Tampere University of Applied Sciences

Modernization Technical Sales Guides
Industrial Technical After-Sales Service

Erik Suhonen

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Abstract

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The purpose of this thesis was to develop technical sales guides for moderniza-tion solutions. These sales guides' goal was to help other modernization units to offer modernization solutions more efficiently and independently.

Industrial lifting equipment modernizations are usually unique and complex pro-jects. Offering modernizations can be challenging because the projects are usu-ally done case by case. Packaging the simplest modernization solutions can make the offering processes more resource efficient and faster from lead to close.

The development project included planning the project, researching the needs of the salespeople internally in the company, and compiling the first pilot sales guide document. The research was done through interviews and a global sur-vey, as well as acquiring data from engineering professionals working with mod-ernizations. Also included is contemplation for future development projects with lean implementations and process optimization.

The overall success of the development project was good and had future imple-mentations in the repeatability of the concept and in the use of the salespeople. For future development of the technical sales guides, a frame for the processes should be made. Processes around the concept could be made more efficient and the use of the tool better targeted if more resources were available.

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Key words: modernization, technical sales guide, development, lean

CONTENTS

Abbreviations and Terms

TAMK	Tampere University of Applied Sciences
NCP	New concept projects
GMS	Global Modernisation Service
PTZ	Pan Tilt Zoom
POE	Power Over Ethernet
Misc	Miscellaneous
PTZ	Pan Tilt Zoom
PPI	Practical Process Improvement
PDSA	Plan Do Study Act
KPI	Key Performance Indicator

1   INTRODUCTION

This thesis work covers a development project for an industrial lifting device modernization technical sales guide pilot. Offering and executing complex technical projects on industrial modernizations can be a time-consuming process. Proficiency in the sales process relies on the experience and level of expertise of the salespeople and engineering units on the frontlines. Offering modernizations usually does not cause costs to the end customers but it does for the company that is offering the modernizations. These projects have variations of electrical, mechanical, and automation engineering for many different industries and solutions. Because of this variety, and the difference in the old equipment, the scope of the modernization projects can vary although the main goal might be the same in some projects. Research indicated that in this case, the knowledge competencies could be improved for the salespeople and engineering units on the frontlines globally. For these reasons improving the modernization sales processes and knowledge sharing with technical sales guides can be seen as profitable.

The main engineering unit offering modernization support globally is in Finland. Global Modernization Service or GMS department offers modernizations and executes modernization projects for updating old lifting device technology to new and at the same time possibly upgrading the features of the device. To increase the level of independence and knowledge competencies of the global modernizing units in different regions, sales guide documentation including processes, knowledge, and components available can be a useful tool. The goal of this tool was to have a way for other units to utilize the know-how and to implement the data that the documents offer to operate more self-sufficiently. This thesis has described the research and the development processes of building the pilot technical sales guide document and contemplation of the possibilities of implementing Lean philosophies to the work processes.

2 PROJECT BACKROUND

2.1 About the project

A global company manufacturing lifting equipment offers modernization services to all their existing and legacy products and to their third-party company products. The global modernizing service (GMS) unit is based in Finland which expertise many other units rely on with modernization cases. The amount of technical knowledge in the other units varies which causes a load on the main unit to solve the modernization solution scope before offering. In some cases, the scope can change during the execution phase due to a poor understanding of the requirements and customer needs during the offering phase.

Piloting a development project on packaging the modernization solutions for alleviating the workload of the main modernizing unit was mentioned while discussing ideas for my thesis. With this, the discussions were extended, and a project plan was made for acquiring data from the frontlines salespeople and generating documentation for the most common and promising solutions. The development project for the sales guide documents was executed with my coordination. The steering and final decisions were made by the sales director and VP of the modernization unit in Finland.

2.2 Project Objectives

The main objective of this development project was to generate documentation for the most usual technical executions for other units to utilize in sales and better fulfill their customer needs globally. These documents were hoped to make the units more independent to free resources of the main modernization unit. Frontlines and engineering units could ramp up their sales and develop skills in modernization if the knowledge was shared properly. Also sharing the knowledge of the technical executions could be a potential contributor to business growth.

Piloting the idea of uniform sales guides to contain this knowledge to be shared globally meant getting information and data from many stakeholders working closely with modernizations. Compiling all the data for the pilot sales guide for a user-friendly package was made by interviewing engineering professionals and with a global survey. The pilot project sales document would be used as a template and a vanguard for future technical sales guides all of which would contain the different scopes of solutions. With the successful execution of the first sales guide the future of the concept could be validated and the preliminary base for knowledge sharing and development realized.

2.3   Project Limitations

The limitation of this thesis is the pilot project that will carry a simple enough technical solution to give a baseline for the wider-scale implementation of the idea. Three preliminary technical solutions were taken into discussion based on previously executed projects. From these three technical solutions, adding cameras to the lifting devices for visual aid in the lifting processes was decided on. The scope of the project included interviews and a global survey which steered the contents of the pilot document alongside the stakeholders of the development group. This thesis is limited to covering phase one out of three phases in this whole development concept. Other possible phases are not disclosed in this thesis. Many areas of the development project and the technical sales guide documents are not included in this thesis for non-disclosure reasons. The company name will be kept from this thesis in any form because the development in the company's sales processes is something that the company does not want to reveal to the possible competition. The contents of the pilot sales guide described in this thesis are rudimentary and will not reveal any trade secrets.

3 TECHNICAL AFTER-SALES SERVICE

3.1 After-Sales Service

All services offered to a customer after they have made a purchase from an organization are considered after-sales service, also known as after-sales support. While some businesses handle the support requests and follow-up activities internally, others enter into agreements with third parties to provide after-sales support. Providing after-sales support can boost customer loyalty, especially if the client feels that the assistance was beneficial to them. (Indeed Editorial Team 2022)

Industrial sales require certain competencies from salespeople in specific sectors and knowledge is necessary for these competencies and skills. Acquiring knowledge competencies to execute industrial product sales that have specific manufacturing, assembly, and material processing functions is one of the more important bases expected from salespeople. Successful salespeople can be described as three dimensional where with knowledge, abilities, and merit they deliver value to the customers and profitability to their employer. (Barber C. & Tietje B. 2006)

3.2 Industrial Equipment Modernization

Industrial equipment modernization is one of the after-sales services provided to the customer. With modernization, the customer can expand their equipment lifetime or alter its functions to better fit their current needs. The scope of modernization most commonly is a unique project that requires becoming acquainted with the equipment's functionality, technical properties, and limitations.

When industrial equipment faces its end-of-life cycle there are options to modernize them. Usually, the main reason to modernize is to increase reliability, system safety, cost savings and to add functions or capabilities to equipment.

Refabricating older equipment is a cost-effective means to improve productivity and processes. (ReliablePlant, Dough Robling n.d.)

3.3   Modernization Technical Sales

From sales, perspective modernization can be challenging because it combines new with old technology, and often the implementation of the new can cause unexpected expenses. Managing the cost structure of modernization projects from poor knowledge bases can be challenging because the work is not often standard repeat. To prevent the profit margins to run out of hand the knowledge of the technology and executions in the offering phase is crucial. To be able to offer a wide range of modernizations usually comes from a long experience of working with different technologies and solutions. Good documentation of the executions in use for the salespeople can facilitate the workload on the offering process and add value in time and profit margins after the project executions.

