Tuomas Koski

ELECTRICAL MANUALS, INSTRUCTIONS AND VIDEOS

Case Wärtsilä Technical Information

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VAASAN AMMATTIKORKEAKOULU
Digitalisaation johtaminen

TIIVISTELMÄ

Tämä opinnäytetyö tutkii opetusvideoita ja käyttöohjeita tehokkaina oppimisen ja tehtävien suorittamisen välineinä Wärtsilän dynaamisessa työympäristössä. Painopiste on paperidokumentaation vähentämisessä, ja tavoitteena on luoda sujuva digitaalinen prosessi, aluksi pilotoimalla sitä Technical Information osastolla. Tarkoituksena on tuottaa visuaalisia ja helppokäyttöisiä opetusvideoita. Tutkimus selvittää, miten opetusvideot vertautuvat perinteisiin kirjallisiin oppaisiin taitojen omaksumisessa ja prosessin ymmärtämisessä. Tarveanalyysi paljastaa selvän kysynnän selkeille ja saavutettaville ohjeille.

Käsitellyt käyttöohjeiden periaatteet korostavat selkeyden, yksinkertaisuuden ja käytettävyyden tärkeyttä. Kehitysprosessi sisältää ohjevideoiden laatimisen, alkaen käsikirjoitusten laatimisesta, pääkäyttäjien näyttöjen tallentamisesta, ja englanninkielisen käyttäjän suullisen selostuksen lisäämisellä videoon. Tulokset osoittavat prosessin jolla on mahdollista luoda tehokkaita ja ytimekkäitä videoita.

Haasteita ilmeni tiedon hakemisessa videoilta, mikä korostaa tarvetta strategiselle lähestymistavalle metadata -tietojen sisällyttämisessä paremman haettavuuden saavuttamiseksi. Vaikka opetusvideot ovat tehokkaita, tiedon hakemisen vaikeus korostaa tarvetta oikeanlaiselle tiedon levittämiselle ja löydettävyydelle, mikä on kriittistä suuressa kansainvälisessä yrityksessä. Kielen selkeyden tärkeys, erityisesti englanninkielisten puhujien kautta, tunnustetaan. Päätelmä korostaa käyttöohjeiden ja opetusvideoiden arvokasta roolia, painottaen jatkuvia ponnisteluja haasteiden ratkaisemiseksi ja käyttäjäystävällisen alustan tarjoamiseksi tehokasta oppimista ja tehtävien suorittamista varten.

VAASAN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES
Digitalization Management

ABSTRACT

Author	Tuomas Koski
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This thesis explores the development of instructional videos and user manuals as effective tools for learning and task execution in the dynamic work environment of Wärtsilä Spare Parts division. Focusing on reducing paper documentation, the goal is to create a streamlined digital process, initially piloted in Technical Information. The aim is to produce visual and easily understandable documentation, with a particular emphasis on instructional videos. The research investigates how instructional videos compare to traditional written manuals in aiding skill acquisition and process comprehension. The needs analysis reveals a demand for clear, accessible instructions for a diverse audience in an international context.

The user manual principles discussed encompass the importance of clarity, simplicity, and usability. The development process involves key-users recording their screens, creating scripts, and having a native English-speaking colleague finalize the narration. The results demonstrate a well-defined process, which can produce short and efficient videos.

Challenges emerge in information retrieval from videos, prompting a strategic approach to metadata inclusion for enhanced searchability. While instructional videos prove effective, the difficulty in utilizing search tools emphasizes the need for precise dissemination and discoverability, critical in a large international company. The importance of language clarity, especially through native English speakers, is acknowledged. The conclusion highlights the valuable role of user manuals and instructional videos, emphasizing the ongoing efforts to address challenges and provide a user-friendly platform for efficient learning and task execution.

Keywords	Instructional video, user manual

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1 INTRODUCTION

In modern working environment new programs, software and ways of working are taken in use more than ever. Also, people change positions and employers quit often and when a new employee arrives initiation is needed. In many cases printed out manuals and handbooks are outdated when those are needed. Also, in modern days there might be more effective ways of visualizing how the process or task should be taken care of.

It might be hard to learn new things and when it comes to computer programs, it depends much on how well the user interface has been designed to make the program easy and logical to use. In any case, it helps if instructions are clear and easy to understand when learning new things.

This thesis is made for Wärtsilä Spare Parts division. There has been a need to make instructions that are more visualized and easier to understand. For this purpose, a project group has been set up. My role in this project is to manage the cooperation between stakeholders.

1.1 Wärtsilä

Wärtsilä is a global leader in innovative technologies and lifecycle solutions for the marine and energy markets. Wärtsilä's 17,800 professionals in more than 280 locations in 79 countries shape the decarbonization transformation of our industries across the globe. In 2022, Wärtsilä's net sales totaled EUR 6.0 billion, and is listed on Nasdaq Helsinki. Wärtsilä has 5 strategic priorities:

1. Excel in creating customer value.
2. Develop high performing teams that make a difference.
3. Drive decarbonization in marine and energy.
4. Capture growth in services.
5. Continuously improve its end-to-end value chain. (Wärtsilä, n.d.)

