? Process owner stated that it is important that the whole process is managed from one point, and all the parts of the process are involved in that. Also the excellence in making the visa decisions was seen as a meter, and how much time it requires. Not all people can make decisions fast, and some people need more time for making it. It was mentioned by the Kouvola Team Leaders that

only amounts are important in efficiency, and that is making pressure when people are continuously required certain amount of visa decisions. When some people are not able to produce as much decisions as others, this is also creating pressure or other personnel are not willing to give their best effort.

When measuring the process with quality the done mistakes can be way to measure it. Process Owner said also that quality however is more important meter than quantity. The mistakes might cause extra work in some points of the process, increased threat of illegal immigration, or wrong decisions. The content and quality of the applications has not changed in the last years. It can be also seen that the knowledge of Russia is a meter of quality and making quality visa decisions. This is also affecting to the ability of making decision. It was also considered by the Kouvola Management if periodical officer transfer between Kouvola and Russian missions could enhance the situation.

At the moment there is resourcing excel, which is used for planning the resource needs. In Kouvola it was commented that the tool should also count those people realistically, who make only few decisions per day, and do some other task part of the day. The resourcing excel should tell the realistic figures how many people are working with visa decisions, and how much time is used for other tasks. This information should be available in the monthly level and flexible ways for controlling and influencing the resource should be found together with the HR department. From management point of view it has been seen sometimes that the missions and units have been setting the need for resource not being completely realistic. Like the applications, also the officers making visa decisions are different. For planning the personnel this is also a challenge for estimating how many seasonal officers are needed in addition to the permanent personnel. When the amount could be estimated, it is hard to actually be able to recruit the estimated amount of people. Director General of Consular Services said the challenge is that the resource of officers is not flexible and increasing in similar way when the application demand is growing, like the amount was not decreasing when the demand and application amount was decreasing.

According to Process Owner in MFA quite many units are making forecasts of their own about the visa demand in Russia. All those parts should work together to make common forecast, and to what all parties could agree. In many comments it was seen that information flow between personnel in different units needs to be enhanced. The daily reports and tools for that are in place, but the long-term predicts and reporting is missing, and what is the demand for resourcing personnel in the long-run? There is no such data. The problem is the difficulty in predictability how the application demand evolves. In the missions it is important to know how much decisions have been made almost in real-time or

latest by the end of the day to be able to resource officers printing the visa stickers or order people to overwork if needed. When Kouvola unit's productivity is not smooth and the amount of decisions is varying, this is seen to complicate the planning of the missions operations especially in St Petersburg which is the biggest unit for printing the visa stickers.

Process Owner commented if Kouvola unit could be seen as a manufacturing unit where the output of made decisions and lead-time will remain constant, in less than 10 days: Should the resources be always set according to that, with personal targets or common targets for the whole unit? It is challenging to set the resource according to the demand which is varying. It cannot be the lowest demand, but also not the highest demand, and what kind of tools will be in usage for the flexibility and taking care of the demand peaks?

4.5 Answers to the research questions

4.5.1 Rq1: How the resource planning should be planned and estimated to meet the application demand?

Resource planning starts with prediction of the next year or season's demand for visa applications from Russia to Finland. Three responsible ministry units in the process are giving their input to the common forecast which is put together with the process owner. The forecast is the basis for the resource planning. It is important that the forecast can be changed and alternative rounds of forecasting will be done if the operational and business environment is changing. Also other aspects which are effecting to the application demand and application backlog are considered and might require a new forecast. An example of this is an unexpected technical failure of information systems which lasts longer, and is majorly effecting to the operational work and production. This has to be considered as an extra factor in resource planning. Also information systems' development projects need to be considered.

The final decision of the permanent resource and required additional resource is done in the financial planning based to the forecast done by MFA units and Process Owner. The permanent resource should cover the basic demand and should never be over resourced meaning the visa officers should always have work to do also during the low seasons of visa application demand. The amount of additional resource should cover the major seasonal peaks of demand in spring-summer, and Christmas-New year times. The combined resource should never be over resourced so that people will always have work, the local holidays covered, and possible gaps covered with over working extra hours. There are

tools for monitoring the productivity of the operations, which help the decision of the resource. Productivity is monitored with amounts of visa decisions done in the production, processing times of visa decisions and how much time officers are spending in the visa information systems from the overall working time. Important aspect of the resourcing is the quality of the operations, so that the processed visas have quality decisions.