In some cases, a go, no go decisions are made if the offer scope seems too risky. Some offer inquiries are directed straight to a new product scope because the modernization of the old equipment might not be profitable. With risk management of the offer processes the unit functions can be more standardized to execute offers and projects that won't strain the resources. The more standardized the sales processes are the faster the inquiries and solutions will be handled. In summary, the knowledge of the scope and current technologies in place when starting to offer modernizations is important to make sure that the work and time can be directed to the correct issues and executions.

4 PROJECT PLAN

4.1 Gate Model

Project planning was done with the gate model which composes of two sections, the front end, and the back end. In the front end of the gate model were decisions on the subject, the scope of the development project, preliminary data sources were scouted, and the work plan was timed. The back end consisted of the work part of the project in which data was collected from other units working close with modernization sales and projects. The development project pilot focused only the phase one of three phases and will not disclose the continuation of the other phases.

Executing a development project with a stage-gate model is a uniform way to plan and implement new ideas with having the learning of the process transparent. Stage gates represent a group of tasks that must be carried out before moving through the gate to the next stage. Quality control and decision-making are built in the gate model before the intended developments can take place which improves the validity of the process. (Heerden F. & Lourens D. 2015)

The gate model shown in figure 1 below on page 12 is the progress of the development project. Both the front and the back end have milestones that need to be achieved to ensure the best possible outcome to serve the next gate tasks. Key decisions play the role of the most valuable issues to be examined and solved. Although with development projects unseen concerns will arise the stage gate model aims to minimize these cases. The gate stage model presents the structure of the project in a very manageable form.

Phase gating divides new concept projects (NCP) into important stages, giving the chance to assess progress at the conclusion of each gate. This strategy aims to regulate potentially erratic and unaccountable processes into a more structured and regulated series of steps. These stages are often divided into the following categories below as listed in Cognidocs article. (Cognidocs, Joe Byrne n.d.)

1. Concept / ideation

2. Feasibility study and design planning

3. Design and development

4. Testing & verification

5. Validation & collateral production

6. Manufacture / launch

7. Improvements

	FRONT END			BACK END				
	Subject closing & Approval	Goals & Confining	Workplan & Approval	Frontline Survey	Analysis Of Data	Branching of Projects & Development	Frontline- & Marketing Material	Evaluation & Trends of Phase one
MILE STONES	• Scope of the project • Data sources	• Sales growth • Strategic Alignment • Business Potential • Frontline involvement	• Making an execution plan • Recognizing different parties • Customer Opportunity Identified • Defining timeline	• Sorting & refining the solutions • Making drafts of packaging solutions • Hook for the survey	• Survey data collected • Data validation • Consideration of development suggestions	• Directing work to development of packages • Solution Packages for Requirements in own projects	• Technical Documentation • Training methods • Qualification & Validation	• Conclusions • Directing the continuity • Evaluation of the project • Trending aspects
	• Planning of the subject • Executing methods	• Scope confined as a fundamental first point for packaging modernization solutions	• Approval of the workplan • Pilot project kickstart	• First draft & screening of the survey script • Survey cover letter • Waiting for results	• Frame work for execution of packaging • Interview of parties • Top score solutions	• Screening discussions • Pilot project ready in Q1/2020 • Marketing & trainings for Pilot	• Marketable aspects • Involvement of service marketing department • Target groups • Campaigns	• Phase two possibilities • Profitability of the project • Pilot project analysis
KEY DECISIONS	• Validate Strategic Priorities	• Focus of the execution validated from survey data	• Agreement of the steps for Phase one	• Survey complete for distribution • Type of data collecting defined	• Making adjustments basing on results of the survey	• Decision of the independent projects	• Execution of improving customer experience	• What is the success factor of phase one • Kickstart phase two
GATES	1	2	3	4	5	6	7	

FIGURE 1. Gate model project plan

4.1.1 Front End

The front end consisted of discussions and planning of the scope of the development project and what needed to be achieved. The main goal for the front end was to ensure and validate the effort going into the project and limit the scope of the project to only necessary actions.

The main goal to achieve was to free the workload from the GMS increasing independent working capacity with adding more agility and self-sufficiency to other modernization units globally. Secondly to accommodate sales growth

through the sales confidence gained from the knowledge offered by the documentation of the solutions. Designating the best candidate solution for the pilot project for documenting and acting as a template for future projects was crucial in the front end. Camera Systems for crane applications were chosen because it was an easy subject to start developing and building documentation.

Involving sales front lines in the front end of the gate model did have further meaning on the back-end execution and surveys. With the understanding of what the other units might need to improve their sales processes the front end of the plan could be completed. Entering the back end of the gate model with a clear plan of how the sales guides might serve the front-line user best way possible.

4.1.2 Back End

The development focus of the project is described in the back end of the gate model, and it is also the point where something concrete is started to be produced. The sales frontline survey was made the first and crucial gate to get more understanding of the need for improving the modernization of sales services globally.

The process of building value started with a frontline sales survey to further validate the work. The survey was drafted on a wider scale for the data to be implemented in future projects. After the key points for the development of the documentation, the pilot project's vision of the outcome became clearer. At the same time, preliminary discussions of the next projects started as well as the process manual concept for future project executions was made.

Analyzing the data from the survey supported the goals of the project. The framework for the development of the documentation started to take shape and the considerations of the suggestions from the survey steered the decision-making of the most useful features to be implemented in the documents.

Development of the pilot technical sales guide was executed based on the survey data and it was clear which stakeholders were to be involved in the development. With the framework in place of the priorities regarding the different projects, the focus on the pilot project could be utilized. The timeline of the pilot document launch and the training was decided. The technical documentation went through many iterations with the assistance of the predefined stakeholders and a technical writer. Some form of marketing material was included in the sales guide document to improve the customer sales experience. After the launch of the first sales guide document, training for the use of the documents was held.

4.2   Project scheduling and progress reporting

Project scheduling is important for keeping track of the progress and gate stages. Creating a timeline visually helped to keep track of the activities in the project and when each step should be done. The created timeline for this development project and specifically for the gate model below in figure 2 is shown when each gate is due to be passed and in which time frame each gate should be done.
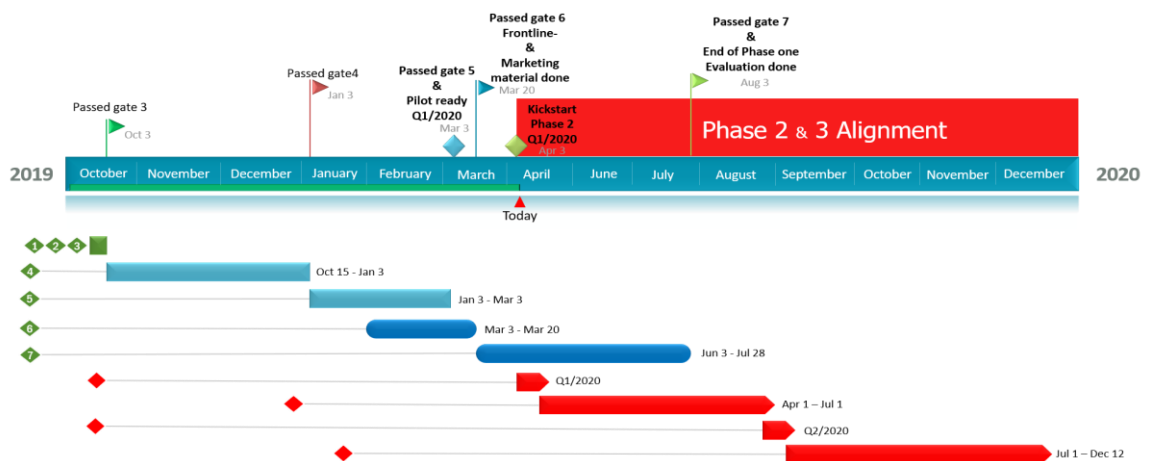

FIGURE 2. Timeline

Timing and managing large-scope development concepts like this are usually done in sections. In phase one the timing of the sales guide pilot can be seen in figure 2 above. The continuity of the project will be aligned once the pilot project and phase one have given more information about its exact results.

