



LAUREA
UNIVERSITY OF APPLIED SCIENCES
Together we are stronger

E-Learning: Case Airbus Defence and Space Oy

Aleksi Tuomisaari

2017 Leppävaara



Laurea University of Applied Sciences
Leppävaara

E-learning: Case Airbus Defence and Space Oy

Aleksi Tuomisaari
Degree Programme in Security
Management
Bachelor's Thesis
December, 2017

Aleksi Tuomisaari

E-learning: Case Airbus Defence and Space Oy

Year	2017	Pages	49
------	------	-------	----

Airbus Defence and Space Oy aims to have security practice training for all company employees and subcontractors who work in the company premises. Previously the use of classroom learning did not reach the goals set for security practices on account of short term employees.

These challenges have been thought to be addressed by converting the classroom events into an online E-learning form. The aim of the thesis is effectiveness, seeing a clear increase in attendance figures and find a solution to train a new employee as early as possible to the safety culture of the company. Effectiveness is addressed by having the employee as interactive with the material as possible. Questions which restrict forward navigation are included in the learning material so the learner will have to think about the answers and read carefully. In addition to the software settings, surveys and comparisons are used to map a strategy to achieve these goals.

The software which is to be used is ILIAS E-learning software which is considered in a SWOT analysis of the thesis. E-learning has a lot of potential for various kinds of learning which is why an analysis of different learning types and how to address them is done using the VARK model.

Data is received through the ILIAS software and employees answer two different surveys, one on the old method in the auditorium and one on the new E-learning method. Comparisons on interest and effectiveness are made and feedback has been received.

The thesis is completed within the guidelines set in the beginning; these guidelines made it possible to reach the set goals.

Keywords: E-learning, Safety Culture, VARK, SWOT

Aleksi Tuomisaari

E-learning: Case Airbus Defence and Space Oy

Vuosi 2017

Sivumäärä 49

Airbus Defence and Space Oy:llä tavoitellaan turvallisuustoimintatapojen koulutusta kaikille yrityksen työntekijöille ja alihankkijoille jotka tekevät töitä yrityksen tiloissa. Aiemmin käytetyllä luokkahuonekoulutuksella ei saavutettu turvallisuustoimintatapojen tavoitteita lyhytaikaisen työntekijöiden osalta.

Nämä ongelmat on arvioitu korjaantuvan niin, että materiaalin siirtäminen verkko-oppimis muotoon olisi eduksi. Keskeisimmät tavoitteet opinnäytetyössä ovat vaikuttavuus, nähdä selkeä nousu läsnäolotilastoissa ja löytää keino saada uusi työntekijä mahdollisimman aikaisin tutustutettua yrityksen turvallisuuskulttuuriin. Vaikuttavuutta haetaan siten, että jokainen työntekijä joutuu miettimään tarkkaan kysymyksiä jotka ovat materiaalin seassa. Tämä saavutetaan niin, että materiaalista ei voi edetä ennen kuin on vastannut sivun kysymykseen oikein. Ohjelman asetusten lisäksi käytetään kyselyitä ja vertailuja reitittääksemme tavat saavuttaa nämä tavoitteet.

Ohjelma jota käytetään materiaalia varten, on ILIAS verkko-oppimis ohjelma. Ohjelmaa arvioidaan SWOT analyysissä. Ohjelmassa on paljon potentiaalia vastata jokaiseen oppimistyyliin, tämän takia on tehty analyysi käyttäen VARK-mallia ja pohdittu, miten jokaista oppimistyyliä voidaan hyödyttää.

Data jota tullaan käyttämään tuloksissa, saadaan ILIAS ohjelman kautta tehdyissä kyselylomakkeissa. Työntekijät vastaavat kahteen eri kyselyyn, yksi koskien vanhaa auditorio menetelmää ja toinen koskien uutta verkko-oppimis menetelmää. Näistä tuloksista verrataan tehokkuutta ja innostusta materiaalia kohtaan. Palautetta työntekijöiltä on vastaanotettu.

Opinnäytetyö toteutettiin ottaen alussa asetetut tavoitteet huomioon; nämä edesauttoivat niiden saavuttamisessa.

Asiasanat: Turvallisuusoppiminen, Turvallisuuskulttuuri, VARK, SWOT

Contents

1	Introduction	7
1.1	Background	8
1.2	Case Company	8
2	What is Security Awareness Training?	8
2.1	Why is it Needed?	9
2.2	E-learning As a Tool.....	10
2.3	Different Types of Learning	11
2.3.1	Visual Learners.....	11
2.3.2	Auditory Learners	11
2.3.3	Kinesthetic Learners.....	12
2.4	Comparing Methods	12
3	Methods	13
3.1	Research Question	14
3.2	Research Problem	14
3.3	Goals.....	15
3.4	Prediction.....	15
3.5	Benefits	16
3.6	Target software	17
3.7	Users.....	18
3.8	Administration	18
4	Benchmark	19
5	SWOT	19
5.1	Unwrapping the SWOT.....	20
5.1.1	Strengths.....	20
5.1.2	Weaknesses.....	21
5.1.3	Opportunities	22
5.1.4	Threats	23
6	Data review	23
6.1	Surveys	23
6.1.1	Tutor Survey.....	24
6.1.2	User Surveys.....	24
6.2	Target Group Types.....	25
6.3	Attendance	25
6.4	User Interest Surveys	27
6.5	Auditorium.....	27
6.6	User Gain Surveys	28
6.7	E-Learning	30

6.8	Interest Survey.....	31
7	Findings.....	33
7.1	Verdict.....	35
7.2	Future Improvements.....	35
8	Reliability & Validity.....	36
	Figures.....	39
	Tables.....	40
	Appendix.....	41

1 Introduction

As a re-occurring trend about 10-15% of employees are hard to get hold of regarding security training every three years; about 5% of employees are hard to get hold of every four years. This might be due to the lack of motivation, which can be because many see security training as an obligation and not as an opportunity to strengthen their knowledge of the company. Motivation can also be low especially if the employee has a lot of work to be done. With recorded incidents and audits, it is seen that employees are familiar with the very basics of security

While the target group of the thesis work are the new employees, it is hoped to have auditorium learning events transformed completely into E-learning. This is for material which does not require face to face contact from the participants.

The thesis essentially being a teaching project, a review of learning types and teaching methods will be gone over. The thesis is also a renovation project, so surveys are conducted to show how effective the new software will be compared to the old and whether it is profitable to continue using the software.

In the following pages, there will be background information of the case company and why it is important for them to have a training software update. The thesis was created with close guidance from management level in the company and a lot of independent learning on how to use the target software.

1.1 Background

Every year there are people leaving and entering Airbus Defence and Space Oy for numerous reasons. Therefore, statistics for auditorium learning events plummet every now and then and at some point, might have a huge spike. The spike occurs mostly when there are lots of newcomers to the company and have a mandatory security induction in the auditorium. After the mandatory event has been completed many people see that they do no longer require listening to familiar news all over again later. Therefore, the officials have thought it to be better for people to learn about the material at their own pace at their own work desks. This method is thought to increase interest in a mandatory learning event with the angle of free will. (Westlund, 2017. Pers.com)

The goal here is to achieve the level of employee knowledge that they know the security regulations and can act in line with it. The employee will be able to analyze possible information security risks in different working situations. Ultimately the employee will be a part of the whole group who ables the company to answer the policies and regulations along with the commitments to stakeholders. (Westlund, 2017. Pers.com)

1.2 Case Company

The case company this thesis will be done for is Airbus Defence and Space Oy (Which will be referred as “Airbus” in the following pages). Airbus Defence and Space is globally known in the military manufacturing market, providing ground- naval and aerial military technology to their customers. Defence and Space is a division of Airbus which has two other divisions: Airbus commercial aircrafts and Airbus Helicopters. (Westlund 2017. Pers.com)

Airbus Defence and Space Oy in Finland can trace its roots to Nokia when they were developing Professional Mobile Radio (PMR) technology. From 2005 to 2011 company name was EADS Secure Networks Oy and from 2011 to 2014 Cassidian Finland Oy. (Westlund 2017. Pers.com)

Currently Airbus Defence and Space Oy in Finland employ some 350 people in Helsinki and Jyväskylä together, at these two sites they are developing mission critical radio communication solutions and terminals based on TETRA standard. Users of these systems authorities in public safety and critical infrastructure such as oil, gas and energy companies. (Westlund 2017. Pers.com.)

2 What is Security Awareness Training?

Nowadays companies have increasing amounts of information put online and this poses an IT risk. Because of this risk it is important for companies to invest in awareness training. While there are people employed who consider the threats and weaknesses, it is a major decrease in chances for incidents by having training for the end users. In the end, they are the ones

who are using the internet. The aspect of IT-security for employees is highly emphasized however, officials find it necessary to remind employees the importance of it even more as the business segment of the company is one of the most cyber attacked in the world- (Brecht, 2016)

Usually companies have some firewall settings or internal blockers for sites and the reasons for these are usually unknown to the end users. A training session can help the users get acquainted with company policy and why the policy is there. Airbus is very strict with the content employees are viewing and many are unaware of the reasons behind these blockers. The learning material is thought to answer most of the employees' questions regarding the restrictions. (Brecht, 2016)

2.1 Why is it Needed?

For a company to reach security goals it is important for all employees to have a part in it. Having trainings in short intervals can help the security staff a lot. When every employee is made aware of the security measures employed in the company and the reasons behind them, the security staff have a heavy load lightened. It does not however mean that the employees are the only ones who should be secure, the security staff should make sure that the material is easily brought forward and made interesting enough so that all employees think about the security aspect of their work. It is important to add the importance of communication concerning security threats, so they can be taken care of early on. The periodical training events can be in the form of the employer's preference. The used method in question now is from auditorium group events to E-learning. (Brecht, 2017)