Wärtsilä's operations have been divided into four businesses which are Wärtsilä Energy, Wärtsilä Marine Power, Wärtsilä Marine Systems and Portfolio Business. Wärtsilä Energy develops technologies that help its customers in decarbonization with future-fuel enabled balancing power plants, hybrid solutions, energy storage and optimization technology. Wärtsilä Marine Power has a portfolio of engines, propulsion systems, hybrid technology and integrated powertrain systems. Wärtsilä Marine Systems offers products and services related to the gas value chain, exhaust treatment, shaft line, underwater repair and electrical integrations. Wärtsilä Portfolio business consists of independent business units with the aim of accelerating performance improvement and unlocking value through divestments or other strategic alternatives. (Wärtsilä, n.d.)

Wärtsilä was established when the governor of the county of Karelia approved the construction of a sawmill in Tohmajärvi on 12th April 1834 and for almost 190 years it has been at the frontier of engineering innovation. In 1898 The sawmill and iron works company were renamed Wärtsilä Ab, which becomes a new company called Ab Wärtsilä Oy in 1907. In the beginning of 1954, Wärtsilä made the decision to commence the design of its own diesel engines in Vaasa and in June 1959, the first Wärtsilä designed diesel engine, the Wärtsilä Vasa 14, was started for the first time. (Wärtsilä, n.d.)

1.2   The Goal of the Thesis

We have a need to reduce the amount of paper documentation in Technical information organization. It should be replaced by easier to use and understand digital version. When the project has been "piloted" in Technical information, it might be utilized to other organizations in Wärtsilä.

The new digital documentation should be more visual and therefore, faster to use and easier to understand the point of it. In this thesis the aim is to create a process

how to create documentation and educational videos faster and more effectively in digital form.

At Wärtsilä, there is an overarching goal to standardize operations throughout the entire organization, and this project is part of that endeavor. Wärtsilä's large number of employees and its turnover present a challenge in striving to maintain uniformity in operational practices. This creates a need for efficient guidelines.

The main objective is to optimize the process of creating the instructional videos and implement the process also to other documentation. At the end we should have a modern way of showing short instructions to end users.

The research question of this thesis is how instructional videos help people to learn new skills and processes compared to more traditional written down manuals and instructions. One research topic is to investigate how to enable users to find instructional videos within the company's system as efficiently as possible. Another research topic is how to easily locate desired information within the video.

2 REQUIREMENT ANALYSIS AND DESCRIPTION OF THE PRESENT STATE

2.1 Present State

In daily work it has been noticed that with different stakeholders in many cases there is a need for additional instructions. Instructions are needed for subjects like company's internal processes, how to use different computer programs and SAP transactions. At this point many of the existing instructions are outdated, unclear, lacking information or hard to find.

The management of the Wärtsilä Spare Parts Sales Department has requested that the technical experts would produce instructional videos for non-technical employees. Also, in Spare parts divisions internal meetings the need of instructional videos for technical and non-technical persons has come up, especially to train the newcomers.

2.2 Requirement Analysis

The target audience for the instructional videos is Wärtsilä's employees aged 18-63 with all kinds of educational backgrounds, mostly with higher education. The audience comes from all over the world and therefore, it has all kinds of cultural backgrounds. The business language in Wärtsilä is English and all videos should be made in English regardless of the native languages of the audience.

The desired learning outcomes for instructional videos in this case are that after watching the videos, the employee has skills to perform the task illustrated in the video. The learners will access these videos through the company network with their computers. All should have access to a decent network connection, a laptop, and a headset. The videos will be related to audience's work tasks and helps them to perform in their jobs.

To make sure that the accessibility of the videos meets all users there is a need to show the tasks in video form and clarify with audio descriptions and possibly even captions when needed. It should be studied if accessibility can be taken even further with the help of A.I. To gather stakeholders input the subject matter expert (i.e., key user) should be consulted for a script to make the video.

3   USER MANUALS AND INSTRUCTIONAL VIDEOS

Matters dealt within this chapter are general principles of how manuals and instructions should be done to get the best results. The focus is in electronic manuals since that is what we do in this project. It is important to understand why the manuals are so important: They speed up the process since the user can learn how to do the needed task and avoid the trial-and-error method. Also, when manuals are clear and easy to understand, users do not have to contact customer support of the software, or ask from co-workers how something is done, when it is easier to look it up from the manual.

Good operating instructions form the basis of the safe use of products and because of that the manufacturer must provide all necessary instructions and information with the product to ensure that the product can be commissioned, used, maintained and removed from service safely and appropriately. In Finland, this information must be provided in both Finnish and Swedish. The importer and seller of the product are responsible for checking that and if the manufacturer has not provided instructions and safety information in both languages, they are responsible for the translation. (Finnish Safety and Chemicals Agency, n.d.)

In this thesis the term "user manual" is used when referring to the manuals (physical or electrical) that come with a product. User manuals can be divided into subcategories as shown in the next paragraph. The term "user manual" is also used when referring to the instructions made by someone else, for example the user of the product as we are doing in this project. These can also be physical or electrical and be divided into subcategories as shown in chapter 3.3. The same general principles apply to both types of data provided to the user.