Recently, the amount of 50 visa officers in Kouvola has been seen satisfactory if the amount of visa applications and demand from Russia is about 2000 a day.

4.5.2 Rq2.1: How to describe the peak seasons and demand peaks in Finland visa process for Russia?

Seasonal peak happens usually twice a year when the application demand is increasing for the certain period of time and decreasing back to the normal demand level. The normal demand level is never stable but varying continuously in a daily basis. The peak season continues longer than the demand peak in the operation of visa production hence there are always backlog and processing time of production. The peak is always increasing the demand and backlog of applications waiting to be processed. Another important factor explaining the seasonal demand is yearly multi-entry visas mostly from the area of Saint Petersburg. People tend to keep the visa valid continuously for easy travelling purposes to Finland and are usually applying the visa in the same times of the year.

Among seasonal peaks in demand there are other factors which are increasing the demand of visa applications to Finland. The changes on the business and political environment might effect to the demand. People tend to travel more in general in economically good times and when they have trust to the economically smooth and positive future. However Finland can be considered as an alternative for other travel plans especially in the area of Saint Petersburg even in the economically bad times.

Other Schengen countries can also have impact to the Finland visa demand. Finland is interesting traveling target geographically to the people in St Petersburg area. People tend to apply Schengen visa also from another countries, depending what is the main travel destination for the visa.

4.5.3 Rq2.2: How to prepare for the operational peak seasons, and take care of the unpredicted/sudden changes in application counts?

Preparation to the operational peak seasons in the production and demand increase starts with the efficient resource planning. The sudden demand peaks require rapid actions and overall monitoring of the process and operational situation. There should be alternative operating scenarios for changing environment and weak signals in the operating environment are constantly monitored. The resourcing process work requires smooth and constant cooperation with mission contact people including Kouvola unit, process owner and financial planning contacts.

Work allocation of different visa applications can be seen as the first action to take care of the increased demand and processing time of visa applications. With common work queues in the location independent visa process officers can be easily moved to process other locations' applications and different application types can be allocated to be processed in priority. Also controlling and monitoring technical service breaks can be seen as the first actions effecting to the supply. The more there are people processing visas, the more there are results in the supply. One action is controlling the times when people are on holidays, so that not all employees are on leave at the same time when there are high demand. The same applies if officers are commanded doing other tasks instead of visa processing. There are certain automated processes between information systems, and ensuring they are working smoothly will help smooth processing of visa applications and will help to decrease the demand back lock. The most efficient way covering high demand peaks is hiring seasonal workers and doing over working with them.

It is also possible to influence to the visa application demand so that there would not be high demand peaks. This has been seen difficult. Basically this would mean tools for influencing to the consumer behavior when people in Russia apply for a visa. One efficient tool would be the price of the visa service fee what time of the year it is applied. In the last years Finland has issued longer visas with multiple visit times.

4.5.4 Rq3: How to enhance the resource management of Finland visa process for Russia and prevent the problems and bottlenecks within it?

Improving the resource planning management can be started with the process of forming the forecast. The better and more specific foresight methods and tools will help to manage the overall resourcing process more efficiently. The constraints of the overall process shall be identified and to ensure the resource planning process can be run easily from the beginning to end any time there are changes in the operational environment which are effecting to the application demand and applications back lock, or to supply for example as technical failures.

Many reports are created locally in different units measuring and monitoring the operations and productivity. In the resource planning for long run information helping that should be created reliably. Information systems should produce instant reports of the overall situation in the visa operations. How many officers are working with that type of visas and from which location? Also the other work officers are working with should be considered and measured in the report. The report should show the figures in the monthly level.