Security awareness training is by no means only for the employees, but also for the supervisors. In fact, the supervisors should always be more aware of possible cyber threats than the employees, so they can think of ways to address and prevent incidents from happening. Supervisors are contacted for answers if something happens and therefore they usually have additional training for their jobs. Additional training can range from seminar visits to regular security meetings. Security meetings are implemented and have a fixed schedule when held. (Brecht, 2016)

While new employees are easier to get to attend security training, it is increasingly difficult to have the higher ups attend due to their busy schedule. There should be distinct levels of teaching depending on the level of risk and experience in the material. Higher ups can have a straight forward presentation which includes possible sensitive information while new employees get the general picture. Having new and old employees going through the same material over at the same time has a definite effect on motivation. The two groups require their own learning package which includes some parts to remind the basics however, with the emphasis on the updated information which affects their job description. (Brecht, 2016)

The most difficult obstacle to overcome in security awareness training is to motivate people to show up. Generally, people who enter the working life from school are happy that they do not have classroom events anymore however, depending on the field of work classroom learning is a necessity. Especially a large company like Airbus, classroom events are needed to have as many people attend as possible now. One of the most effective ways for employees to think of the lectures as interesting events is to make the material look like it is meant exactly for their work, so they can use the information for their days at work. Categorizing material to suit certain tasks is to be considered with the material created in online form. (Korolov, 2015)

2.2 E-learning As a Tool

A common consensus is established through numerous sources that it is financially and resourcefully smarter to turn to E-learning than to continue with traditional classroom learning. As stated in a blog entry “Why E-learning is So Effective”, it takes a lot of resources, time and money to organize a practical learning event. There are several factors which need to be considered. To start off the learning event needs a teacher who organizes the resources and plans the entire event. Then there is the need for materials if it is a physical learning event, additionally getting hands on material which will be used in the training will cost quite a bit of money. By E-learning it would be more cost-effective and less time consuming to have training online and if needed, some practical training in person. Time and cost have been taken into account with this work as the content is created by the trainee working on this thesis. Having the material put online and the software introduced benefits the supervisors as they have less to learn and most of the content is up to date when the work is finished. (Kuhlmann, 2010)

The biggest problem currently with workplace learning is that companies do not invest enough time to make it effective. Training events considered an effortless way to get people to work faster even though the learning event which took place in a classroom or auditorium did not answer any questions the employees might have had. Will Holland writes “most learners will likely forget 80% of the training material in 90-120 days” the reason being that learners are forced to sit and listen to long non-innovative events where there is no real interaction with individuals, some may have thought that the visual side can be stimulated by creating videos with training, however these too are usually boring and unengaging. While interaction with officials and employees might not improve necessarily with the implementation of E-learning, measures such as feedback and questionnaires are to be implemented in the software and regular status updates will be made. This allows the employees to be informed of various changes and know that a well-maintained program means it must be important. (Holland, 2014)

2.3 Different Types of Learning

There are many different learning models created by psychologists and scientists and one of them “The VARK Model” includes four major learning styles: Visual, Auditory, Reading/Writing and Kinesthetic learners. The biggest problem people have is that almost every single learning event starting from school leans heavily toward reading/writing and rarely addresses the other three major learning styles. The foundation of the material and structure of the E-learning content is laid by finding out the learning types of employees and catering to address all needs as well as possible. (Nakano, 2016)

Visual people prefer to learn through visually stimulating presentations which include charts, polls and aids to show the relationships between the content of the material. Auditory learners prefer that material being read out to them so recording a lecture or learning event without any visuals or reading can help these learners a lot. Then there are the readers/writers who must have a pen(cil) in their hand to get anything out of the learning event, they are the ones who usually do best by reading a lot of material and then writing notes or doing quizzes, this is the most popular learning method used. Finally, there are the kinesthetic learners who are the most practical people. Having words to read, listen or write does not help this group at all. If the training has something to do with practical work, these people are the ones who prefer to learn by doing, otherwise it will stay unclear to them. Any training provided to these people can be beneficial if asked to interact with their surroundings. (Nakano, 2016)

2.3.1 Visual Learners

Visual learners like reading/writing learners do well with words on paper, however to maximize the productivity of the material it is important to look at the formatting. Good things to have for these learners include PowerPoint documents where the learner or teacher can easily create a visually stimulant experience through fonts, colors or pictures. An image gallery which has pictures as references to learning material can be a welcome addition to the learning module, this helps the visual learner read and see through a picture what they have just read, it works as a reinforcement to the text. Video training is common to many workplaces however making them interesting is more of a challenge. Videos are an effective way to train visual learners, one might add text to the video, so the learner must concentrate harder. (ProProfs, 2013)

2.3.2 Auditory Learners

Auditory learners rarely benefit from having material to read and write down afterwards which is why it would be best for this group to have recorded lectures and could answer questions orally rather than with pen and paper. Having audio files with training can help this group of learners immensely, this way they can listen to the material on their own time. If

needed, linking audio files to aid the material the learners are listening to can be a good addition, it can help them get immersed in what they are listening to. Communication being a part of the training process, it would be a good idea to form small groups and usually they will create their own forums or discussion groups where they can interact with each other. (ProProfs, 2013)

2.3.3 Kinesthetic Learners

Kinesthetic learners are the most practical of all learners. Having text or audio material will not prove to be an effective teaching method for them. However, it is difficult to have any practical teaching using E-learning so rarely this group will have a productive time when learning. To address the need to do to learn, it can help to add interactive material on the online courses of the E-learning. If training for something practical it can be useful to, if possible, add 3D renderings to the material which can then be interacted with. When answering basic questions, it is helpful for this learner to see that their actions influence something, so having a poll or a result chart after every interaction they do can prove to be a helpful addition. (ProProfs, 2013)

2.4 Comparing Methods

It is true that every person has their own method of learning and that E-learning or classroom learning is not for them. It can depend on numerous factors such as remote working, the need for interaction or busy schedule. (Pagnucco, 2014)

Looking at some benefits of E-learning when comparing to classroom learning, we can find for instance, that doing online courses can be a major asset to timetables since there is no need to be present for the material at an exact time. The material can be accessed whenever the user wishes to, unless there is a pre-determined availability/deadline. Another good aspect is that many people are unable to interact with anyone when there is a big classroom event. Having the material only for the user, they might be more inclined to ask questions and tell their opinions. E-learning focuses on the individual rather than a large group of people. By having more people interested in communicating through online forums or discussion groups there can be many more acquaintances made. If it is an open course globally, the user can make many new contacts and reach the people who are on the same wave length. This can help diversity in interaction and a broader outlook on the discussion. (Pagnucco, 2014)

Classroom learning has its benefits as well. E-learning is more of a university/workplace tool and people are given classroom learning for numerous years while in primary schools. This method provides the learner with the possibility of discussion and interaction with fellow students and teachers which can help a lot of people. Classroom events usually have a schedule which is followed so it is easier for most to set, for instance, meetings around the event

because the time is fixed rather than the unsure time spent on E-learning. Discussions in classrooms are made much more interesting and are given more depth through emphasis on different matters and the tones and expressions of the peers. (Pagnucco, 2014)

The usually best factor of classroom or on-site events are the fact that students can make use of the sites material if the student is lacking the equipment at home. Many schools have libraries or IT classrooms which can be very practical for finding needed information. Additionally, depending on the time the student can easily receive help from the tutors or assistants. (Pagnucco, 2014)

3 Methods

Qualitative research methods will be used to gather data for the results of the thesis. Surveys in the form of questionnaires and weekly meetings with the security manager and security officials will be done. Benchmarking will be addressed by having the same group of people who have been to the auditorium event take part in the E-learning project as well. New employees are joining the company after the auditorium event which means that they will give their own data set and will have no benchmarking when answering their own surveys. (Security Team, 2017)

The benchmarking aspect will be conducted in the manner of first gathering data from people who have taken part in auditorium learning events. The testing group will be of the same nature: new employees and experienced ones who should participate in the induction event again. Since there are new employees starting employment after the auditorium event, the ones whose employment starts before the auditorium event answer surveys for both methods; the ones whose employment starts after the auditorium event answer only E-learning survey. This way for the sole E-learning respondents there will be no comparison toward the material at auditorium event. (Security Team, 2017)

Questionnaire surveys are conducted because of the amount of “students” and their consistent physical attendance at the workplace, it is one of the most cost-effective and reliable methods on gaining data from the employees. Because the survey is fixed in online form, it enables hard-to-reach-employees to respond to the survey with ease and on their own time when they see fit. Surveys are done anonymously because there are not many employees in the pilot program and this will make it easier for the employee to be completely honest if they feel like they do not want to give criticism using their own name. (DeFranzo, 2012)

There are three main benchmarking methods internal, competitive and strategic. *Internal benchmarking* is mainly used to spread the information about best used practices within the company. It is also a good benchmarking method if there is no real competitor in the industry to use as a benchmark. *Competitive benchmarking* is mainly conducted when a performance

evaluation is due within the industry. This is a good way to define the standing of the company when comparing to rivals. *Strategic benchmarking* goes on a global scale. To measure the company's standing in industries around the world. Usually strategic benchmarks are conducted by a person outside the company. (Stroud, 2012)

Airbus is looking to improve on itself to better their security induction and since the induction is to improve from itself to see if it is a more viable method, the benchmarking method of this thesis will be in the category of *Internal benchmarking*. This method will be addressed with the questionnaire surveys which will give data from the auditorium event and the E-learning material. The auditorium will serve as a benchmark and the results will be compared once the E-learning material has been completed and the second surveys have been answered. (Security Team, 2017)

3.1 Research Question

There are two research questions which are used as guidelines for the thesis, both with a common goal. The first being more focused on how the content affects the employee and the second focused on the attendance of employees toward the learning events.

1. Will renewing security induction training to E-learning be an effective way to integrate new employees to the company safety culture?
2. Can E-learning raise the attendance of employees for the security induction events?

The questions are easily answered with the methods mentioned in the method section of this thesis.

3.2 Research Problem

“A research problem is the main organizing principle guiding the analysis of your paper.” (Alvesson and Sandberg, 2013) As stated in the quote, potential problems which might be encountered during the project are fuel to the solutions which drive the research onward.