With realistic scheduling and monitoring of the project tasks, the success rate of the project will increase. Clearly stated listing of milestones that include the activities and deliverables from start to finish is a key element for successful project management. Coordinating and managing projects become more structural after these tasks have been realized and executed within the scope of the project.

The project manager or coordinator should be sceptical of the scope and timing of the project for avoiding negative iterations to occur. When creating new concepts and ideas for development projects, close monitoring of the tasks is crucial. With monitoring of the processes and what gets done at what time in a pilot phase, future projects gain valuable information for resourcing. With correct resourcing right out of the gate the managers can start to capitalize from the experience of the already executed projects.

In coordinating and scheduling a pilot development project that has many variables and unknowns, it is important to be strict on the progression reporting. Monthly progress reports were done to the management for keeping track of the completion of the goals in the project plan. Adjustments to the project were made if needed, according to the progress and learning from the previous tasks. Below in figure 3 is a report sheet from the executed pilot project where management has an easy way to view a monthly summary of the progression status and recent activity. The team executing the project is stated clearly for the management to do the strategic steering of the development project.
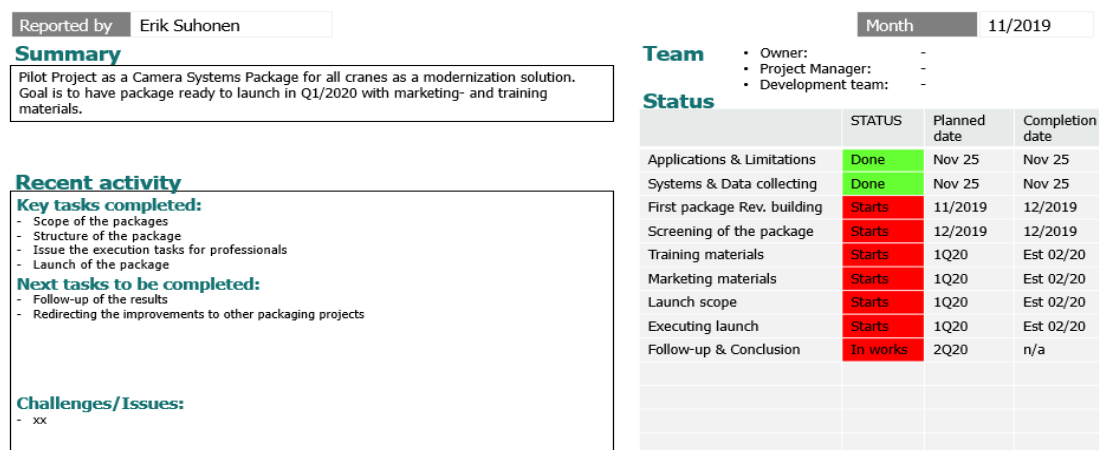
| Reported by | Erik Suhonen | Month | 11/2019 |

Summary

Pilot Project as a Camera Systems Package for all cranes as a modernization solution. Goal is to have package ready to launch in Q1/2020 with marketing- and training materials.

Team
- Owner: -
- Project Manager: -
- Development team: -

Status

	STATUS	Planned date	Completion date
Applications & Limitations	Done	Nov 25	Nov 25
Systems & Data collecting	Done	Nov 25	Nov 25
First package Rev. building	Starts	11/2019	12/2019
Screening of the package	Starts	12/2019	12/2019
Training materials	Starts	1Q20	Est 02/20
Marketing materials	Starts	1Q20	Est 02/20
Launch scope	Starts	1Q20	Est 02/20
Executing launch	Starts	1Q20	Est 02/20
Follow-up & Conclusion	In works	2Q20	n/a

Recent activity

Key tasks completed:
- Scope of the packages
- Structure of the package
- Issue the execution tasks for professionals
- Launch of the package

Next tasks to be completed:
- Follow-up of the results
- Redirecting the improvements to other packaging projects

Challenges/Issues:
- xx

FIGURE 3. Progress report

5 RESEARCH

5.1 Development Project Research

Development projects require research to validate the invested resources and to obtain important data for executing the goals of the project. Researching the need to sell modernizations solution better, the focus was turned to the people and the units that often work in the sales and design field. If the main global modernization unit has the best current knowledge available for the solutions and executions, how could they best serve that knowledge to the sales front-lines and other engineering units to utilize? With these questions, we began to interview and obtain information from the frontlines on how they saw the best delivery methods of this knowledge. After the data had been gathered from the most experienced sources the main task of analysing the data and spotting trends was to compile our knowledge in the form proposed by the research re-sults. The pilot development project research resulted in the first documentation in what we call a technical sales guide.

Research indicates as Seth and Sharma describe that the B2B sales in the in-dustrial market shift from product to service sales and focus more on the organi-zation instead of the salesperson. Most of the study in the field of sales is fo-cused on recruitment, inspiration, compensation, and, to a lesser extent, sales organizations. However, more firms are starting to focus on the automation as-pect in sales which can be deducted from figure 4 below. The figure indicates the research shift from product and salesperson focus to broader organizational and service-based sales. (Sheth, J. and Sharma, A. 2008)
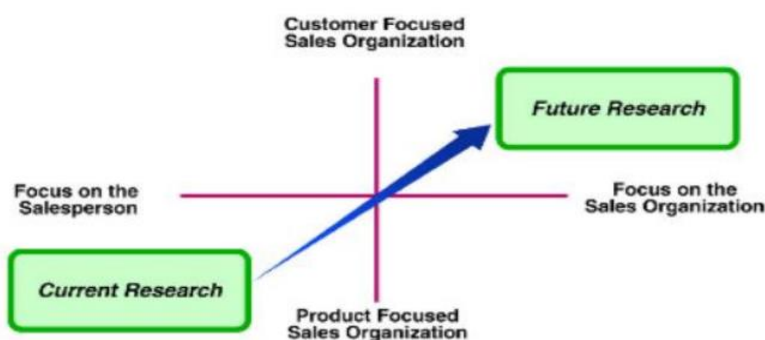

FIGURE 4. Sheth, J. and Sharma, A. (2008), "Shift in sales organization",

Whit this in mind the research in the pilot development project did indicate the request for a more automated process from the sales guide compared to the current sales operating model. As the current operating model in which the sales query goes through many discussions and questions to clarify the scope, it cannot be fully replaced by the sales guides in the factor of the more unique and complex modernization projects that require more intuitive engineering to complete. With that said the goal was from the start to address the simplest solutions that fall into the scope of the sales guide. The future of the concept could be scalable for more automated operating models but first, the base for the knowledge must begin small to have the operations standardized in practice.