3.1   Definition of a User Manual

A user manual, (also known for example as an instruction manual or a user guide) is a document that helps in using a particular system, product, or service

seamlessly. These documents cover detailed information around operations, standards, and guidelines. (Prabhakaran, 2022) The functionality of the product should be described in the user manual, and it should provide answers to user questions such as where? Who? What? When? How? And why? (Suomen standardisoimisliitto, 2012, 37)

User manuals should instruct the user step-by-step through how to use the software, product, or the process. It should be easy to navigate through the guide to the needed information. (Prabhakaran, 2022) The learning process demanded of the user should be broken down into a series of small steps. This can be done for example by referring the user to an illustration representing each action. The best way is to lead the user to read an instructional step, then perform it, appreciate the effect, and then read the next step. (Suomen standardisoimisliitto, 2012, 55)

A user manual should show how to get started at the beginning of the manual. That is the key to users to get started quickly. (Prabhakaran 2022) It is also important to use consistent terminology and the information in the user manual should be as simple and as brief as possible. The ground rule is that one sentence should only contain one command. (Suomen standardisoimisliitto, 2012, 57)

Manuals can be delivered for example printed, online or in video format. It is important to pay attention to accessibility and take maximum advantage of the chosen media. This means making sure that all users can obtain the information they need for example by providing a range of soundtracks and sub-title options. Sign language or audio description should also be provided in some cases. (Suomen standardisoimisliitto, 2012, 71)

3.2 Accessibility of Digital Services in Finnish and EU Legislation

Section 6.2 of the Finnish Constitution (731/1999) guarantees the equality of all people. According to it, no one shall be discriminated against on grounds such as gender, age, origin, language, religion, belief, opinion, state of health, disability, or

other personal reasons without an acceptable justification. According to Section 5 of the Non-discrimination Act (1325/2014), authorities must assess the realization of equality in their activities and take necessary measures to promote equality.

The Act on the Provision of Digital Services (306/2019) (hereinafter referred to as the Digital Service Act) obliges the public sector and some private and third sector organizations to comply with accessibility requirements. Finland's national Digital Service Act obliges a wider range of organizations than the underlying EU Accessibility Directive, which defines the minimum level for public sector actors. Private sector actors within the scope of the Digital Service Act include, for example, financial sector actors, insurance companies, and postal service providers. Compliance with the accessibility requirements of the law does not guarantee that a digital service is accessible or easy to use for everyone. Compliance with the accessibility requirements of the Digital Service Act can improve the usability of a website or mobile application on different devices and with assistive technologies. Accessible implementation considers different people and their needs. It is important to consider not only technical accessibility requirements but also clear and understandable language and ease of use of the service. (Aluehallintovirasto, n.d.)

The technical accessibility requirements of the Digital Service Act are defined in the harmonized European standard EN 301 549. EN 301 549 standard includes requirements for product documentation and support services, for example. In addition, for mobile applications, the standard defines requirements to support platform accessibility features. The EN 301 549 standard refers to the WCAG guidelines (Web Content Accessibility Guidelines), developed and maintained by the international World Wide Web Consortium (W3C), which are used as the basis for accessibility requirements in many countries' legislation. The aim of the guidelines is to ensure the accessibility of web services for all users regardless of their disabilities. Web content must be usable, for example, with assistive technologies such as screen readers for visually impaired users. Different users must be able to access content and use functions regardless of any limitations, and the content must

be displayed correctly on different devices. Compliance with WCAG criteria ensures the realization of the minimum level of accessibility. (Aluehallintovirasto, n.d.)

Although regulation regarding the accessibility of digital services focuses on public sector services, there is a significant benefit for private sector actors in adhering to these regulations and considering accessibility. Accessibility can be seen as a significant competitive advantage, as the importance of customer experience has grown in online services. (Nieminen & Kock, 2022)

3.3 Types of User Manuals

An instruction manual contains basic instructions that tell users how best to use a product (Prabhakaran, 2022). It provides quick and easy answers to a user's questions. A good instruction manual is well planned and covers all important aspects but avoids information overload or confusion. (Bit.ai Blog, 2019)

A training manual is a set of instructions that tell users how a job, process or task should be completed (Prabhakaran, 2022). It improves the quality of how to perform a job, process, or task (Larcom, 2019).

Service manuals are instructions guiding users on how to keep a piece of machinery running at different points in its lifetime (Prabhakaran, 2022).

User manuals are technical communication documents that instruct end-users with the operation of a product (Prabhakaran, 2022). A user manual is the documentation provided to users to help them be more successful with product or service (Knott, 2023).

An operations manual is the documentation about information including roles, responsibilities, and processes of the company (Prabhakaran, 2022). It describes in detail the processes and systems that a company uses to produce its goods and / or provide its services (Cambridge Dictionary, n.d.).

An organizational policy manual is documentation of the company's policies, procedures, and best practices (Prabhakaran, 2022).

Standard operating procedures (SOP's) Manuals are instructions telling members of an organization clearly how to go about completing certain processes (Prabhakaran, 2022).

3.4   Electronic Manuals and Instructional Videos

In electronic manuals the information is provided in forms of video, audio, or both. It can also mean printable versions of documents or interactive multimedia applications that combine static elements such as text and images with dynamic elements such as video, audio, or animation. Electronic manuals can also be web-based collaboration applications such as blogs which support the creation by a virtual team or community. They can also be online context sensitive help systems that contain elements of interactive multimedia applications and odder numerous access and search options. (Suomen standardisoimisliitto, 2012, 71)

In this thesis the focus is on user manuals and instructional videos provided by the company using the software and not the one who created it. Instructional videos are meant to demonstrate process, transfer knowledge, explain a concept, or show how to do something. (Ezell, 2022)

A good instructional video requires some groundwork. It is important to determine and get to know the target audience and find out why they need help. This information can be gathered for example by interviewing product users of sending an inquiry to users. When the topic and the audience is known a script is created. It is recommended to start a video with an intro that clearly lays out the topic and quickly explains what viewers can expect to learn. Finally, the video is ready to be shared but it is wise to share it with a few people first to get some feedback. (Ezell, 2022)