The objective of the security briefing and training is different for new employees, experienced employees and for employees who work on projects with higher security requirements. The company finds it necessary to work on the depth, accessibility, effectiveness and interaction based on the needs of the certain group of employees. The purpose of the thesis is to find out how these goals are achieved through different learning methods, course structures and timing. The learning methods are E-learning, classroom, one-on-one and small group meetings. (Westlund, 2017. Pers.com)

A challenge for the thesis work is that people generally do not respond to learning event invitations, meaning that a solution must be found to have enough people take part in the events. Timing is another problem due to the thesis being done during summer, so many people are going to be on holiday around the time of the released material. The positive side is that many new employees are set to start employment at the company during the summer. However, it is wished that older employees take part in the learning as well to get a diverse opinion from new- and old employees. (Security Team, 2017)

3.3 Goals

The goal of the thesis is to create a learning environment which is easy and interesting to use. The E-learning will not be replacing the general introduction package a new employee receives but will be adding importance and flexibility in the integration process. Communication is a central part of the E-learning material and is hoped to increase the feeling of necessity for security training in employees. The material makes it clear for all employees that every day they as individuals affect how secure the company is. (Westlund, 2017. Pers.com)

To reach wanted attendance figures for classroom learning it is important to have the trainers' and participants' timetables fit. Usually the trainers have many tasks of their own and the participants are needed with their own project responsibilities. This results in some employees missing the training session and waiting some time for the next one. It is thought that have the new employee introductory tour on office practicalities would be more beneficial with a written information package. (Westlund, 2017. Pers.com)

Hence, a goal is also to make it faster for a new employee to integrate into the safety culture of the company; time can be saved to finish other work projects by the supervisors. The only drawback is that the time spent face-to-face will decrease dramatically and can create distance in communication. The results will show if E-learning worsens the communication factor. (Westlund, 2017. Pers.com)

A goal is to reach wanted KPI targets which cannot be reached with the auditorium events. This can be affected by sending out reminders using the software and checking who has viewed the material. (Westlund, 2017. Pers.com)

3.4 Prediction

It is predicted that if the online version of teaching in comparison to the auditorium is made visually and structurally interesting, the company can start to decrease the need for a security auditorium event and focus more on the E-learning material. (Security Team, 2017)

Every workplace has its share of people who do not care about listening to the same information repeatedly, however if the material is updated regularly and is kept interesting, high rates of attendance are to be expected. (Security Team, 2017)

3.5 Benefits

The company can benefit from the E-learning if it is received positively. It will add value to learning while working and make the face-to-face events more interesting. Having employees do a course with E-learning can free up a lot of time for people to work on their own projects, and when they have time they can do the course. The courses will have deadlines because there is still a chance that people will find it easier to skip a task if they are not rushed in any way. (Security Team, 2017)

Having to give courses and briefings face-to-face constantly can take the interest out of anyone who might be a part of it. Being accustomed to auditorium events and security briefings can create an environment where the tutor is not interested in the topic at all and this reflects on the audience in a negative way. Having introductory material which can be done on a singular level can give the tutor time to create interesting and well thought out briefings for cases when they students must have face-to-face contact. If working further away the company does have screen sharing software so presentations can still be seen by the employees. (Security Team, 2017)

Since the company has offices and partners abroad, it can be beneficial to have basic information on their destination in the company servers. Having a face-to-face or screen share briefing on a topic and then having reminders in online form can help the employee remember a lot of the material which was handled in the briefing. It can even help to have a few exercises on the topic even though it is not necessary. People tend to learn better by doing, so having a reading “exercise” can increase knowledge in the learner if they wish to do it. (Security Team, 2017)

The fact that by looking at their own screen and browsing the pages of the E-learning course at the persons own speed make it more likely that they can finish a course with a better feel than by listening to a presentation at the speed that everyone can keep track of. Creating a course which includes only the necessary information and no additional information might leave the person with some questions which is why a comments section and a forum will be used to gain feedback and ways to answer questions. This way users are communicating and learn better by teaching each other. It also adds value to the communication between co-workers in the office which is one of the goals of the thesis work. (Security Team, 2017)

3.6 Target software

The software which will be used for the E-learning is ILIAS. It is a software which is used in many schools and is the base software used by other offices of Airbus globally. The software is simple to use and can be used to gather very good data on participation rates, survey results and recommended improvements to the courses which are created. (Security Team, 2017)

ILIAS will also be used to gather scattered information about certain subjects to help the administration locate all information concerning a single issue. When new acquisitions are made the administrators need training, so it will serve the teaching aspect of the software by adding the training for administrators as well. (Security Team, 2017)

It is possible to create groups in the software and this is done so, that people from different levels have access to training which only they will need. This helps cut down on any confusion regarding which tests, surveys and learning modules are required from employees. Airbus having the two offices in Finland gives reason to have individual groups for each office and having the sub-groups for people who might need specialized training. For instance, the security induction is held for every employee; if the employee is new it is mandatory for them to attend, after this the employee will start a timer on when they should attend next time. (Security Team, 2017)

The reason E-learning would be perfect for learning and re-learning is that the older employees are expected to know the basics and have just a reinforcement on advanced material, so they do not have to sit and listen to all the basics repeatedly. The new employees naturally have more material to go through, however after this all the material will be in the general directory and all courses will be based on new material or material which needs going through very often. (Security Team, 2017)

The software has perfect communication capabilities which addresses one of the goals for the thesis. Improving communication between administration and users is imperative in a company which is highly dependent on its security. If the employees wish to ask questions on a course or learning module, they have the possibility of adding comments on the learning material and will spark conversation with other users or administrators. A forum is implemented with the possibility to add all kinds of threads and posts which handle security matters in the company. The forum will also implement a section on what the employees wish to learn about. If there was something unclear in the induction, they can request a section in the repository on the topic which they wish to learn about. This system works also as a feedback and any of the comments or requests will be addressed by modifying the material in the software to create an as clear as possible system to welcome new employees and keep their interest up at work. The fact that requests and feedback are addressed, make for a better

atmosphere because it shows that the administration is really interested in hearing from users. (Security Team, 2017)

3.7 Users

As stated in the “research problem” section there will be users with diverse backgrounds in the company. To address this there will be groups for certain people in different sectors. New employees will be receiving a security induction and some newcomer material which is not something which the “veteran” employees need reminding of. Every employee will complete the same tests to see on what level their knowledge is. This gives data on the interest levels of company employees. (Security Team, 2017)

The user compliance will be monitored with the guidelines of ISO 27001 on user access control. The user will be formally registered into the system by the system administrator. Upon ending of employment contract, the user will be removed from the system. All user accounts will be reviewed by system administrators in regular intervals as to make sure that there is minimal possibility of distributing company specific information remotely. (ISO/IEC 27001:2013, A.9.2)

All users are aware of the sensitivity of the material that is written in the software. Users have the knowledge of the organization’s practices and rules for handling sensitive information and making sure the personal authentication methods are only known by the user. (ISO/IEC 27001:2013, A.9.3)

3.8 Administration

The system administrators are the people who are part of the company administration and will have their own group in the program. They will be the people who manage ILIAS. Because ILIAS has many different uses, the administration can have their own administrative training and forums within their own group. It would be a good addition to increase communication between them and this would decrease the chances of having different information scattered around the computer network. (Security Team, 2017)

Working with compliance on the company’s access control policy, the system administrators make sure that access to non-relevant information on the users’ point is restricted. The administrators will add users with default passwords, and once the user has changed their password to have a secure log-in procedure, they will be granted access to the information. Passwords/PIN-codes are only known by the user and system administrator, and the information will be kept in an appropriate level. As the passwords can be anything the user wants the log in procedure will be secured. Any possibility of unauthorized access will be minimal because the software is installed within the company network. (ISO/IEC 27001:2013, A.9.4)

4 Benchmark

As a benchmark for the E-learning an auditorium event is used. It is thought to be the most effective benchmark given that the E-learning courses will be replacing the auditorium events completely. The auditorium events are mandatory for every employee in the company and they are held every three years. Every employee must also go listen to the same presentations every three years to have the information reminded to them. (Security Team, 2017)

The auditorium event consists of three presentations for the duration of two hours. The benchmarked event was constructed poorly so that the presenters ran out of time and some information was left untold. Due to the filled schedule of the presenters and the repetitiveness of the content there is a high probability of lacking in motivation. It is thought that with E-learning it makes it easier to get the message through and the content can be modified with as much time as possible. (Security Team, 2017)

One aspect to look at for this thesis is peoples' interest and motivation towards this type of learning. One way to find out this information is to send out surveys asking peoples' opinions anonymously, so they might answer as truthfully as possible. Another way is by observation of the results. Observations were made during the auditorium event. A few audience members asked questions during the presentations and some made development ideas. However, most people were sitting quietly, and many were doodling while listening. This behavior showed that there were a lot of people who, from observation point of view, are not reading/writing type learners and they most likely forgot over half of the content which was brought to them. (Security Team, 2017)

While network errors might be a risk factor in E-learning, auditoriums are not completely guaranteed to work the entire time. Depending on the day or software of the machines used to project the content for the viewers, there might be technical glitches. During this auditorium event, the new projector system had a glitch which made the screen disappear every now and then which slowed the presentations down. Every method of teaching has risks. By relocating material to the E-learning software it does not require changing schedules for the event, it only means that the student will be reading the material later when the servers are back up and running. (Security Team, 2017)

5 SWOT

Creating a SWOT analysis can be an effective tool, in addition to risk assessments, to find out the company's weaknesses and threats and how to overcome them. It brings out a few more sides and ways of thinking to the project in question so the project can provide as much benefit as possible. A thing to remember when creating a SWOT analysis for the company is that Strengths and Weaknesses are usually looked for within the organization while the

Opportunities and Threats are mainly external factors, however should not exclude internal possibilities. (Mindtools, 2017)

<p style="text-align: center;"><u>Strengths</u></p> <ul style="list-style-type: none"> - Frees up time to do priority work - Easy to use by users - Employees will not feel forced - Target software is free - Modules have broad settings - Material can be linked to other teaching sources - Many people work remotely 	<p style="text-align: center;"><u>Weaknesses</u></p> <ul style="list-style-type: none"> - Lack of motivation to sign in - Time consuming user management - Acquaintance to the software takes time - Some people cannot learn by E-learning - Not everything can be taught via E-learning
<p style="text-align: center;"><u>Opportunities</u></p> <ul style="list-style-type: none"> - Improved communication between employees and offices - Employees from abroad can have an introduction to the site - New acquisition which addresses all types of learners - Trainees have information online - Guest lecturers for smaller groups 	<p style="text-align: center;"><u>Threats</u></p> <ul style="list-style-type: none"> - Hardware problems - Material availability relies on software upkeep - Employee equipment might be faulty or have not received them - Material must be checked regularly whether it is still valid

Table 1: SWOT analysis

5.1 Unwrapping the SWOT

Contrary to the statement that Opportunities and Threats are mainly external factors, most of these were found as internal factors. It depends on the project that the SWOT analysis is created for. In this project, the SWOT had an emphasis on the internal factors because it is only for internal use. The only external factors having to do with software and network.