5.2   Interviews And Results

Interviews were conducted with the modernization frontlines and engineering professionals globally through online meetings. The interviewed people were handpicked for their expertise and what their experience could point out from working with modernizations to benefit the project. The interviews were executed with a list of baseline questions for every interviewee. The interview baseline questions are presented in appendix 1.

The discovery from most of the interviews was that the knowledge of modernization solutions was obtained from previous experience and old project documentation if the documentation were available. The Finnish modernization unit does education locally where people are hosted for a couple of weeks at the main unit by the company. Also, online education events are usually done yearly by the managers and other engineering professionals where the frontlines salespeople and other engineers can participate. Other than the above the interviews revealed that most of the training for the salespeople was done locally and there was no collective data available on the modernization solutions. This brought up a point that if the employee turning rate is high the unit struggles to train the new employees on a good level of expertise in modernization solutions. With that said, the sales on modernizations suffer as well as the customer experience. Therefore, usually with the less experienced frontlines the

detection of the scope that the customer needs will land in the Finnish modernization unit.

Since the salespeople are usually the direct contact with the end customer it would be greatly beneficial to have material available about the modernization solutions for them to use. The experience level and knowledge of the salesperson can determine the effectiveness of the sales situation and the buying decision. There might be solutions that the customer might like to have or even need but the knowledge of these solutions is not readily available and business opportunities are lost.

The overall opinion was that this type of technical sales guide could be very beneficial taking into count that the how-to information for executing these solutions in some cases is silent knowledge. In some regions a language barrier issue was mentioned, so producing expert-level documentation of modernization solutions was welcomed. The interviews brought many beneficial suggestions to make the development project more successful and the people interviewed were glad to help with the project.

5.3 Survey for Sales Frontline

For validating the project and to gain more information a survey was drafted for the salespeople and engineers on the frontlines. The survey was an overall success with a response rate of 90% of the receivers who answered the survey. The survey covered the solutions that could be documented, and which of the solutions could have the best business potential if sales material was available. The suggestions and comments for the development of such sales documents were supportive. A draft of the document was also sent next to the survey to give an idea of what the document could look like, and the comments helped to steer the document in a more user-friendly direction.

The survey was sent to targeted respondents of employees working or that had worked with modernizations before to get the best results as possible. The survey was recommended to be shared with any other employees that might have

worked with modernizations. The survey itself took about 4 minutes to complete and it was globally shared. Below are listed bullet points from the cover letter to give information about the survey.

The aim of the survey is to:

- Find the Packages with the most promising business potential.
- To direct the first packages into effective use for sales personnel.
- Get the comments about the help needed in the offering process.
- Design the best serving Packages for your work.
- Improve the way we offer modernizations.
- Improve profitability of modernizations.
- Improve offering & delivery times.

The goal of the Packaging task is to:

- To make the offering process faster from lead to close.
- Improve the Modernization customer experience.
- Offer straight to the customer in some cases without ModSupport.
- Inform about the solutions existing for the customer needs.
- Improve the sales in Modernization service.
- Improve the flow of information.
- Collectively arrange the data about Modernizations in one easy access portal.

5.3.1 Survey Results

The survey results supported the development project's goals and were deemed beneficial and worthwhile to execute. Salespeople indicated that sales guides would make their jobs easier, and training new employees would go faster. The suggestion was that the form of the sales guides should be somewhat uniform for making the use of the documents more effortless. All the survey attendees' service years were asked to better analyse the results.

One aspect of the survey was to get information from the frontlines on how to improve their offering process with modernization service. Below in figure 5 is one of the answer summaries from the survey that was implemented in the pilot project. More pre-defined automation on the modernization of sales processes was requested from the sales guide. With more structure and availability of knowledge, the survey indicated that the sales guide documents could solve some issues that the frontlines were dealing with when offering modernization solutions to their customers.

- Quotation templates
- Offer configurator
- Data sheets for components
- **Lead times of orders**
- Easy select options for applications
- Standard price list
- Contact persons for solutions
- **Reference cases executed**
- Installation instructions

- Trainings for estimate budget offers
- **Solutions explanations for customer**
- Detailed descriptions of the solutions
- Technical guides
- Technical drawings
- **Learning & pre-learning**
- Marketing materials

- Range and dimensions of components
- **Checklists**
- No - Go area lists
- Brochures
- Training documents
- **Value creating arguments & selling points**

FIGURE 5. How to improve offering survey results

Many great suggestions that only the people working at the customer surface at the frontlines could know about, steered the decision-making of the final documentation in a beneficial way. Hopefully, the involvement of the salespeople and frontlines in this survey process sparked new enthusiasm to offer modernization solutions to their customers. Further spreading the knowledge of the opportunities to better serve the customers with their needs. The whole survey was more extensive and some of the value points are not shared in this thesis.

5.3.2 Business Potentials

Analysing the business potentials of different solutions were made in the survey by a questionnaire of listed solutions. The survey answers supported the data obtained from the already executed modernization projects. Trends could be spotted, and the most promising solutions would be used in future sales guides. Implementing metrics for KPIs on the sales guide solutions and processes would be a beneficial driver for targeting future work to be more profitable. The possibilities of the areas impacted by the new sales tool being used as intended were discussed which are listed below on page 20.

- Faster sales and better sales materials
- Ballpark estimates for the customers
- Better access for example projects
- More fluid information sharing
- Improving the training of employees

The most popular solutions in the business potential inquiry in the survey were more complex and harder to document so the selected pilot project solution was indeed the best way to implement the concept. Camera systems only obtained a possibility on the business potential scale in the survey, but the goal of the pilot project was from the beginning to serve as a vanguard for building the next documents.

The survey results relied fully on the expertise of the survey answerers. At this time with piloting a new concept more in-depth analyses of the business potential were not made. We figured that the best knowledge at the time when starting was in the frontlines where the salespeople had gained valuable experience working closely with the customers. With this said the order of future documentation of the solutions for the frontlines and salespeople was decided mostly by the survey. In the future further analysing the survey data comparing the offers and projects executed, metrics could be created that would indicate more targeted business opportunities.

6 PILOT SALES GUIDE DOCUMENTATION

6.1 Technical Sales Guide Pilot

A pilot project is a scaled-down version of a development project to show concept viability. This way new ideas can be introduced in a more cost-effective way. Pilot projects can provide stakeholders with valuable data and show the value of a development concept and validate the implementation of resources.

Documentation work on the pilot technical sales guide after the surveys and interviews was executed. The draft models that were made for the survey the best were picked for further development. The document went through extensive sanity checks with selected stakeholders. With the comments and steering of the management, the near-finished document was introduced to a native-speaking technical writer with whom assistance the document was finalized.

The structure of the document was made taking sure that it would serve as a baseline for the future executions of technical sales guides. The document would include simple flow charts as seen below in figure 7 to make sure that the use of the technical sales guide would be done as intended.