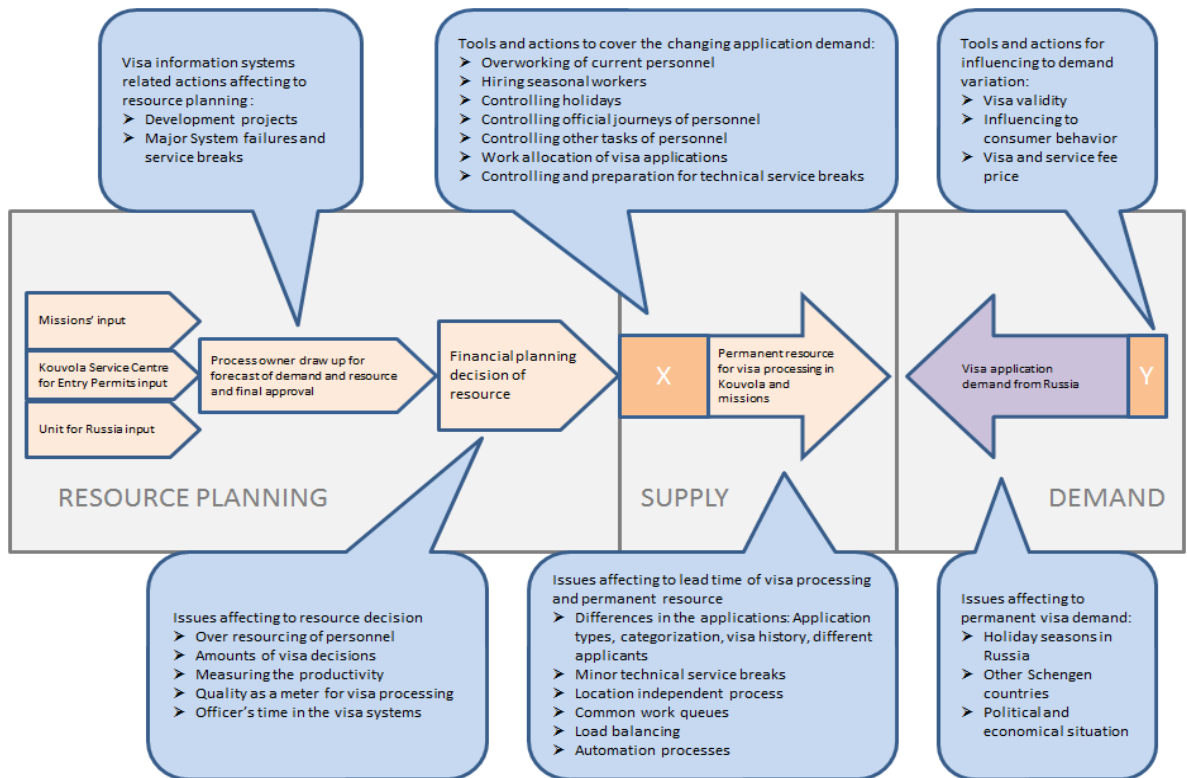
Currently the efficiency of the visa operations and supply is measured by amount of produced visa decisions by an officer and the quality of work. The productivity can be measured in the produced amounts in an hour, day, week or month with the amount of used working time. It should be considered that people are different and officers are not robots either. Quality can be measured as quality and correct visa decisions, and that there are less mistakes. Also a knowledge of Russian language and local expertise can be seen as an aspect of quality of the officers.

The efficiency of the whole visa process which leads to more efficient supply is the lead-time of the whole process. The lead time can be counted from the moment visa application is submitted and the passport with visa decision has been granted back to the applicant. In the resourcing process it is important to think is the best lead-time of the visa process the shortest, or the most optimal time considering the 10 days delivery time.