5.1.1 Strengths

Starting with the "S" Strengths which emphasizes on the program and material simplicity. The first point is that the program frees up a lot of time for the employees to continue working on their daily tasks. The future of who will be taking care of the learning material is still uncertain, however now is taken care of by the security team. The learning modules are a fantastic

way to include the intricate details which usually are forgotten during the induction or the introductory rounds in the office. Having the information available in the same place and access to the material being easy to use for the users saves time and effort.

Many employees seem reluctant to go to the auditorium event because it is forced and takes a long time. Having the same material in E-learning form and no time limits is predicted to liven up feelings of employees and will increase interest.

The options of the software are broad and deep which is a perfect base for E-learning. This way it promotes variety between modules and the users will not feel like they are studying the same material on repeat. The learning material is easy to link to sources through external hyperlinks and there is a possibility to reference other learning modules with internal hyperlinks.

The company has many people working remotely so having security training and updates online can prove to be a strength in this group. The same goes for employees who might be traveling a lot. With the possibility to go over the training material at home, it is predicted that attendance figures will have a significant rise.

5.1.2 Weaknesses

Next up is “W” Weaknesses which are mainly from the employees. Starting with motivation, unless reminded employees might have a very hard time to log in to the learning software to see what material can be found. Although it is predicted that virtual attendance will be higher than auditorium attendance. It is not a big weakness since the E-learning material is to replace auditorium learning which happens every three years so when new material is added it is easy to inform everyone.

As opposed to classroom learning where attendees are marked present or not present every time, the E-learning software has a more complex and time-consuming user management system and the logs must be viewed often to see if the material has been used.

A weakness also to do with time consumption is that the software is unknown to all administrators. This means that it will take time to get acquainted with the tools and properties of the software. It is a weakness when considering classroom learning where the content is simple to present with every day materials from the office.

The fourth point is that some people cannot learn by E-learning. There are lots of people who require the human contact when being taught. Having everything online is the weak spot for these people, however it is always possible in the company to have face-to-face sessions for these types of people if they wish it.

A weakness with E-learning is that there is no real interaction between people. Theory which does not require mental picturing is easy to convert to E-learning material. However, it is impossible to reach the level of depth and interest in case points or examples as in a presentation. This weakness is a setback for reaching the goals of the thesis.

5.1.3 Opportunities

The third is “O” Opportunities which are added to almost every aspect of the company. The first and most important for the supervisors is that communication between employees and communication between Helsinki-Jyväskylä offices is predicted to improve. The communication being somewhat of a question mark, promoting people to inform everything that might be an incident can help the incidents being taken care of in proper time.

Company Helsinki and Jyväskylä offices are regularly visited by Airbus employees from other countries. The E-learning software can be linked to the arriving colleagues and they can learn about the local office rules beforehand to make their visit much easier.

Auditorium learning is a lot of the time for the audio and reader/writer type learners. Rarely the events have any practical parts and the visuals are the mandatory images of the material written in the presentation. Many people are drawing or doodling during auditorium events because they need something to do. Visual people have blurry text in front of them because there is no real visual stimulant to open the content to them. Audio learners have it easy given that there is someone talking, however how the content is brought to them affects the outcome drastically. Monotonic faint voice where even the presenter is not excited about the material does not give the audio learners any sort of edge on the others. Readers/writers can compensate on the speaking by reading the slides, picking up points from the presenter and making their own conclusions and notes. E-learning can address all these learners by interactive images, audio/video files, texts and exercises.

This thesis concentrating solely on security and premises has all the material for possible trainees to know how to be secure without asking their supervisors. During the summer, many supervisors are on vacation, which means that it is not always possible to ask if a trainee has a question. Every job has a heavy emphasis on security, so the material is useful for every job a trainee might have.

The point of remote workers was discussed in the “Weakness” part of the SWOT however, it can also be thought of as an opportunity. Some employees work remotely so it is difficult to get them to arrive at the workplace to attend the inductions or other training. Having E-learning software can prove to be a useful way to teach remote workers. It can be accessed via VPN (Virtual Private Network) and they can view the material when they have the time.

Having people work on material online gives an opportunity to arrange guest lecturers and the local lecturers can put more time into preparation for their presentations. These can be arranged for smaller groups and more frequently, so people will not be left with a negative feeling toward auditorium events.

5.1.4 Threats

Finally, there is “T” Threats. As mentioned in the MindTools article SWOT Analysis: “Threats are mainly external factors” is true for this analysis as well. The first threat addressed is the hardware such as computers. If the computers do not work or the servers are down, there is no access to the material either. However, this can also be an opportunity since E-learning can be postponed as easily as just doing it later. If an auditorium projector malfunctions the entire event must be postponed and requires a lot more organizing.

The target software is open-source software and well maintained now. Currently it is up to the trainers in the company to withhold the upkeep of the learning material. The threat currently being that if there are new policies and regulations it might be forgotten to be added to the software because the software is not that familiar to the trainers.

Having access to the E-learning material means that the employee must have a working computer, working network connection and that the software is accessible. If one of these fails, there will be a delay in access to the material and the further the employment proceeds the more work projects the new employee must deal with and finally cannot find time to do any learning.

Airbus Defence and Space Oy being a big company, the rules and practices change. Because E-learning is difficult to get to the face-to-face teaching level it means there is more material and more to remember. Periodic material review must be implemented to have valid information online always. A system where the trainers update the material often and create a practice for material auditing and update schedules will be needed.

6 Data review

6.1 Surveys

The method chosen to see whether E-learning is the way to go is sending surveys to all the people who take part in both auditorium and E-learning events. There are people who start working later in the company, so they will be solely working on the E-learning material. The non-auditorium employees will also have surveys to fill, however their opinion will not be used for the comparison of the auditorium. The following headings will contain comparison charts. There will be an interest comparison between the two learning methods and it will also be compared on how much did the learner gain from the material after a week or two

from the learning event. Tutors will also answer a survey and the results will be viewed as an interest chart.

The classroom event is held eight to ten times per year and is mandatory for every employee in the company, so it is not only for new employees even though it is an induction. There are new and old employees and their results may differ from each other depending on how many times people have taken part in the auditorium learning. This has been addressed by having the older employees answer a different survey. The survey differs in the way that they add how many times they have been to the event and do they still get anything out of it.

6.1.1 Tutor Survey

Before the end users are sent a survey, the tutors are sent their own survey. Questions regarding the tutors' commitment to their material and opinions toward the auditorium event are asked. Since there are only four tutors in the company who present material at the events it is not viable to use charts to map labels. Therefore, all responses are looked at individually and coming up with conclusions.

The tutor survey consists of questions regarding their interest in the topic, comparison to E-learning and preparedness to their presentations.

The results of the survey give ground to the necessity of an E-learning solution. Timetables can be addressed more in favor of all parties and content effectiveness can be modified with ease. All tutors have the same positive view on E-learning as a tool, however with certain topics having a definite auditorium event requirement. This survey is seen as the green light from all tutors to be a strong part of creating useful content and creating a tool which will reach all guiding goals set in the beginning of the thesis work.

6.1.2 User Surveys

There are two groups of employees who answer surveys. One is the newcomers and the other one is labeled "Veterans" which means that they have been working in the company for a longer time. The newcomers will be asked basic questions on interest in these kinds of events. The "Veterans" will be asked about their interest in coming to the event again. This way data can be gathered so, that interest can be measured from a new employee's point of view and from a more experienced employee's point of view. There are some 20 people all together answering the surveys. Because there are so few respondents, the surveys are made mandatory for each employee.

New employees are joining the company ranks after the auditorium event, so they will have no references in the auditorium survey which is why they are left out of the auditorium survey. They will however take part in the E-learning survey so there will be a chart showing

interest towards E-learning without their negative/positive opinion on the auditorium event. This group can show whether there is enough information in the E-learning to have as an induction, or if it needs some fixing. Auditorium learners have some information stored from the auditorium event, so they might be able to fill in possible gaps in the E-learning material.