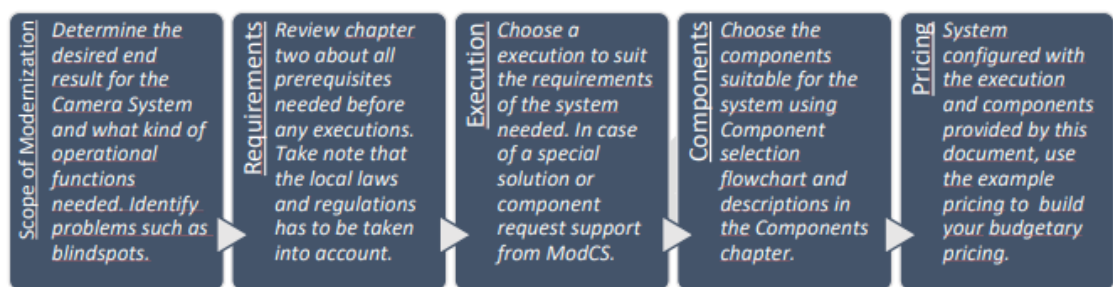| Scope of Modernization	Requirements	Execution	Components	Pricing
Determine the desired end result for the Camera System and what kind of operational functions needed. Identify problems such as blindspots.	Review chapter two about all prerequisites needed before any executions. Take note that the local laws and regulations has to be taken into account.	Choose a execution to suit the requirements of the system needed. In case of a special solution or component request support from ModCS.	Choose the components suitable for the system using Component selection flowchart and descriptions in the Components chapter.	System configured with the execution and components provided by this document, use the example pricing to build your budgetary pricing.

FIGURE 7. Execution flowchart from the technical sales guide document

The basic flow of the camera systems sales guide was made to conform to the process of a real modernization project. The object of using these documents is to get the frontlines and other units to do as much work independently as possible before the offered query lands on the main unit in Finland. This would reduce the amount of back-and-forth communication done with the frontlines and that way make the process more profitable.

First to determine the scope of the project and with that knowledge, the requirements of the project can be compiled. Executing modernization solutions the methods can vary, and the document includes a couple of the most basic executions. Components for the execution can be selected suitable for the customer and the application needed. The component selection does include guidance for the user as descriptions and considerations for the use of the components in the document. The pricing of the work and components will be done after the project confinements have been done accordingly with the sales guide document.

With this kind of document structure, the frontlines can utilize the sales guides to get knowledge on the solutions, scope, executions, components, and pricing. The knowledge shared in these documents internally in the company can be beneficial with sales pitches and opportunities for marketing to the customers. With the sales guides there is less effort in training a new employee and old employees can get knowledge of the solutions that they might have not come across before.

The development project scope included was to create an easy-access portal where this sales guide information is stored. Microsoft Teams is used as a company standard so the structure for public sharing for those who might need the sales guides was created. The development of the documents also utilized Microsoft Teams, a development portal was made to house all the documentation projects with the process manuals on how to compile these documents and execute the projects.

6.2   Configuration of the Camera Systems Solution

The pilot project in this case was picked to be as simple as possible because the structure was the more important subject in the pilot phase. Camera systems for cranes were considered a simple enough solution to get the idea of the process of executing the sales guide document concept. Engineering professionals who knew the content of executing camera system solutions for cranes

gave their knowledge to be implemented on the document. The data was collected from meetings where the specific technical executions and components were decided upon for the document. The component categories were cameras, PTZ controllers, decoders, POE switches, screens, recorders, and miscellaneous components. Following the basic flow chart seen in figure 8 below the document user can understand the camera system solution workflow from the component point of view.
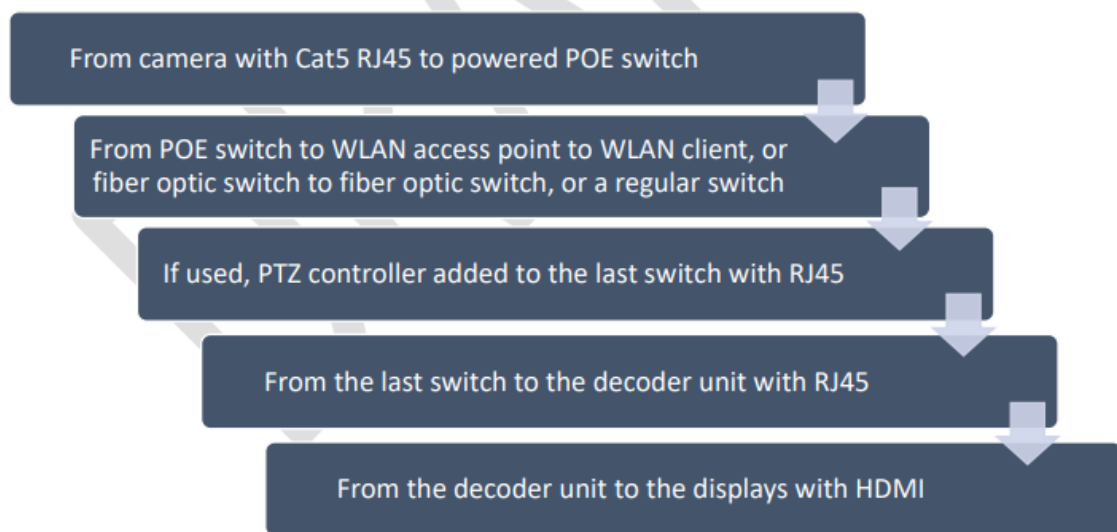
From camera with Cat5 RJ45 to powered POE switch

From POE switch to WLAN access point to WLAN client, or fiber optic switch to fiber optic switch, or a regular switch

If used, PTZ controller added to the last switch with RJ45

From the last switch to the decoder unit with RJ45

From the decoder unit to the displays with HDMI

FIGURE 8. Basic camera system layout from the technical sales guide document

With the description of the technical execution workflow, the document guides the user who then can proceed with the sales process with a better understanding of the requirements. When the solution and its requirements are defined correctly at the sales phase the execution of the sold project becomes easier and more transparent. The offer request scope often changes due to the lack of knowledge of the requirements on the front lines which the sales guide document aims to reduce. If getting the requirements of the solutions clarified takes too long, it might cause the client to lose interest in the offer if it is not critical for their operations.

The execution of the basic solutions should be easy access knowledge and that is what these sales documents aim to provide. The executions in the documents are expressed so that the workflow of the process is clear for the sales guide users and therefore for the customers. The solutions have variable execution methods depending on the customer needs and for this there are checklists

available for the end users so they can determine what components suit each different customer need.