Instructional videos can also be divided into subcategories. For example, lecture videos feature an instructor on screen or their voice behind a visual presentation when how-to videos for their part give step-by-step instructions to do something. (Karel, n.d.) A screencast is a digital video and audio recording of what occurs on a presenter's computer screen. The presenter records all the screen activity and images continuously to complete a designated task. (Ruffini, 2012)

Outlining and visualizing what will be shown is advisable. This will help to make the instructional video clear, concise and interesting to the audience. After that it is time to write a script to help making the video more efficient and avoid forgetting something. (Ezell, 2022)

When the groundwork is done it is time to record the narration. It is recommended to use the best microphone available and find a quiet place to record. Then comes the stage of recording and editing the video. To lead the viewers into the content a video intro can be made to lay out the topic and quickly explain what the viewers can expect to learn. (Ezell, 2022)

3.5 Artificial Intelligence in Instructional Videos

Artificial intelligence (AI) can be used widely in the video making process. It can be used in the content creation and scriptwriting process to help generate ideas, write scripts, and even suggest dialogue based on the desired tone or style. Tools like GPT-4 can assist generating outlines or even full scripts based on input prompts. (Lopez, n.d.) With the AI video translator such as Speechify, it is possible to effortlessly add multilingual dubbing to videos. There is no need to use costly setups, equipment, and skilled personnel and still instantly broaden videos audience by translating it to other languages. Today it is possible for AI to sound really humanlike, it is possible to show emotions like passion and excitement. (Speechify, n.d.) The automatic translation capability of AI extends beyond just subtitles and audio. There is the option to translate all text appearing on-screen, ensuring synchronization with the narration for a seamless viewing experience. It is also

possible to use the video subtitle translator to incorporate subtitles in the video file's target language. Your audio and subtitles will perfectly align, ensuring a synchronized viewing experience. (Synthesia, n.d.)

AI Can also be used to make instructional videos more accessible. AI-powered automated captioning and transcription services have simplified the process of adding precise and synchronized captions to videos. Leveraging machine learning algorithms, AI can transcribe speech within videos and produce captions instantly, enhancing accessibility for individuals with hearing impairments. AI can also be used to provide real-time sign language interpretation for videos. It can analyse and understand sign language gestures and motions in real-time. This enables individuals who rely on sign language for communication to engage with video content in a more immersive and inclusive manner. AI-driven technologies for content summarization and audio description are aiding individuals with visual impairments in accessing video content. These AI algorithms can generate brief summaries or offer verbal descriptions of visual elements within videos automatically. This enhances the comprehensibility and enjoyment of the content for those who are blind or visually impaired. AI is also playing a significant role in video translation services, facilitating real-time translation of videos into various languages. This functionality caters to non-native speakers and those who prefer consuming content in their mother tongue, ensuring effortless access to video content. Consequently, videos become more inclusive and accessible, bridging cultural and linguistic gaps. (Videohaus, 2023)

3.6   Call to Action

A "call to action" (CTA) video is a video that directly tells viewers what they should do next. It is like a prompt that guides them on what action to take after watching the video. There are three types of CTA videos: verbal, text, and buttons. In verbal CTA videos there is usually a person speaking or there is a voiceover presenting the topic or product and suggesting the viewer to proceed with the link below or

subscribe for more content. Text CTA videos have animated text explaining all the details and calls to action in the end. It can be, for example, important dates or names that are easier to perceive in reading form. CTA buttons are clickable elements embedded within the video player or displayed alongside the video content. These buttons often contain short, persuasive text and are designed to encourage viewer engagement and drive desired outcomes. CTA buttons can be used for example to link other videos for the viewer to watch next. CTA can be added to any part of the video. (Explain Ninja, 2022)

3.7 Usability Evaluation

Usability refers to how easy user interfaces are to use. It is not just about the interface being user-friendly; it is also about the methods used to make it that way during the design phase. There are five main aspects to consider when evaluating usability:

1. Learnability: How quickly can users figure out how to use it the first time they see it?
2. Efficiency: Once users are familiar with it, how fast can they get things done?
3. Memorability: If users come back to it after a while, how easily can they remember how to use it?
4. Errors: How often do users make mistakes, how serious are they, and how easily can they fix them?
5. Satisfaction: How pleasant it is to use? (Nielsen, 2012)

Usability can be effectively evaluated through various methods, with user testing emerging as a fundamental and practical approach. This method involves three key components:

1. Selecting representative users,
2. assigning them relevant tasks and

3. observing their interactions with the interface without intervention.