6.2 Target Group Types

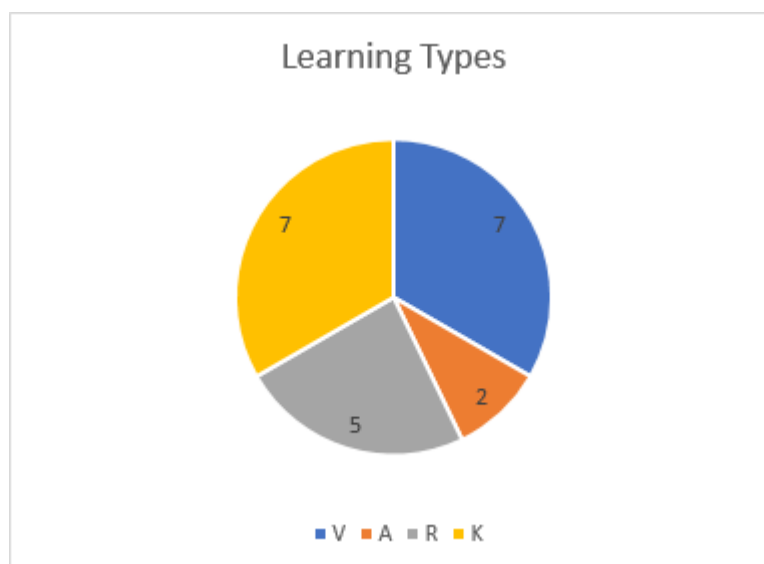


Image 1 Learning Types

One important aspect when creating learning material is to find out how people learn. Usable content can only be created properly when learning types are known. With the information, there can be more emphasis put on certain areas of the material.

32 employees were sent a survey, 21 answered and the survey included a question in learning types. Most people are in the (V) Visual and (K) Kinesthetic categories, the two categories which are not usually taken very well care of in auditorium events. This response gives a good basis to fix the learning modules in the software to serve the needs of all learning types. Adding lots of interactive images aid the two major groups, it also helps the (R) Reader/Writer group. (A) Audio is the most difficult to address, however videos can help with this problem.

6.3 Attendance

There are 42 employees who should be attending the auditorium event and the ones who do are going to be the group who will answer the auditorium survey. All who do not attend will be brought into the surveys once the auditorium ones have been completed and the E-learning material has been reviewed.

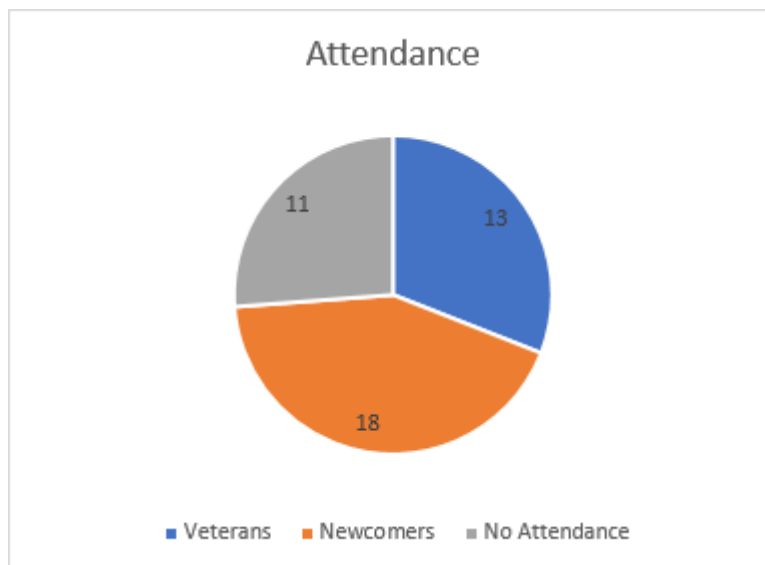


Figure 1 Attendance

As seen above, the auditorium event has a total of 31 peoples' attendance and consists of people from both offices. Most of the people are newcomers to the company and the rest are older employees. Some non-attendees are no-shows and the other ones start employment after the induction takes place. The 31 participants from the 42 people will be in the pilot phase of the E-learning project.

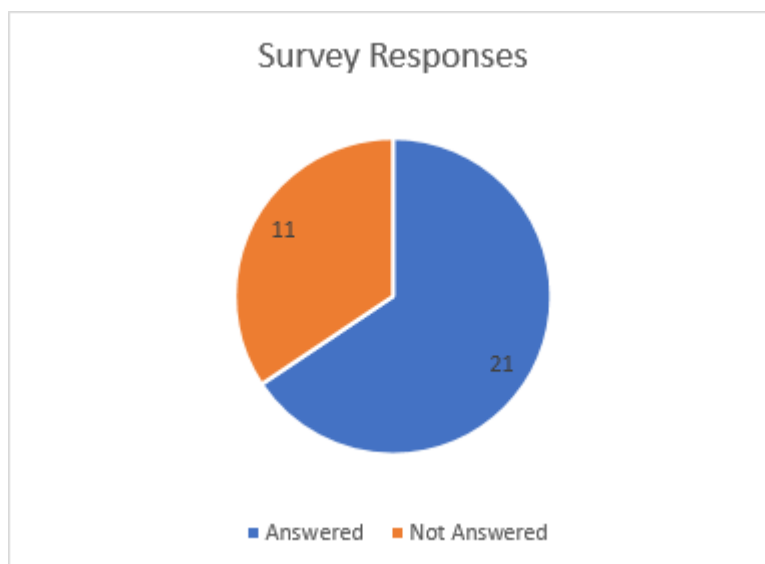


Figure 2 Auditorium Responses

Of the 32 people who attended the auditorium event, 21 responded to the survey which is well over 50% so a good figure can be seen. The drawback of the amount of responses is that the survey is during the time of most of the employees' summer vacations. The redeeming

part being that most of the attendees are trainees or new employees, so they can give a fresh opinion and are most likely present at work.

Predictions for the E-learning survey responses are higher because there are many new people starting work after the auditorium event, so they have not been to the induction yet. The new employees will be answering a different survey than the auditorium attendees, this way two charts can be made up to have responses from people with no real bias.

6.4 User Interest Surveys

Users' interest levels are important when thinking of learning methods, which is why it is considered in this thesis. Users are asked questions which give interest correlations and any noted defects will be fixed when creating E-learning material.

6.5 Auditorium

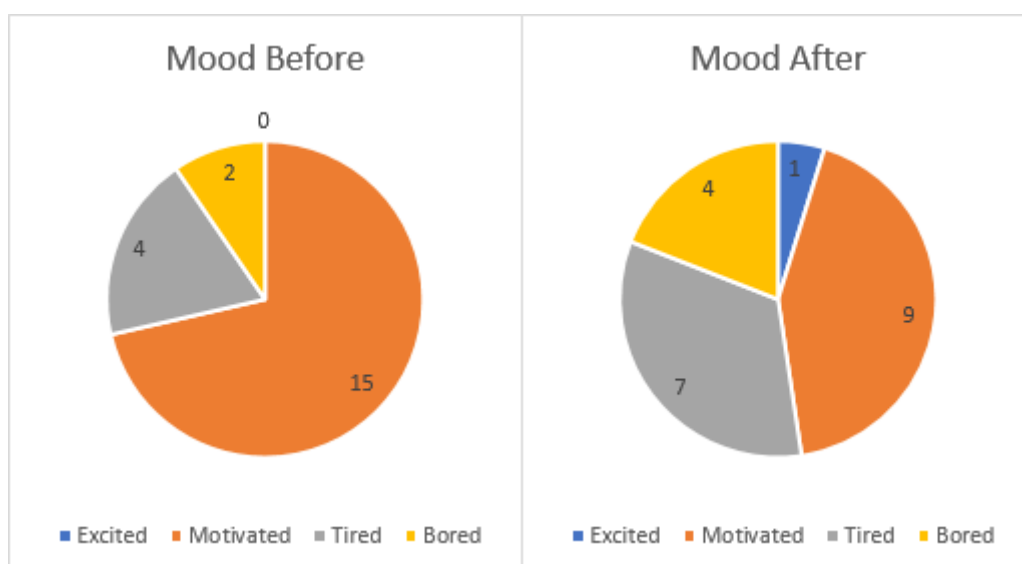


Figure 3 Mood Charts

All respondents are asked about their interest levels before and after the auditorium event and the results are predictable apart from the one “excited” response. Many entered the auditorium motivated and left tired or bored.

It is predicted that the mood charts will show a higher percentage in the Motivated and Excited sections because people can start work on the modules on their own time and there is no one to set a pace. The modules have a lot of variety in content, so it should satisfy the learning needs of all learning types.

The fact that there are only a few surveys to review, the questions are formed so that the results will be reviewed individually. The surveys are anonymous however it is possible to view

a single respondent's answers. The respondents are set in four categories of people. The categories do not give a totally accurate description of the person in question; however, it is only used as a comparison chart for the results of the E-learning survey.

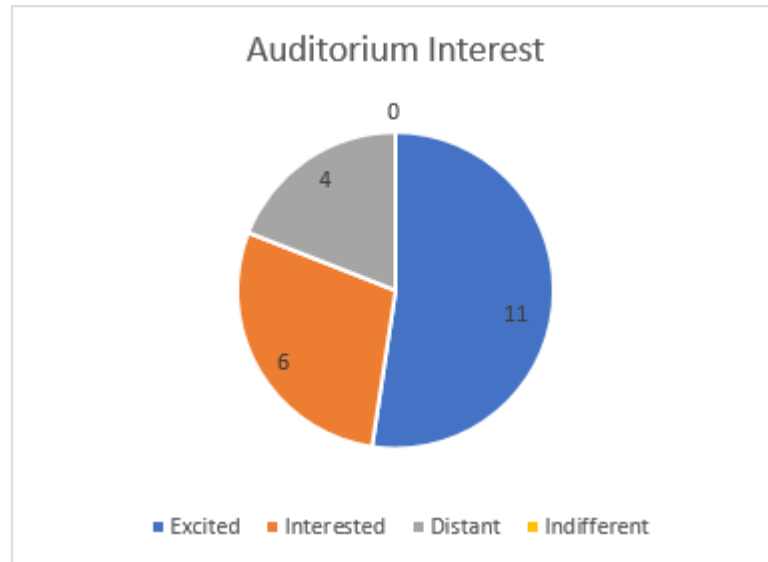


Figure 4 Auditorium Interest

The survey questions were numbered from 1-4 for labeling purposes and the labels are Indifferent, Distant, Interested and Excited. The questions were a mix of general auditorium interest questions and ones related to the attended auditorium event. The result is that the auditorium events are thought of as major events, however the attended auditorium event was not brought out as well as people would have hoped. As mentioned before, it is not an accurate read of the results with so few labels, however there will be a clear enough curve to be seen once people respond to the E-learning survey.