The component selection flowchart from the sales guide document as seen in figure 9 below shows components and the checklists for each component category. The component selection flow chart includes hyperlinks that direct the user to the component listing section in the document which further explains the accurate function and limitation of each component. The user then chooses the right components to fit the defined solution scope following the arrangements of the flowchart. After the components for the right execution have been chosen, the user then can proceed to start pricing those components and chosen execution.
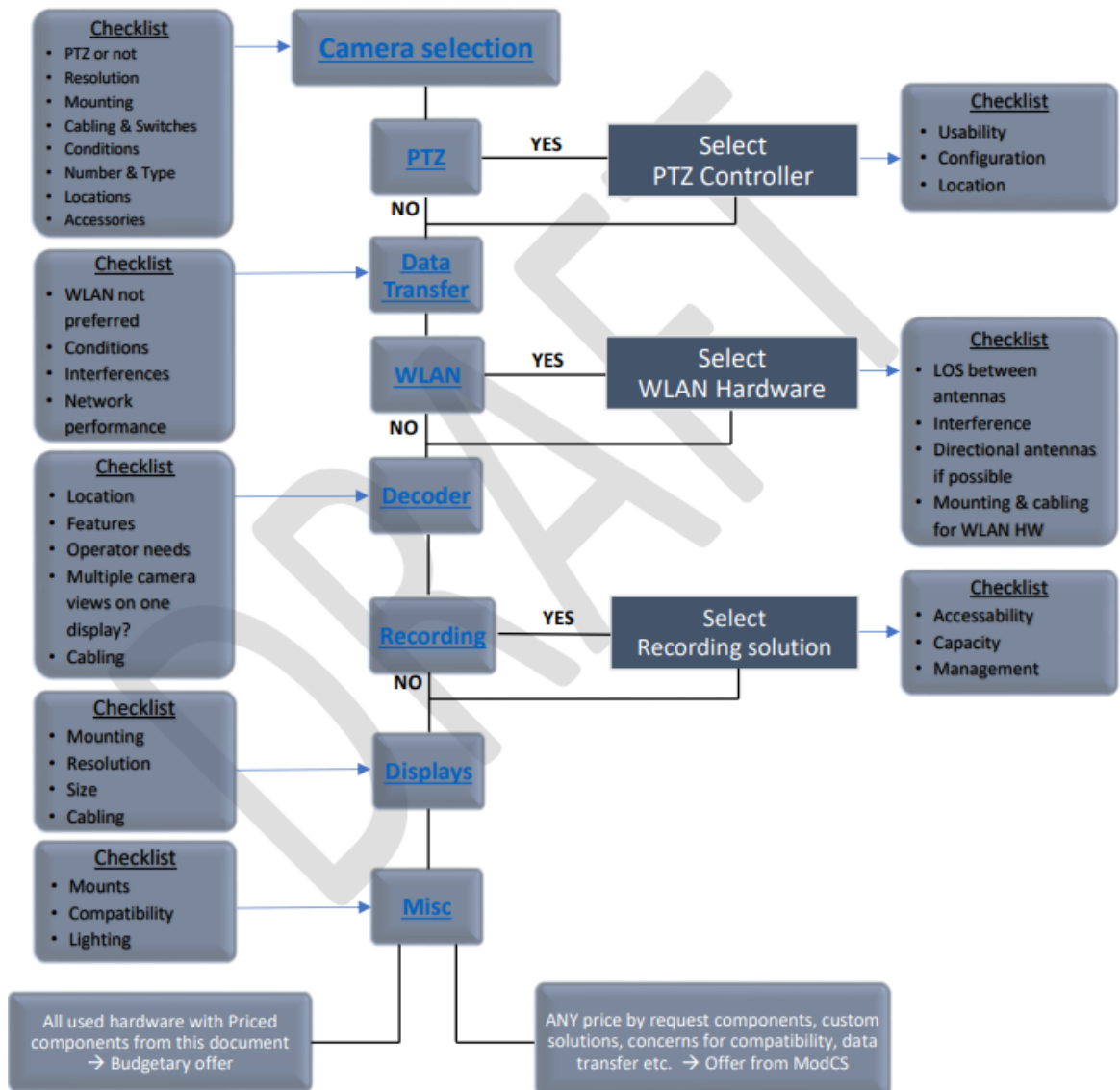
FIGURE 9. Execution checklist from technical sales document

In the pilot project sales document, excel offer layouts were included so that the end user could fill out the offer sheet as per the chosen solution and components asked for. The offers provided by the sales guides are non-binding because the development of the concept is in its initial stages. All the binding offers for the solutions and executions are under the main modernization unit's responsibility for the time being. Still, the frontlines could get the binding offer and approval way faster than the query to go through the normal process of waiting for a sales engineer to get through it.

The system layouts of the camera solutions are posed in the sales guide document as the flowchart shows in figures 8 and 9 above. Below in figure 10 is one of the possible system configurations with variations of components and data transfer methods.
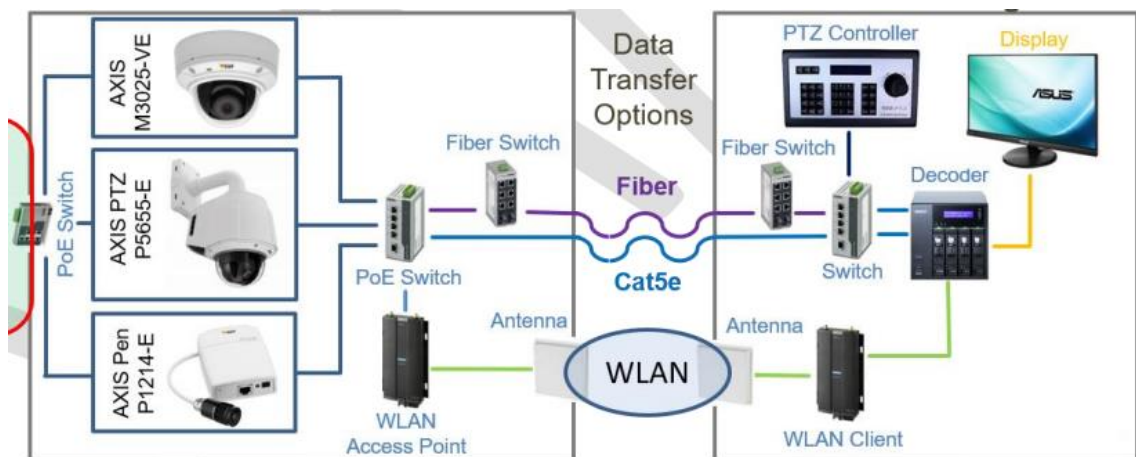

FIGURE 10. Camera System component configuration

With the knowledge provided by the technical sales guide document, the user can define the solution with components and the execution for the customer. Therefore, the other global units can function more independently without the need to rely on the Finland units' support.

6.2.1 Resourcing the Pilot Project

Resources available were limited and I was the main resource coordinating the pilot development project and the sales guide concept. Steering and brainstorm-

ing were done with the sales director and VP of the modernization unit in Finland. Other resources used in the project were gathered throughout the company. Technical knowledge of the solutions was gotten from engineering professionals and managers, with their consultation we could get the best component choices and example executions to the sales guide. Coordinating the project with all the stakeholders and bringing the engineering professionals together to compile the first sales guide documentation was a huge effort.

Execution of the interviews, meetings, surveys, and coordination work with the help of management was achieved within the schedule of the project plan. After the first iterations of the sales guide document were compiled, a technical writer was resourced to go through the document with me and form the document within the company's standards and guidelines. The sales guide was written in English, so a native technical writer was used to point out the linguistic errors in the document.

With the pilot project finished the follow-up sales guide document projects could be kick-started. After the piloting phase, the sales guide concept would get more resources and a dedicated structure for executing future sales guide documents. Getting the knowledge for executing these complex development projects on the sales guides was deemed to be successful in the pilot phase. The next sales documents would focus on the most requested solution from the global survey.

6.3 Framework for Repeatability

Repeatability was a key component of the pilot technical sales guide. The first sales guide was meant to have a coherent structure so that the next ones could be configured with a similar flow as possible. The outlook of the sales guide was made by the company standards and so would the next ones. With different solutions, there will be unique work phases, but one of the goals was to unify the concept as much as possible.