Testing users individually ensures unbiased results, as any assistance may skew the outcomes. Typically, testing with five users is sufficient to uncover significant usability issues. Employing an iterative design approach, which entails running multiple small tests and refining the design based on feedback, enhances the overall user experience. It is essential to distinguish user testing from focus groups, as the latter are inadequate for assessing design usability. Unlike focus groups, user testing emphasizes individual user behaviour over verbal feedback, facilitating a more accurate evaluation of interaction designs (Nielsen, 2012.) Within software and web development industry the user interface of the product is usually tested before it is released. It can include an expert review or user tests or both. This method can also be used in connection with user manuals or instructions. User tests demand some resources, but they may save the company money and save users from getting frustrated. (Møller, 2013, 51–52, 58)

The user manual can help users to get the full potential out of an application. However, users avoid manuals whenever possible, and designers try to build interfaces that do not rely on them. To improve the user experience of manuals, there are a few things that can be done. User manuals must be comprehensive but if the functionality of the product requires a very big manual it is a great idea to provide a quick start guide along with it. This can be done by providing a general map of the interface and explain its basic functions. Pay also attention to white space in the manual. It adds pages very quickly but using it wisely for example between lines increases both reading performance and comprehension. When making written user manuals the fonts are important too. A common practise is to use serif font types for print and sans-serif fonts for online body text, but the most important part is to test choices with users. (Karafillis, 2013)

It is recommended by technical writers to structure the table of contents in a clear hierarchical manner. The instructions can be goal-oriented or descriptive

depending on the task. For example, the installation process of the application is a classic goal-oriented workflow that has the goal clearly defined. In situations where the goal is pretty much up to the users to define, a more descriptive instructional method allows them to better find their way around in the application and experiment with all the available tools and settings until they achieve a result they are happy with. (Karafillis, 2013)

It is often suggested by technical writers that the language of a user manual should be simple, but it is still important to use the same technical terms as the interface has and maintain consistency. Technical terms can be explained in a glossary. A user manual should be divided into meaningful segments that allow users to skip undesired information and find what they are looking for easily. (Karafillis, 2013)

3.8   Video as a Learning Tool

Several studies have shown that videos are in fact better than other learning tools. For example, Hoffler and Leutner (2007) concluded that animations are superior to static pictures if they refer specifically to the topic to be learned and presented with an adequate level of realism. The instruction videos in this project are made as screencasts because screencasts can provide learners a student-centered and engaging learning experience in both distance and traditional learning settings. Screencasting is a multimedia alternative to video recording because it can include music, sound effects, audio, graphics, and text. Screencasts allow students to learn by example anytime, anywhere and with their own pace because videos can be paused. (Ruffini, 2012)

3.9   Choosing the Screen Recorder

A screen recorder is a software tool that allows users to capture everything that is displayed on their computer screen and save it as a video file. Screen recorders often offer features such as the ability to select specific areas of the screen to

record, add annotations or captions, and adjust recording settings like frame rate and quality.

Requirements for the screen recorder in this project are:

1. ability to select the window or screen that is recorded
2. editing with the same program (adding cover sheet, audio narration and captions)
3. matches company's software policies.

There is plenty of software that offer these features, for example:

1. Camtasia by TechSmith has tools that allow users of all skill levels to create professional content like presentations, webinars, and training videos. Camtasia is all-in-one recording and editing solution with fully customizable intro and outro, but it uses a lot of system resources when running and has limited video transition and effects features. (Riverside, 2024)
2. TinyTake is a great recording software solution for beginners. It lets the user to record the whole screen, a selected area of the screen, a specific window on the computer screen, or from a webcam using keyboard shortcuts. However, the video editing options in TinyTake are limited. (Riverside, 2024)
3. Screencast-O-Matic is a screen casting and video editing software tool that is available as freeware as well as paid desktop application. It has many easy-to-use features for example screen capture, webcam recording, microphone audio recording, ability to add computer system audio to recordings, script tool, speech-to-text captioning and drawing tools. The video editor allows its users to edit the audio and video sections of a screencast as well as cut, crop, resize, hide the cursor or webcam, narrate, insert multimedia, replace sections of the video, control the speed, and add transitions and music. (EverybodyWiki, n.d.) Screencast-O-Matic lacks the

scrolling screen capture features and requires purchasing a hosting service (Riverside, 2024).

4. Icecream Screen Recorder enables recording audio and video separately from the computer screen, webcam, and external microphones. Trimming of recordings or changing the playback speed is also possible. It is user-friendly and highly customizable but allows the trimming of only the beginning and end of recordings and has limited video export formats (Riverside, 2024).

5. Movavi Screen Recorder provides many recording options. Recording sound is possible from your webcam, computer, or an external mic while simultaneously capturing video from a screen or webcam. Movavi Screen recorder captures audio and video separately. To edit the videos, an additional software is needed (Riverside, 2024).

6. Wondershare DemoCreator is an easy-to-use, all-in-one recording, and editing program that can record multiple computer screens simultaneously. It records audio and video tracks separately but uses a lot of system resources while recording (Riverside, 2024).

3.10 Screencast-O-Matic

Screencast-O-Matic has been used to record and edit the instructional videos in this project. The benefits of the Screencast-O-Matic are scripted recordings, advanced video recording capabilities. It has in video CTAs, narrations, audio mixing and editing tool built in. The scripted recordings feature is very useful when the user is doing short training videos and has to keep focused on the point. Disadvantages of Screencast-O-Matic are a slightly confusing editing tool and many features are locked behind paywall. (Riverside, 2024)

1. Screencast-O-Matic vs Camtasia

Pros on Screencast-O-Matic over Camtasia: Scripted recordings function, faster loading times, cheaper price.

Pros on Camtasia over Screencast-O-Matic: Better post-capture editing, higher number of import options, many layers for editing. (Riverside, 2024)

2. Screencast-O-Matic vs TinyTake

Pros on Screencast-O-Matic over TinyTake: Scripted recordings function, better editing tools.

Pros on TinyTake over Screencast-O-Matic: Basic using is easy even for beginners, upload to YouTube function. (Riverside, 2024)

3. Screencast-O-Matic vs Icecream Screen Recorder

Pros on Screencast-O-Matic over Icecream Screen Recorder: Scripted recordings function, supports MKV format.