6.6 User Gain Surveys

Gain surveys are a second page in the interest surveys sent to the users. Gain survey means that it is measured how much information people really took in from the event. These surveys will also be made for the auditorium event and E-learning. Although the E-learning material contains questions within the learning modules, the survey will be sent a week or two after the students have gone through the modules to see if they remember anything better from the material.

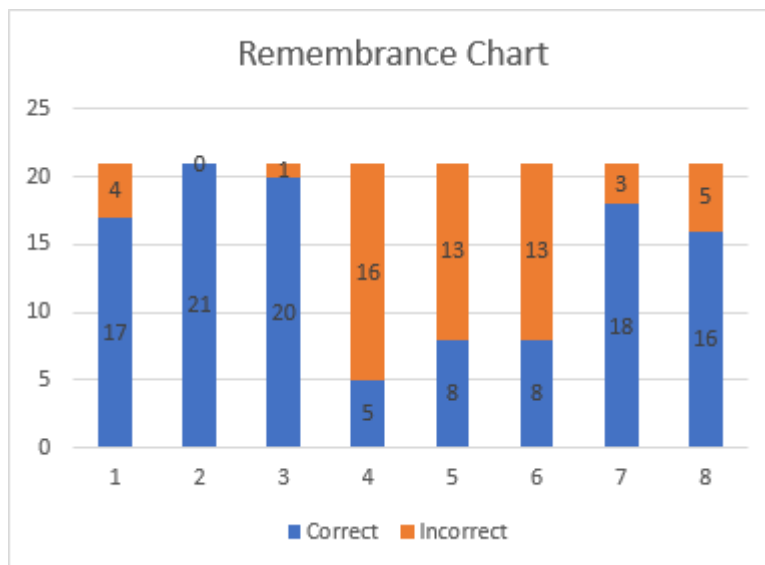


Figure 5 Remembrance Chart

<p>1. Safety Plan Where is the premises safety plan located? *</p> <p><input type="radio"/> Lobby/Reception</p> <p><input type="radio"/> Fire Department</p> <p><input type="radio"/> Security Team</p> <p><input type="radio"/> Sodexo</p>
<p>2. Software Hack What is most commonly used for an attack attempt on Airbus? *</p> <p><input type="radio"/> E-Mail</p> <p><input type="radio"/> USB</p> <p><input type="radio"/> CD</p> <p><input type="radio"/> Signal Tapping</p>
<p>3. PIN-Codes What time do you need to use a PIN-code to enter the office? *</p> <p><input type="radio"/> 16:30 - 06:00</p> <p><input type="radio"/> 20:00 - 05:30</p> <p><input type="radio"/> 22:00 - 06:00</p> <p><input type="radio"/> 00:00 - 07:00</p>
<p>4. Numbers What ranking is Airbus DS in terms of cyber-attacks in Europe? *</p> <p><input type="radio"/> 1st</p> <p><input type="radio"/> Top 10</p> <p><input type="radio"/> Top 50</p> <p><input type="radio"/> Top 100</p>

<p>5. Discretion</p> <p>What can you NOT do while on a trip? *</p> <p><input type="checkbox"/> Work on government classified material</p> <p><input type="checkbox"/> Tell people exactly what you do at work</p> <p><input type="checkbox"/> Say that our client is VIRVE</p> <p><input type="checkbox"/> Leave your laptop on a cafe table while getting coffee</p>
<p>6. Classification</p> <p>What does classification ST IV mean? *</p> <p><input type="radio"/> Government classified (Confidential / Luottamuksellinen)</p> <p><input type="radio"/> VS-Vertraulich</p> <p><input type="radio"/> Government Classified (Restricted / Viranomaiskäyttö)</p> <p><input type="radio"/> Secret</p>
<p>7. Malware</p> <p>What is the very first thing you do when you suspect malware on your computer? *</p> <p><input type="radio"/> Disconnect my computer from the network</p> <p><input type="radio"/> Inform IT-support</p> <p><input type="radio"/> Shut down my computer</p> <p><input type="radio"/> Remove the hard drive and take it to IT-support</p>
<p>8. Risk Factors</p> <p>What is the #1 risk factor in corporate security? *</p> <p><input type="radio"/> Human</p> <p><input type="radio"/> Phone</p> <p><input type="radio"/> E-Mail</p> <p><input type="radio"/> IT Systems</p>

The “Remembrance Chart” has results for the questions which are listed under the chart. The questions are after the survey questions (Found in the Appendix section) and are thought of from the material presented in the auditorium to see how the participants remember. Most of the answers the users remember very well however, the questions where most of the people answer incorrectly are about the risks of the company. The incorrect answers are due to the questions being very specific on numbers or remembering definitions.

As a conclusion from the cart, the premises aspect and general regulations within the company are known to the learners from the material. The E-learning material did not contain information on classification which is why a module for this is created to address unknown information relating to classification.

6.7 E-Learning

The E-learning modules are opened to the viewing of employees and they are given a month time to read and complete the modules. After the deadline has been met, the employees

answer another survey which is in the same style as the auditorium one. This is to get an as accurate as possible comparison between the auditorium and E-learning.

Many new employees have started working at the company after the auditorium event which means that there are two groups of people answering surveys in the E-learning section. These are the people whose survey answers matter slightly more, since they have not had a security training event they will view the material with no benchmark of the auditorium.

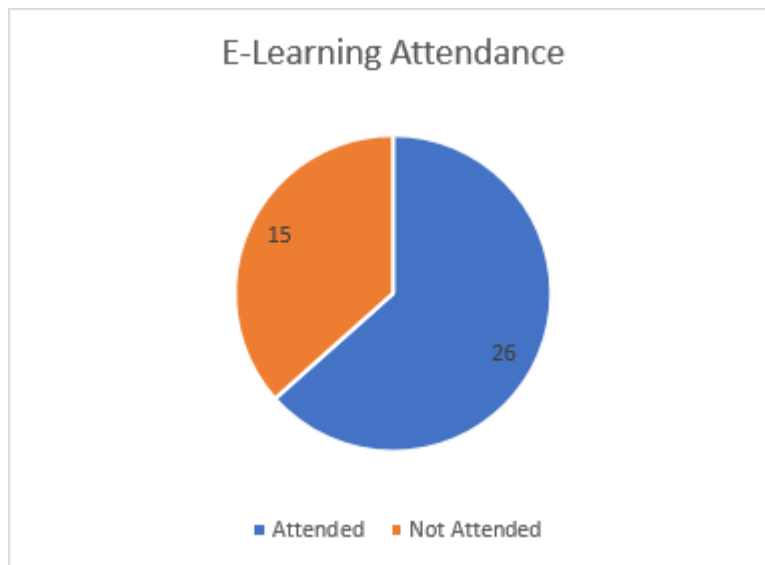


Figure 6 E-learning Attendance Chart

The attendance figure of the E-learning modules is not what was hoped for, however more than half attended which is enough to receive viable data. A total being 26 out of 41 people viewing the material, however unfortunately this does not correlate to the 19 out of 41 answers to the surveys. The research being qualitative over quantitative it is not considered a defeat and the data is still usable and very viable.

6.8 Interest Survey

There will only be a survey which is for the interest and opinions of people toward the E-learning material because there are questions and tests within the learning modules. All users have a statistic on them which shows how many attempts and fails they have received in a module. The statistics will be reviewed to get a conclusion on which areas would require more looking in to.

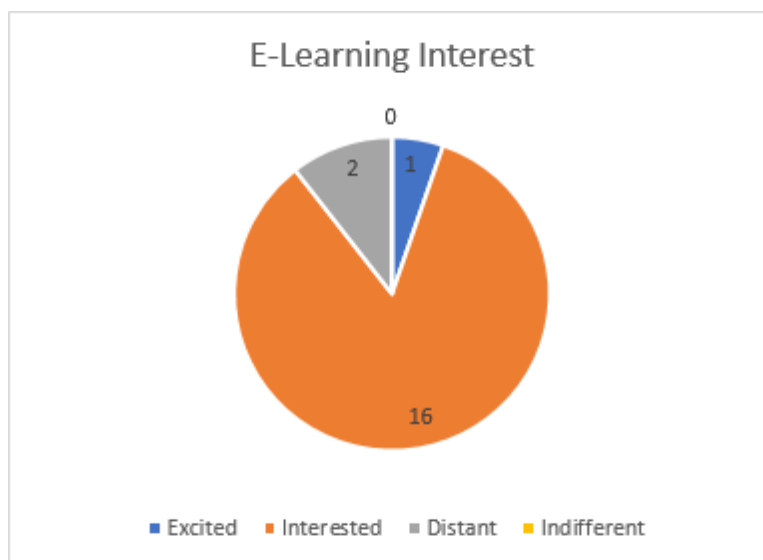


Figure 7 E-learning Interest Chart

The E-learning Interest Chart is created by the answers to the seven survey questions by the users. The questions are compiled to get an as good as possible read on if E-learning is an effective way to proceed with the security training. Each answer giving the amount of points as is stated before the answer. Adding up the points it can be clearly seen that people like the content and looking at individual answers, people are left a lot more interested compared to before reading the material.