5 Management summary

The research questions were formed to find answers to the objectives. Resource planning starts of a forecast of demand, which is done together with main operational units of MFA in Russia and Finland. Missions of Russia, Kouvola Service Center for Entry Permits, and Unit of Russia of MFA Department for Russia, Eastern Europe and Central Asia give input for forecast of demand drew up together with process owner to plan resourcing. Process Owner takes into consideration the possible visa information systems related actions. The plan and common forecast is delivered to Financial Planning for decision of the final resource need. Issues affecting to Financial planning's decision are to avoid over resourcing of personnel, and efficiency and quality of the operations and production. The process is run mainly twice a year before summer and Christmas seasons. Several ad-hoc meetings take place for modifying the process output together with forecast planners, process owner and financial planning, for example major system incidents require the whole planning of the process and influence to the forecast. The supply of the production consists of permanent human resource for visa processing in Kouvola and Russia. The supply should be in balance with the visa application demand from Russia, which is creating the visa application backlog for production. The MFA Supply for demand consists of permanent resource which can produce certain amount of decisions. Several processes and actions are in place keeping the production efficient and agile, for example location independent processing and common work queues with load balancing and automated scans. The actions for influencing the consumer behavior and demand are not used in practice.

5.1 Process model for resource planning



Picture 5. Resource planning process model for Russia

Visa application demand is varying and the MFA tools for influencing the demand (Y) are limited for keeping the demand smooth. MFA has various tools and actions for influencing the supply (X) for varying demand. Permanent resource cannot be too big for a fright of over resourcing. The changing demand needs to be tackled with MFA tools and actions, for example overworking and hiring seasonal workers. $X + \text{Permanent resource} = \text{Visa application demand}$ (The actual visa application backlog).

5.2 Conclusions

As the demand is varying, there should be tools to answer to the sudden demand peaks. Efficient reporting is supporting the foresight coming from the new visa systems. RPA can also help combining information from different resources and reports and form analysis.

Optimal amount of personnel is the amount when average amount of applications are processed in the consulates and Kouvola. Consulates expect Saint Petersburg should have the amount of personnel that they can process average amount of applications and take care the consulate special tasks. In Kouvola the personnel tasks should be planned so that there is always enough reserve to process applications, and the other tasks should be done mainly in the low season.

Traditional tools and ways for taking care of peak seasons, and preparing for them are overworking and hiring seasonal workers. In addition, sudden growth in certain locations can be taken care by work allocation. Other officers from other location will process the growth. Hiring new seasonal staff flexible has been seen problematic due to lack of zero working contracts. Changing the legislation in this would help the situation.

There must be reserve of personnel for growth of demand that cannot be taken care by permanent personnel, visa systems and RPA, or other tools. Rapid reserve for visa processing could be formed inside the ministry by the organizations own personnel from any unit. Location independent visa processing allows volunteers to be working anytime and anyplace, and the new visa system will support that. Increasing the positive image of visa work, including benefits would help finding the reserve. New information systems as SAP will help allocate people time and resources for different function of operations. There should be also all-year budget for using the extra resource for visa processing.

When external resource is used as seasonal workers the planning and decision has to be done early enough, to ensure there is enough people working when the demand growth starts. With the new efficient visa information system, analytics tools and robotic process automation the process can be made more efficient and smoother also during peak seasons.

In the literature demand control should be used to balance seasonality. Strategies for balancing service business seasonality are pricing, diversification, control of applicants and marketing communications. For some applicants the service promise with price can be the way for controlling the consumer behavior. Balancing the demand is done together with

foreseen demand in the near future and balancing it into organizations ability to produce. New information system and reporting will help in the process.

Ministry has tried to modify periods of visa length to move high season demand into low seasons. That caused problems at the borders to count the visa usage time. After launching the EU smart borders project this will remove the problem when visa usage and visits to Schengen will be counted automatically. New visa system will monitor the visa usage automatically.

Other reasons like sudden technical failures can grow the applications backlog, which is creating similar effect than sudden peak. In the multi-vendor information systems supplier environment, it is important that all parts work well together. In the future, the risk is diminished by centralizing the critical applications and systems within the visa process to one vendor. The new visa information system includes all the modules and will have less system failures.

Currently used resourcing Excel has to be integrated to the new visa information system and reporting. The new system should take care of the other tasks people are working with. Work as to be planned so that shift between different tasks and visa processing is smooth and people are motivated to do it.