Pros on Icecream Screen Recorder over Screencast-O-Matic: Simple user interface, good onscreen drawing editor. (Riverside, 2024)

4. Screencast-O-Matic vs Movavi Screen Recorder

Pros on Screencast-O-Matic over Movavi Screen Recorder: Scripted recordings function, more advanced features, wider range of editing tools.

Pros on Movavi Screen Recorder over Screencast-O-Matic: Simple and user-friendly interface. (Riverside, 2024)

5. Screencast-O-Matic vs Wondershare DemoCreator

Pros on Screencast-O-Matic over Wondershare DemoCreator: Scripted recordings function, takes less resources to run, more comprehensive editing tools.

Pros on Wondershare DemoCreator over Screencast-O-Matic: Simpler editing with AI-power tools, AI voices and avatars, effects library. (Riverside, 2024)

4 DESCRIPTION OF THE DEVELOPMENT PROCESS & OPERATIONS

Topics for the instructional videos were collected and to pilot this process we chose to make a video of usage of an SAP transaction. The target audience in this case was internal users.

To record and edit the videos we used Screencast-O-Matic because it is very user-friendly and easy to use and therefore, we did not have to spend time learning how to use the program first. It is also very versatile and has a range of features beyond basic screen recording, such as video editing tools, audio narration, webcam recording, and the ability to add annotations and captions to your videos. Even the paid version of Screencast-O-Matic that we used is relatively affordable compared to some other screen capture programs and Screencast-O-Matic provides cloud hosting for the recorded videos, making it easy to share content with others without having to worry about hosting it. Finally, Screencast-O-Matic is available for Windows, Mac, and Chromebook, making it accessible to users across different operating systems which is important in a large international company.

The process starts with the expert of the subject, in this case the Key-user, making a script of the topic. After that the key-user records the video from his/her own screen and makes the first version of the narration at the same time (Figure 1). This may take several attempts and require editing. When the video is done the final narration is made by the person chosen to this project. The aim was to have the same native English-speaking person speaking in each video. We found a suitable person from one of Wärtsilä's network offices. With Screencast-O-Matic we were able to change the narration of the videos. Step-by-step instructions were made for our team how to create new narrations. Also, with Screencast-O-Matic we can add things like intro and subtitles (Figures 2 and 3).
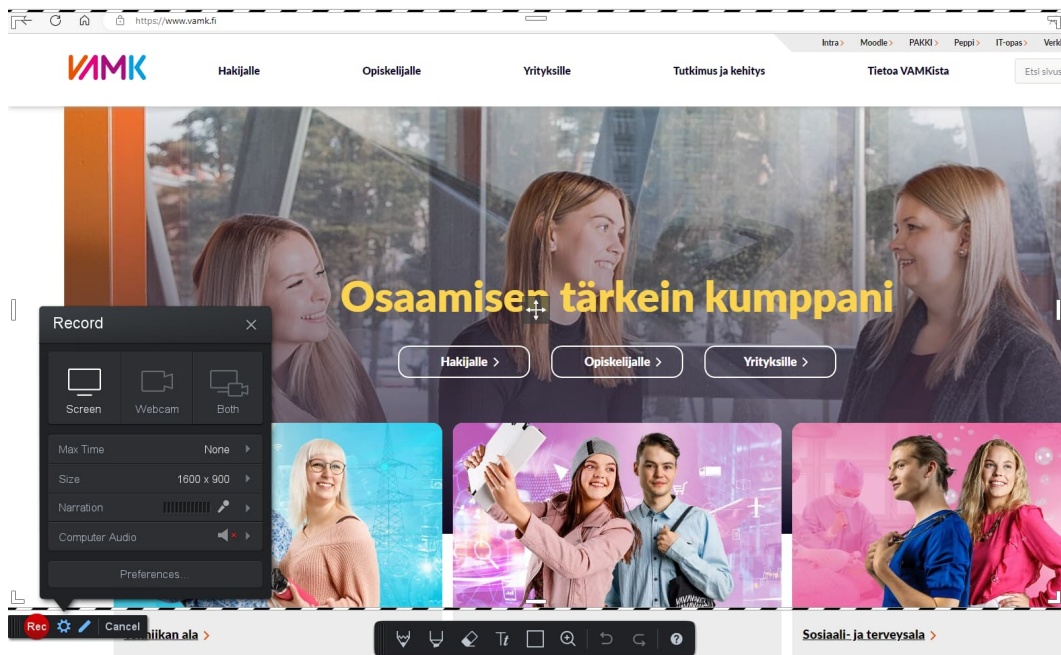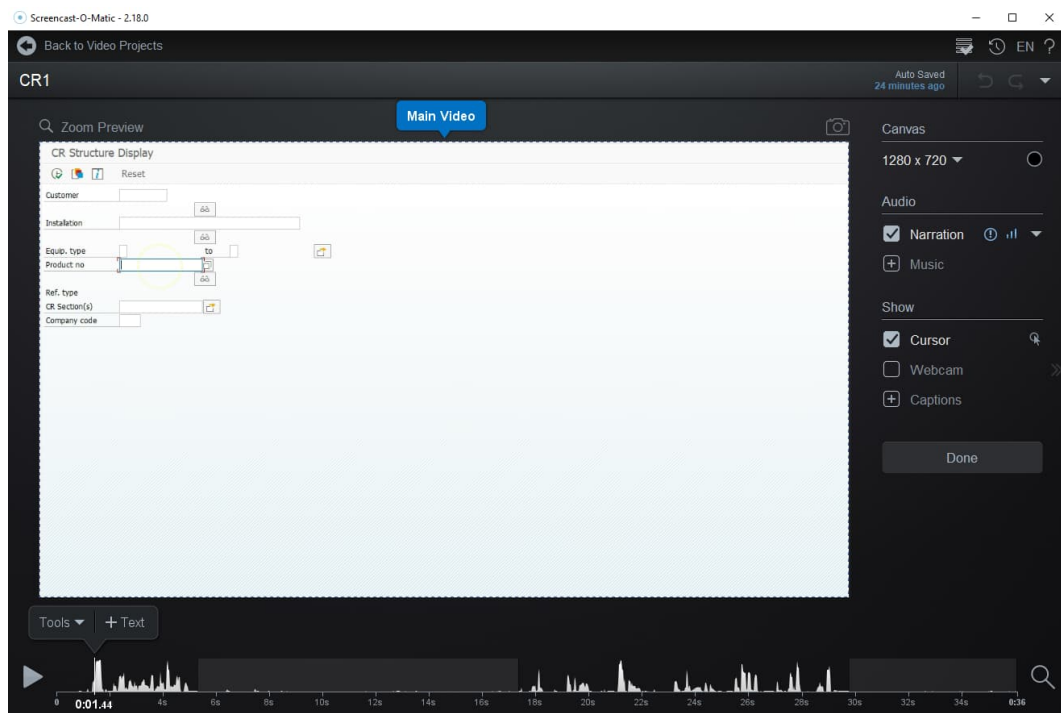
Figure 1. Recording screen with Screencast-O-Matic