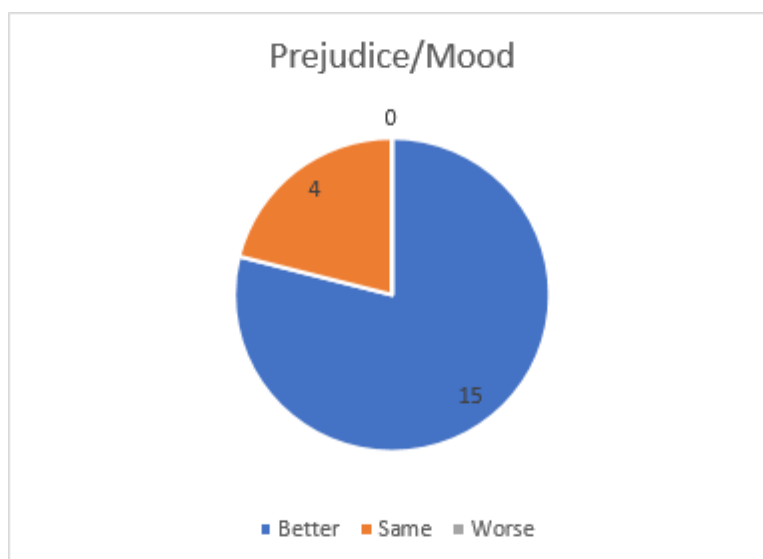


Figure 8 Prejudice/Mood Chart

While Figure 6 shows how people feel about the content of the E-learning material, there are questions which are directly comparable to the auditorium material. Adding up the points of the answers a conclusion of 15 people think that the E-learning material is better than the

auditorium material. The rest feel that the material is on the same level. A few individual comments toward the material relate to the fact that E-learning does not have the connection with the audience and cannot receive instant feedback, and certain material just cannot be taught within the company network.

7 Findings

The above data gathered is to find out whether the E-learning has been done right and have no direct answers for the research questions. The following data is to answer the questions made at the beginning of the thesis.

One of the bigger questions asked at the start of the thesis work is “Will renewing security induction training to E-learning be an effective way to integrate new employees to the company safety culture?” For this question, there are three survey questions which give the result of the people who read the material.

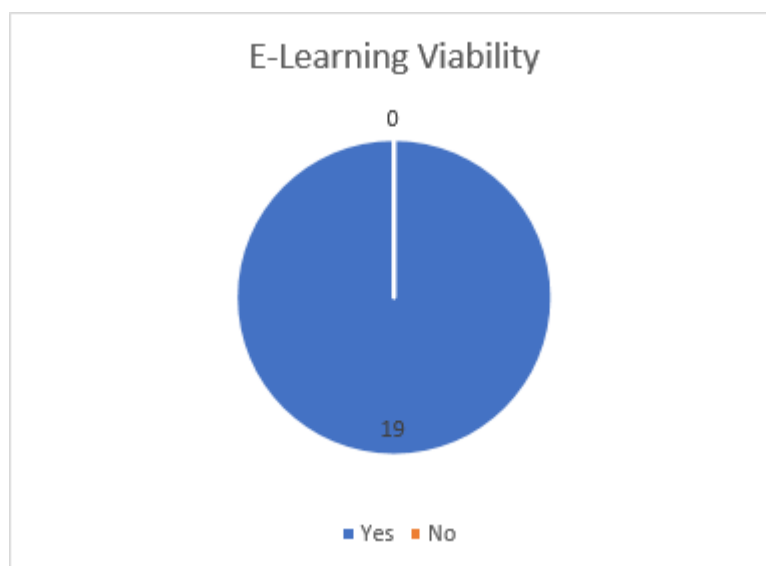


Figure 9 E-learning Viability

To start off all respondents are asked whether they think E-learning would be good to train a new employee to the company. As the figure above proves, all who answered the survey think that having security training change from auditorium to E-learning is good for new employee integration. Discussing and reviewing the material in the E-learning meetings has given the material a green light from the supervisors as well.

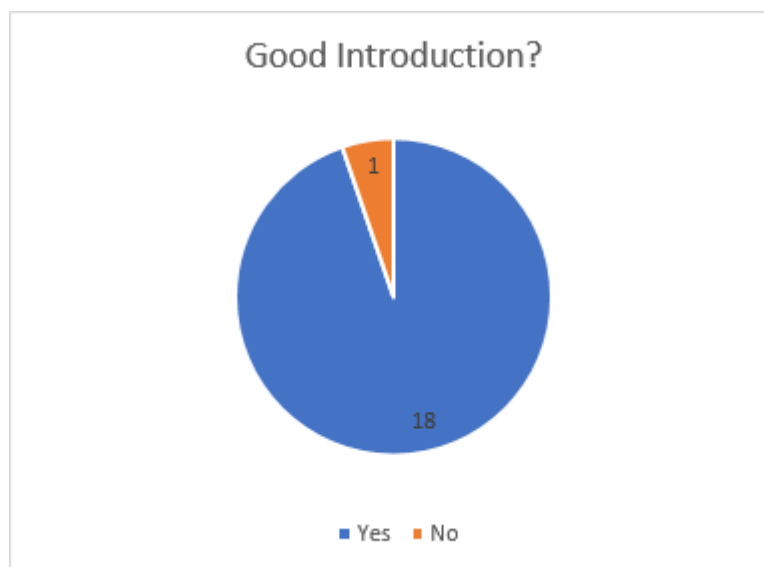


Figure 10 Introduction Quality

Following the overall opinion of using any software to train new employees, is whether the material which has been reviewed is adequate to train the new employees at Airbus. 19 people of 20 think that the material viewed is at a good enough condition to be taught new people. The one person is a respondent whose strong point is in the auditorium. To conclude this part of the figures, it is a matter of how an individual learns and face-to-face events will not be removed completely as it is known that not everything can be taught online.

An interesting observation is seen in the results of the E-learning survey. All the people who started their employment after the auditorium event gave the material full points for induction training. This shows that the material is accepted by the new employees and with no auditorium experience behind them they feel that the material is enough for them to know how to look out for possible security incidents.

Answering the second research question "Can E-learning raise the attendance of employees for the security induction events?" there is company internal calculators on who and when was the last time an employee has attended the induction events. A chart of how the E-learning affected the calculations has been created and shows the following figures.

	2017	P1	P2	P3	P4	P5	P6	P7	P8
Training 2017	80 %	89 %	88 %	88 %	83 %	88 %	88 %	88 %	0 %
Induction 2017	69 %	89 %	83 %	83 %	67 %	83 %	90 %	90 %	0 %

Figure 11 Training/Induction KPI (Key Performance Indicator)

The figure above shows different statistics. The P1, P2, P3...etc. stand for monthly periods in a year. The "Training 2017" row shows the number of employees training participation over

the course of 36 months and the “Induction 2017” row shows the number of new employee training participation over the course of 12 months. While the number of “Veteran” employees stays the same, a significant increase in attendance can be seen in the new employees’ row. This result is evidence of one of the thesis goals being reached. More people are reached by having them go over a security induction in their first weeks of employment when they have time to do so. Results from the surveys also give evidence that when the material is to be read again in three years, all employees are willing to go through the material again.

7.1 Verdict

During the thesis work, the security induction material has been transported from paper to E-learning form. A total of four modules are created using the feedback from the management meetings and the feedback from the end-users to make them as viable as possible.

The goals of the thesis have been reached and they are to create a training event for employees to effectively integrate them to the safety culture of the company within their first weeks of employment. The attendance figures of the auditorium event being lower than management wishes, has been addressed and proved to be an improvement using the E-learning software. More people were reached, and more people took part in the courses. Due to the possibility of going over the material at their own pace, increased the attendance and interest in all the people who were re-visiting the material in the auditorium.

The use of E-learning tools such as interactive images give the possibility to explain mundane information more interestingly. A case point being the use of an ID-badge and access keys through an interactive image give the content more depth and the user has control over the image, so they are more inclined to read the text relating to the interacted content.

7.2 Future Improvements

The goals which were set for this thesis have been reached, however there are certain areas for improvement to be made. Timing was the main problem during the thesis work. Most of the people were on holiday when the material was given to the employees to read through and answer surveys. Deadlines had to be made for a lengthy period to allow people to return to work and go over the material when they had the time.

Looking at the remembrance chart it is important to go over the material with thought to think of the content which might not be brought out with as much emphasis as it would need. This way the new content can contain some additional information to help remember the message which is hoped to be sent to the learner.

An aspect to take into consideration at the start of the project would be to think of different ways to have the revision training have an as strong impact on the learner as they did when they went over the material the first time.

When creating an E-learning program for a company it is important to create a document for the administrators who will be upkeeping the material after the project has been finished. This way the information can be written fastest and there will be no need to back track after the project has been finished.

While the user access control was addressed, it was done at a late time so an indicator to show log in times and completion status was not created until the very end of the project. When a mandatory event such as the security training takes place, it is important to see who has taken part in it and when. Therefore, it would have been a good assistance to put an indicator to use at the very start of the project.

8 Reliability & Validity

The reliability & validity is seen in the simple yet effective ways the thesis has been done. Questionnaire surveys, benchmarking former practices and interviewing officials are methods which are easy enough to recreate if one wishes to do a similar study or project for a different company. Timing was a realistic 4 months and can be finished earlier. The reason it took as long as it did was because of additional work tasks and time of year when most of the company was on vacation. The software used to create the E-learning content is free and easy to use. Like all programs it takes time to learn it but once the user has been more acquainted with the program it is easy to use.

Following two months of introducing the E-learning material there have been new people starting their employment at the company. The E-learning material has been used to introduce the security regulations and the results have been positive. As stated in the SWOT analysis there has been software glitches in the form of the website not opening however, it was a glitch which was fixed.

Most needed aspects were addressed, and the software has been easy to use after the introductory material was handed over to the security officials. No questions have arisen from the company to the thesis worker which is considered a success in its own, as this indicates that the material is usable, the introductions were clear, and the methods chosen for this thesis work were the correct ones to use for the kind of project it was.