The preliminary workflow of constructing future sales guides should follow the same principles as shown below in figure 11. The projects themself would of course be individual but having a structure in place for the development projects before the work begins will be beneficial for the overall outcome.
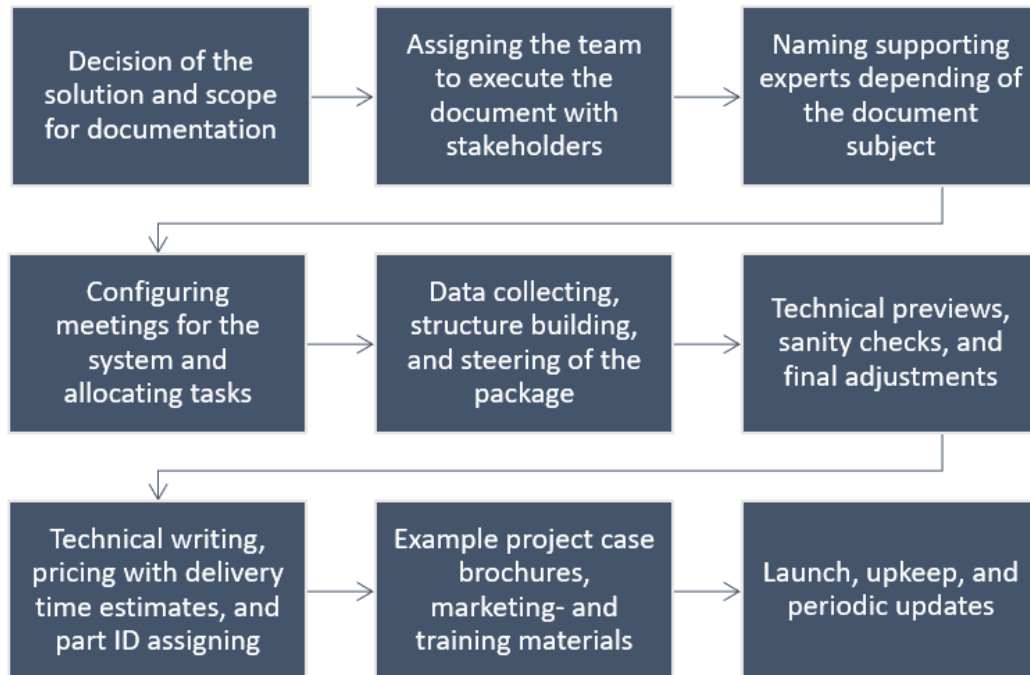

FIGURE 11. Flow chart of the main processes

Workflow for repeating technical sales guide development projects starts from the decisions of the solutions. After the solutions have been selected to be developed into a technical sales guide, the stakeholders can be recognized and assigned. By further allocating the technical tasks of the execution to the engineering professionals more structured project plan can be drafted. Data collection for the document can be done from the already executed modernization projects and with that knowledge, the document can start to take shape. When the document is starting to reach its maturity by the steering of the management, a technical writer can be appointed for the document outlook work. After the technical sales guide has been completed for the launch, informative marketing about the tool can be done. With the technical sales guide published for the use of employees, training for the use of the guides can be held.

6.3.1 Process Manual

A process manual also known as a procedure manual is a document that holds protocols and guidelines for implementing repeatable tasks and actions with certain principles. Process manual targets are to make repeatable processes more effective and with predetermined outlines improve efficiency and communications.

The process manual for executing the sales guide documents will include guidelines on how the work should be structured. This document would include the company policies for outlook and knowledge security. Below in figure 12 is shown a preliminary draft of the table of contents for the process manual document. Before this kind of document should be fully compiled there would be a couple of the sales guides finished so that the standard processes are well enough known.

1.0 Policy
1.1 Execution of Modernization Technical Sales Guide development projects maintains an operational policy defining our direction relative to quality, information security, and inter alia.

2.0 Scope
2.1 This process manual identifies the responsibilities, authorities, and procedure relating to executing intermediate level Modernization Technical Sales Guide projects. Basic procedures of the projects are described within this document.

3.0 Technical Sales Guide category: Intermediate
3.1 Intermediate Technical Sales Guides includes following sections: Informative knowledge sharing, general description with case example, selling points, functional description, budgetary pricing for the basic solutions and components, example project cases.

4.0 Responsibility
4.1 Management and Directors – Responsible for reviewing and quality of the outcome of the projects.
4.2 Project Manager – Co-responsible of quality of outcome and managing the projects.
4.3 Technical writer – Execution of the technical writing in cooperation of the management.
4.4 Technical Team – Researching data, components, and solutions regarding the scope of the project.
4.5 Supporting Experts – Gives definitive specialist consultation for the projects.

5.0 Procedure
5.1 Project subject selection, Management decision
 5.1.1 Scope of the project
5.2 Assignment of the project team and stakeholders
 5.2.1 Naming experts of per field
5.3 Configuration meetings
5.4 Allocating tasks
 5.4.1 Data collecting
 5.4.2 Structure building
5.5 Preview of the package
 5.5.1 Sanity check & Final adjustments
5.6 Technical writing
5.7 Pricing & Part ID
5.8 Example project case brochures
5.9 Marketing- & Training materials
5.10 Launch of the Pre-package
5.11 Up-keep & Periodic updates

FIGURE 12. Process manual table of contents as a preliminary frame

When resourcing projects, mapping the workload must be in order in terms of the requirements of the work. With the preliminary scope of the project, clear, strategic, and operative steering can be done accordingly. Piloting the development project for the first technical sales guide a hierarchy of the stakeholders responsible for executing the project became clearer as seen below in figure 13.
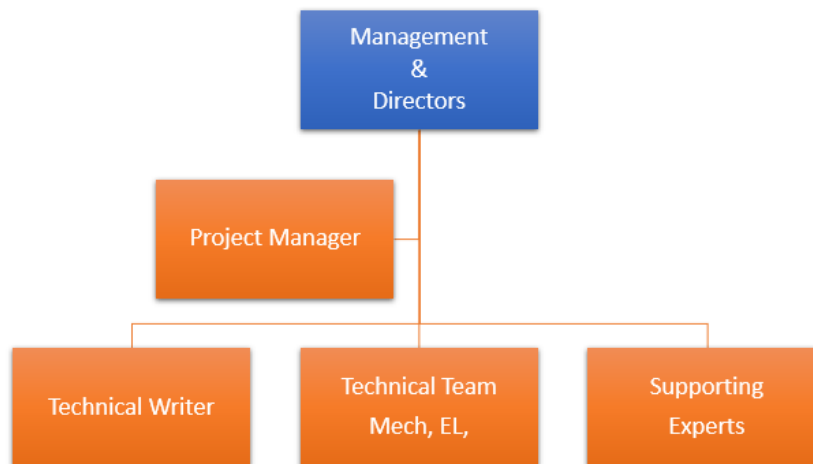

FIGURE 13. Hierarchic layout of development project team

Process manuals can be a valuable resource for employees by saving time and money and making the project workflow more effortless. When projects and work processes have more structure that can be implemented in the planning phase the overall process can be focused more on the quality of outcome and standard work.