In general to the personnel and group working it is important the human resource is satisfied and well-being at work. LEAN has many theories to improve processes and human work. In the end the most important thing combining all the theories is the respect of a human being. Robotics can be implemented to help humans with monotonous manual work, but humans are not robots. Especially in the Kouvola Service Center most of the personnel are already experienced and doing other tasks. If short time personnel is not possible to be hired, the usage of RPA has to be investigated, together with deployment of the new visa information system.

In Finnish State Treasury research 2016 it was investigated how to strengthen HR management and HR expertise in the public sector agencies and institutions. The research lists many guidelines and best practices to into actions. Here are summarized some of them.

- Digitalization can be seen opening new possibilities in HR strategy and management.
- In the processes and working methods the processes have been standardized and overlapping work minimized.

- Flexibility in the organizations, roles and responsibilities gives possibilities to use HR resources over agency limits and external resources can be used with flexibility. HR management is working over organizational limits.
- New, digital tools are used for service production which will improve user centricity and efficiency. Individual content will be used in the trainings, which is available any time and place.
- Analytics will be used in the measurement, reporting and knowledge management. This allows knowledge and data based management and foresight. Analytics can be used in HR planning and optimizing, recruiting, learning and rewarding. It can also enhance commitment to the employer and decrease turnover and absences. The optimal usage of resources now and planning of them will decrease costs, improve operations and increase job satisfaction.

The new visa system and reporting module will have information from many sources and provide support for the following. Management dashboard can be established, where the current production situation can be monitored anytime anywhere.

- Daily operations and resource allocation and management of the personnel
- Meters for operative effectiveness
- Seasonal predictability of the operational load and short and long-time scale resourcing of the personnel

When considering the whole process, and lead-time of the visa process, the bottleneck and constraint is the processing of decisions. A single application, and documents belonging into it are moving in the process continuously expect when it is waiting the decision. Also when observing the circulation of a single passport from the applicant to the point when it is returned back, the moment when it is not mostly moving is the time when it is waiting the visa sticker to be printed and attached in to the passport in the consulates. In practice, the application is waiting to be processed in the visa systems in the application backlog. The passport is waiting the visa decision to be printed, and this is related to the application backlog how fast they are processed. Even if the demand can be foreseen with efficient analytics tools and reporting combining all the information related to the visa process and even how efficient is the process and technical systems, the process is very human resource centric. Without sufficient amount of human work, the process is not working efficiently as the single decision always needs to be human made by EU legislation. If there is not in time, not in place enough human resource the application backlog will grow. There must be flexibility in having experienced personnel in request to the process. Technical solutions and outsourcing have improved the complete process and human resource dependency significantly in the nearly past 10 years. From this develop-

ment the best practices can be picked up when planning the new systems and improving them, and digitizing the processes.

Technical improvements

- New efficient N-VIS system
- Less technical failures
- Reporting and analytics of data from different sources
- RPA

Human resource related improvements

- Planning
- Work allocation and rotation
- Personnel well-being
- Internal resource reserve
- Continuous HR budget

Process related improvements

- Efficient usage of foresight methods combined with technology
- Improve communication with all parties involved
- Minimizing unnecessary work
- Demand control and service promise as balancing method

5.3 Objectives, were they achieved

Objectives of this study were to investigate and document resourcing model for Finland visa process for Russia, and what are the factors effecting into it, and to find tools and processes for more efficient process. The current state, tools and processes used for resourcing are shown in the model (Picture 5). Tools and processes for more efficient process are presented in the answers for research questions, and new development ideas are listed in the conclusions. Concrete development ideas were requested by the orderer of the case study. This will be part of Future development proposals.

5.4 Future development proposals

This case study or parts of it can be used as a workbook for organizing a workshop or another studies to find out concrete and new development ideas. The new development ideas can be for example small enhancements making the processes faster and more efficient by digitizing them, or help developing the new visa information system to save

man-hour. One interesting point to study is the management of working queues of visa application backlog and human resource. Is there ways to improve effectiveness of work by different ways of working, especially in small teams? Personnel access to the systems should be smooth, and every transfer and shift between systems and work actions almost without notice. Always when a single applications is waiting the decision, there should be smooth transfer to other productive tasks and actions. If the system or part of it is down, some productive work can be done offline.

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