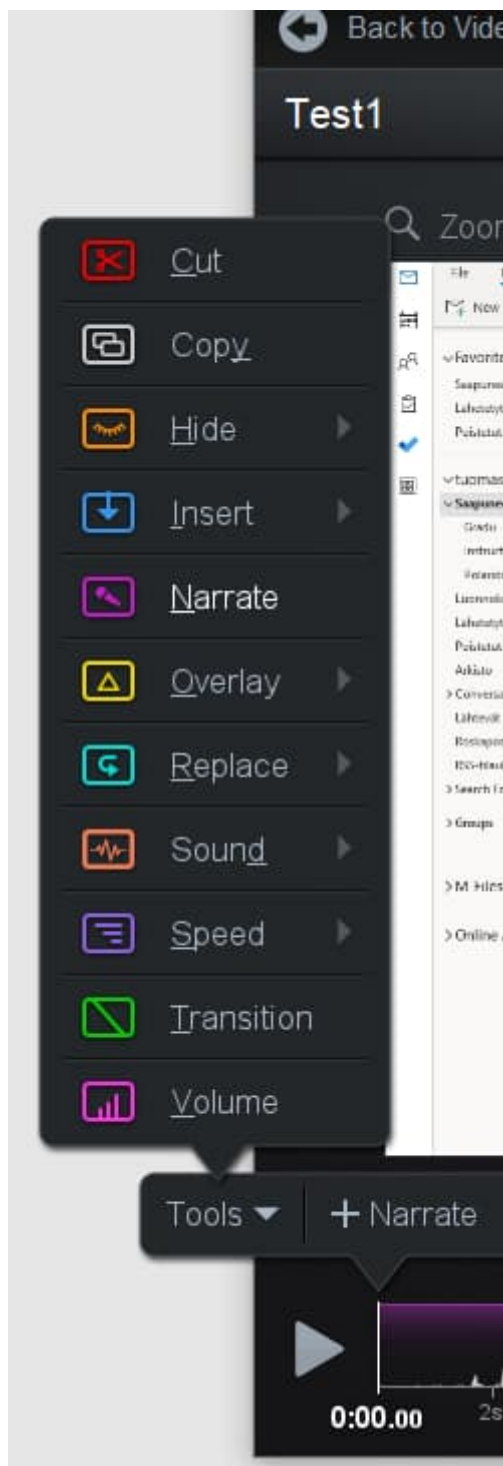Figure 2. Editing video with Screencast-O-Matic

Figure 3. Editing tools available in Screencast-O-Matic

5 DESCRIPTION OF THE RESULTS OF THE DEVELOPMENT

The result of the development is that we have a process where an expert of the subject records their own screen to demonstrate the thing that needs to be educated to users. Then the expert writes a script about what is happening on the screen so our native English-speaking colleague can re-do the narration for the video.

Based on studies of the subject the maximum length of instructional video should be 4 – 6 minutes. Our first video was 3min 30sec (Figure 4). We made sure that the language in our instructional videos is clear and the terms we used were the same as in the subject system. We also used the same terminology throughout the entire video to ensure consistency as recommended by experts in chapter 3.7.