6.3.2 Lean Implementations

Lean is a working philosophy that places an emphasis on eliminating waste from a process. The fundamental tenet of this concept is that any resource use that does not directly result in the generation of value for the customer is wasteful and should be eliminated. This idea is put into practice from the viewpoint of the consumer of a good or service. (7. Gauci James, 2010)

Lean project management means having all the project phases and processes in control and to understand the relationship between the different phases and tasks. While traditional project management might focus on the goals, with lean

project management we can get a better understanding of all the project processes. By structuring the projects so that the processes are in the base guidelines and constraints we can start to understand the patterns and how we might be able to improve the processes. With this kind of structuring of the projects and understanding how to manage them by the lean philosophy implementations waste reduction from the processes can be done. (Ballard G & Howell G.A. 2003)

Lean project management's three M's Lean are as follows: Muda, the activities that consume resources without adding value, Muri, the overuse of equipment or employees, Mura, overburden, or burnout. Understanding the resources and the capacity of the resources plays a great role in successful project management. Three M's of lean are waste for the projects that can be eliminated by understanding fully the processes and the relations between different tasks in the project. Balancing the processes means balancing the workload and with that understanding, the optimization of the work can be implemented. Suffering downtime or slowed processes from overstretched and overstressed people is a waste that should be avoided. (stanwick, Vermeeren J. n.d.)
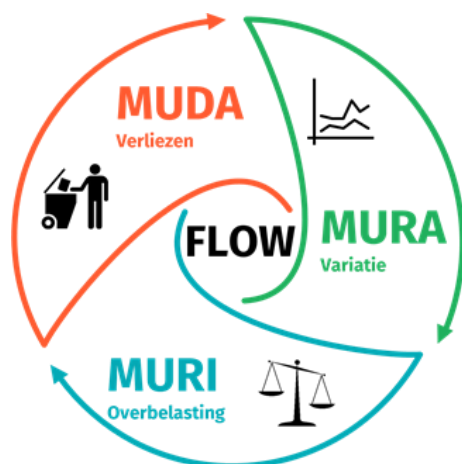

FIGURE 14. The 3 M's of Lean from Vermeeren J. stanwick

Practical Process Improvement (PPI) aim is to achieve profitable growth with simple logic, practical methods, and tools, by engaging everyone. Improvements can be implemented with basic tools like Pareto charts, flow charts, or brainstorming with other stakeholders. Statistical tools can be histograms, run charts, and process behavior charts. Adding the Plan-Do-Study-Act model

(PDSA) the eight-step method the improvement can be incorporated by cycles or iterations of the process. (Zunich E. n.d.)

Implementing lean principles to the future technical sales guide projects with Practical Process Improvement (PPI) eight-step methodology and Plan-Do-Study-Act model (PDSA) could improve the overall process of the development projects. Making the cycle of improvements a standard practice to the project processes by iterating the process of the PDSA would result in more trackable project execution. With this, the implementation of the PPI statistical tools that would record the data for the next iterations could be utilized as seen below in figure 15.

FIGURE 15. Eight steps for PPI, PDSA-cycle-based. from A Plan-Do-Check-Act Based Process Improvement Intervention for Quality Improvement Jorge Luis Garcia-Alcaraz.

Piloting the concept of technical sales guides the overall process focused on eliminating waste from the modernization of sales processes and technical solutions executions. Still the process of developing the sales guides could be improved and optimized. The development project concept should be made into a more trackable form by making the standard processes known.

For lean project management, the future of developing the technical sales documents and the processes of the solutions would carry a complex structure only with its main characters. Categorizing the main tasks of automation, electrical, and mechanical engineering into more manageable processes would mean reworking the operating models of the whole modernizing unit. Alone the main assignments as listed from the sales guide perspective below would themselves go into more meta level for them to be fully implemented on the PDSA processes. All the processes would need extensive discussions on how to proceed with different variable situations to achieve good control of the processes.

PLC

- Connectivity (third party inverters).
- Own inverters, non-PLC.
- *Customers process needs.*
- *Commissioning.*
- *Consistent programming.*
- *Functionality (automation features).*

Electrics

- *Power grid (differences between countries).*
- *Clear initial data from old electrics.*
- *Uniform electric schematics.*
- *Old and new electrics interfaces.*

Mechanics

- *Correct mechanical solutions.*
- *Mechanical design optimization.*
- *Special solution repeatability.*
- *Modularity on the designs.*

Still, by committing to the lean working principles the unified operating model would result in more observable and fluent processes. With this kind of project structure implementation, an online configurator for the customers could realistically be constructed for the most basic modernizing in the future. After defining the standard working processes and dedicating ourselves to a new and lean working environment the profitability of the modernizing operations could be realized. The larger implementation of Lean to the modernization processes is the upper management's decision while it would cause initial costs to make the changes throughout the organization.

7 SUMMARY

7.1 Summary Of the Development Project

The development project for documenting modernization solutions for sales support and knowledge sharing started in September 2019. Phase one of the task was planned with the pilot project of camera systems technical sales guide. The pilot technical sales guide was planned to launch in Q1/2020 which it did on March 31.

The development project for the first Technical Sales Guide where the Camera Systems solution was presented did bring a lot of insight into how the overall modernization of sales processes could be improved. The result of the work suggests that the project was worth executing and the development of the technical sales guides for modernization will continue in the future. Different stakeholders endorsed the document which is only the pilot for the whole concept. Modernizations offering is a difficult subject because of the diversity of the systems and projects. This document brings the aspects of offering modernizations to a user-friendly form. The document structure compiles the system description, sales points, requirements, executions, components, and various documentation regarding the camera systems in a way that the knowledge is fast and easy to internalize.

However, further development of the technical sales guides is needed to secure the full potential of the concept's purpose. Improvements and optimizations on the whole process will continue as the concept shows more results. Points after the pilot project for development that has come up project lead time optimization, the standardized appearance of the documentation, data management, resourcing, and writing of the technical content. In addition, prospects for collaborations with other departments to develop technical sales guides will be investigated.

With the implementation of lean to the future development processes the concept would get more value but the decision is made by upper management. Developing technical sales guides is a complex process that would benefit greatly from the structured frame which could be improved with every cycle. Making the processes more optimized demands repeatability which lean management by implementing the PDSA model would deliver.

Overall, the development project of technical sales guides was a great experience and a motivation builder for example a project management career. Operative and strategic leading are interesting subjects and this project showed valuable aspects of working with different stakeholders and how to coordinate large concepts together.

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APPENDICES

Appendix 1. Interview questions

Questions for Interviews

- What kind of selling material do you use?

- What kind of selling material would you need?

- How much data or material is required to sell the modernization to the customer?

- What kind of data would be useful in a sales pitch?

- Do you need more knowledge about the solutions in different modernization cases?

- How much into detail you go in a sales meeting?

- Would you pitch more technically detailed solutions to the customer if the material existed?

- How detailed material would be the most useful?

- How often you learn about new possibilities of modernization solutions?

- You don't offer modernizations because it seems too complicated?

- Would you be willing to learn about more specific and detailed solutions if the material existed?

- If solutions catalogue did exist would you use it?

- Would you offer more additional features if the material existed?

- Rate the example packaging drafts.

- What customer requirements you decline the most?

- Would a catalogue of different solutions with descriptions be useful?

- Would a technical description and execution material of solutions be useful?