After these most important steps are finished, we can improve the video by adding intros, subtitles or effects if needed (Figure 5). As recommended in chapter 3.4, we added the intro to our videos that clearly explains what the video is about and what can be learned from it.
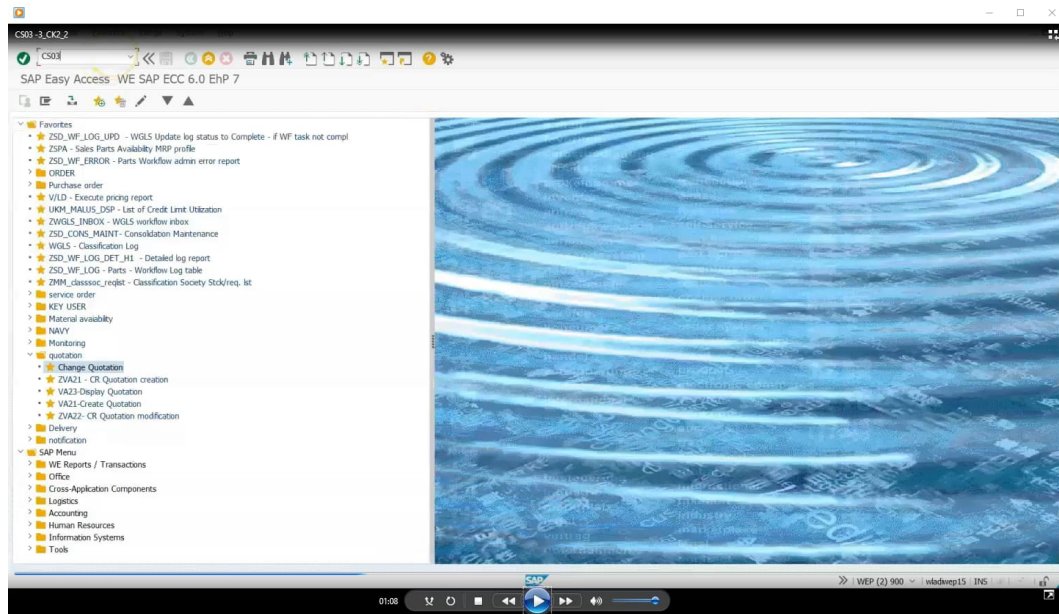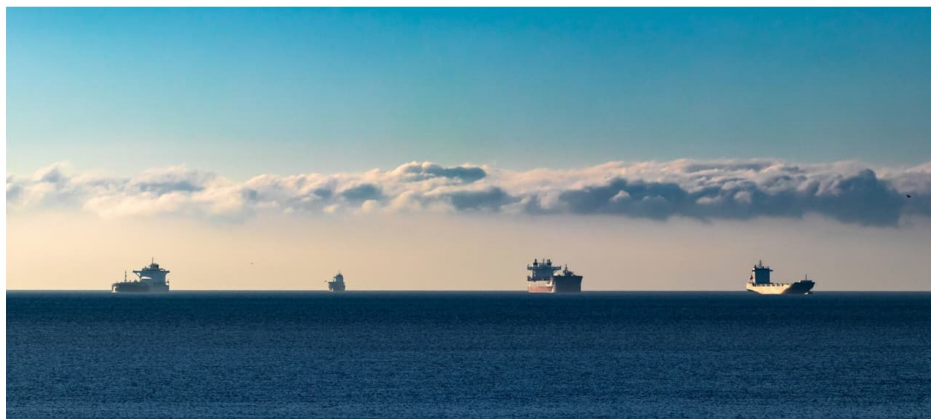
Figure 4. First ready instructional video

Figure 5. Intro picture for first video

Experts and end users found instructions in video format a very effective way of sharing information. This has been claimed in several studies referred in chapter 3.8. As a downside, it is more difficult to use search tools to find specific information from a video compared to written instructions. AI could also be used to

pick up keywords from the video so search tools could find the information needed more efficiently. It is also important to keep the instructional videos short and only show one subject per video to make it easier for users to find what they need.

In this kind of company, where the number of employees is quite high, one of the biggest issues with instructions is how to publish them in a way that correct users can find them. Video instructions do not make an exception. Even more important than the platform where the videos are published is that the metadata and search engine discoverability are as good as possible.

In an international company using a native English-speaking person in the videos makes them clearer and user friendly. In the future AI can expand possible languages also for every user's native language.

When publishing the videos, it is important to make sure that metadata of the file includes the right key words. By doing this we make sure that the search tools can find the videos in the future. Metadata provides context and additional details about the primary data, making it easier to manage, organize, and understand. It is commonly used in digital content management systems, databases, websites, and other information systems to enhance searchability, accessibility, and usability.

6 CONCLUSIONS AND ASSESSMENT

In conclusion, user manuals and instructional videos play a crucial role in facilitating efficient learning and task execution. The clarity and simplicity of manuals are emphasized, as they not only accelerate the learning process but also reduce the reliance on customer support. Video, as a learning tool, is highlighted for its effectiveness, offering a student-centred and engaging experience that accommodates various learning preferences.

While the success of instructional videos is evident in their positive reception among experts and end users, the inherent challenge lies in the difficulty of utilizing search tools for precise information retrieval compared to written instructions. This challenge is particularly significant in a large international company like Wärtsilä, where the correct dissemination and discoverability of instructions, including videos, become crucial.

Recognizing the importance of language clarity in an international setting, the use of a native English-speaking person in videos is emphasized. Additionally, the strategic inclusion of metadata with appropriate keywords emerges as a vital solution to facilitate future searchability. By addressing these challenges head-on, Wärtsilä aims to provide a user-friendly and accessible platform for its diverse workforce, ensuring that instructional content remains a valuable resource for efficient learning and task execution.

In the future, we will consider using more AI to help us improve current videos and create even better ones for the future topics. We are also going to use AI to make the videos more accessible by adding for example dubbing to audiences' native language or doing translations for the captions. We are also planning to use Call to action elements in the future videos for example links to other useful instructional videos.

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