References

Electronic Sources

- i. Alvesson, M and Sandberg, J, 2013, *Constructing Research Questions: Doing Interesting research*, London: Sage
- ii. BSI, 2013, *ISO/IEC 27001:2013*, UK
- iii. Mindtools team, Accessed April 2017, *SWOT Analysis*, London, UK
- iv. Holland, W, 2014, *Why eLearning?* Akron, OH
- v. Kuhlmann, T, 2010, *Why E-learning is so effective*, Washington, USA
- vi. Nakano, C, 2016, *The Four Different Types of Learners, And What They Mean to Your Presentations*, blog.prezi.com
- vii. ProProfs Team, 2013, *Best E-Learning training methods for employees*, USA
- viii. Pagnucco, J, 2014, *Traditional vs. online learning: which format is right for you?* Canada
- ix. Brecht, D, 2016, *The importance of security awareness training for enterprise IT governance*, EnterpriseAppsTech
- x. Korolov, M, 2015, *Does security awareness training even work?*, CSOnline
- xi. DeFranzo, S, 2012, *4 Main Benefits of Survey Research*, SnapSurveys
- xii. Stroud, J, 2012, *Understanding the Purpose and Use of Benchmarking*, isixsigma

Unpublished Sources

- xiii. Westlund, L, 2017, *Security Manager*, Airbus Defence and Space Oy
- xiv. Security Team, 2017, *Weekly discussions*, Airbus Defence and Space Oy

Images

Image 1 Learning Types..... 25

Figures

Figure 1 Attendance	26
Figure 2 Auditorium Responses	26
Figure 3 Mood Charts	27
Figure 4 Auditorium Interest	28
Figure 5 Remembrance Chart	29
Figure 6 E-learning Attendance Chart.....	31
Figure 7 E-learning Interest Chart	32
Figure 8 Prejudice/Mood Chart.....	32
Figure 9 E-learning Viability	33
Figure 10 Introduction Quality.....	34
Figure 11 Training/Induction KPI (Key Performance Indicator).....	34

Tables

Table 1: SWOT analysis	20
------------------------------	----

Appendix

Appendix 1 Auditorium Survey (Newcomers).....	42
Appendix 2 Auditorium Survey (“Veterans”).....	45
Appendix 3 E-Learning Survey (Auditorium).....	45
Appendix 4 E-Learning Survey (No Auditorium)	47

Appendix 1 Auditorium Survey (Newcomers)

<p>Auditorium Events</p> <p>Scale form 1-4 your personal interest towards auditorium learning events *</p> <p><input type="radio"/> 1 - They are pointless</p> <p><input type="radio"/> 2 - Not interested</p> <p><input type="radio"/> 3 - They are useful</p> <p><input type="radio"/> 4 - They are a must</p>
<p>Learning Types</p> <p>What kind of learner do you think of yourself as?</p> <p>Visual - Learn using pictures, colors, video etc.</p> <p>Audio - Learn by listening to lectures, audio books, recordings etc.</p> <p>Reading/Writing - Learn by reading material and writing your own notes about it</p> <p>Kinesthetic - Learn by doing, practical person *</p> <p><input type="radio"/> Visual</p> <p><input type="radio"/> Audio</p> <p><input type="radio"/> Reading/Writing</p> <p><input type="radio"/> Kinesthetic</p>
<p>Interest Rates</p> <p>How interesting was the event as a whole? *</p> <p><input type="radio"/> 1 - I almost fell asleep, very boring</p> <p><input type="radio"/> 2 - It was ok, though I did not learn anything</p> <p><input type="radio"/> 3 - I enjoyed the event and wrote down some notes</p> <p><input type="radio"/> 4 - I was filled with energy and took part in conversation</p>
<p>Length</p> <p>What did you think about the length of the learning event? *</p> <p><input type="radio"/> 1 - Way too long!</p> <p><input type="radio"/> 2 - A bit too long</p> <p><input type="radio"/> 3 - Long enough</p> <p><input type="radio"/> 4 - Too short</p>
<p>Necessity</p> <p>How necessary do you find a security induction event? *</p> <p><input type="radio"/> 1 - Not at all</p> <p><input type="radio"/> 2 - Small parts were useful</p> <p><input type="radio"/> 3 - It was mostly useful</p> <p><input type="radio"/> 4 - It is a must</p>
<p>Mood 1</p> <p>Scale 1-4 your mood before the learning event *</p> <p><input type="radio"/> 1 - Bored</p> <p><input type="radio"/> 2 - Tired</p> <p><input type="radio"/> 3 - Motivated</p> <p><input type="radio"/> 4 - Excited</p>

<p>Mood 2 Scale 1-4 your mood after the learning event *</p> <p><input type="radio"/> 1 - Bored</p> <p><input type="radio"/> 2 - Tired</p> <p><input type="radio"/> 3 - Motivated</p> <p><input type="radio"/> 4 - Excited</p>
<p>Lecturer Suggestions Were the suggestions on how to be more secure made by the lecturers enough to think about security in your free time? *</p> <p><input type="radio"/> 1 - They made suggestions?</p> <p><input type="radio"/> 2 - I cannot remember what the suggestions were</p> <p><input type="radio"/> 3 - I looked into some of them</p> <p><input type="radio"/> 4 - I am now more aware of my surrounding factors</p>
<p>Mandatory If the learning event was optional, would you take part in it? *</p> <p><input type="radio"/> 1 - Never</p> <p><input type="radio"/> 2 - Just once</p> <p><input type="radio"/> 3 - When there is something new</p> <p><input type="radio"/> 4 - Every time</p>
<p>Additions Is there something you want to add?</p> <p>Answer:</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div>
<p>Can you remember the lectures?</p>
<p>Safety Plan Where is the premises safety plan located? *</p> <p><input type="radio"/> Lobby/Reception</p> <p><input type="radio"/> Fire Department</p> <p><input type="radio"/> Security Team</p> <p><input type="radio"/> Sodexo</p>
<p>Software Hack What is most commonly used for an attack attempt on Airbus? *</p> <p><input type="radio"/> E-Mail</p> <p><input type="radio"/> USB</p> <p><input type="radio"/> CD</p> <p><input type="radio"/> Signal Tapping</p>

<p>PIN-Codes</p> <p>What time do you need to use a PIN-code to enter the office? *</p> <p><input type="radio"/> 16:30 - 06:00</p> <p><input type="radio"/> 20:00 - 05:30</p> <p><input type="radio"/> 22:00 - 06:00</p> <p><input type="radio"/> 00:00 - 07:00</p>
<p>Numbers</p> <p>What ranking is Airbus DS in terms of cyber attacks in Europe? *</p> <p><input type="radio"/> 1st</p> <p><input type="radio"/> Top 10</p> <p><input type="radio"/> Top 50</p> <p><input type="radio"/> Top 100</p>
<p>Discretion</p> <p>What can you NOT do while on a trip? *</p> <p><input type="checkbox"/> Work on government classified material</p> <p><input type="checkbox"/> Tell people exactly what you do at work</p> <p><input type="checkbox"/> Say that our client is VIRVE</p> <p><input type="checkbox"/> Leave your laptop on a café table while getting coffee</p>
<p>Classification</p> <p>What does classification ST IV mean? *</p> <p><input type="radio"/> Government classified (Confidential / Luottamuksellinen)</p> <p><input type="radio"/> VS-Vertraulich</p> <p><input type="radio"/> Government classified (Restricted / Viranomaiskäyttö)</p> <p><input type="radio"/> Secret</p>
<p>Malware</p> <p>What is the very first thing you do when you suspect malware on your computer? *</p> <p><input type="radio"/> Disconnect my computer from the network</p> <p><input type="radio"/> Inform IT-support</p> <p><input type="radio"/> Shut down my computer</p> <p><input type="radio"/> Remove the hard drive and take it to IT-support</p>
<p>Risk Factors</p> <p>What is the #1 risk factor in corporate security? *</p> <p><input type="radio"/> Human</p> <p><input type="radio"/> Phone</p> <p><input type="radio"/> E-Mail</p> <p><input type="radio"/> IT Systems</p>

Appendix 2 Auditorium Survey (“Veterans”)

<p>Spacing</p> <p>Is three years a good time between security lectures? *</p> <p><input type="radio"/> 1 - Should be more often</p> <p><input type="radio"/> 2 - It is long enough</p> <p><input type="radio"/> 3 - Should be less often</p>
<p>Attendance</p> <p>How many security inductions have you attended now including this last one? *</p> <p><input type="radio"/> 1</p> <p><input type="radio"/> 2</p> <p><input type="radio"/> 3</p> <p><input type="radio"/> 4+</p>
<p>Content</p> <p>How was the content brought in repeat? *</p> <p><input type="radio"/> 1 - It was the same material</p> <p><input type="radio"/> 2 - It enlightened some blind spots in my memory</p> <p><input type="radio"/> 3 - I re-learned something I had forgotten</p> <p><input type="radio"/> 4 - I learned something completely new</p>

Appendix 3 E-Learning Survey (Auditorium)

<p>Content</p> <p>How interesting was the content? *</p> <p><input type="radio"/> 1 - Not interesting at all</p> <p><input type="radio"/> 2 - Somewhat interesting</p> <p><input type="radio"/> 3 - Mostly interesting</p> <p><input type="radio"/> 4 - Very interesting</p>
<p>E-Learning</p> <p>Scale from 1-4 your opinion toward the E-learning material given *</p> <p><input type="radio"/> 1 - I did not learn anything</p> <p><input type="radio"/> 2 - I learned better in the auditorium</p> <p><input type="radio"/> 3 - I learned a bit better</p> <p><input type="radio"/> 4 - I learned much better</p>
<p>Learning Types</p> <p>Did the E-learning material answer better to your data gathering requirements? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>

<p>Recommendations</p> <p>Did the recommendations/suggestions seem more clear than in the auditorium? *</p> <p><input type="radio"/> 1 - I do not remember them</p> <p><input type="radio"/> 2 - I remember some of them</p> <p><input type="radio"/> 3 - I remember most of them</p> <p><input type="radio"/> 4 - I remember all of them</p>
<p>Timing</p> <p>How much time did you use to go over the same material as in the auditorium, but now at your own pace? *</p> <p><input type="radio"/> 1 - Less than 30min</p> <p><input type="radio"/> 2 - 30-60min</p> <p><input type="radio"/> 3 - 1h-1,5h</p> <p><input type="radio"/> 4 - More than 1,5h</p>
<p>Timing 2</p> <p>Going at your own pace, do you think you learned more? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>
<p>Questions</p> <p>Did the questions help you understand the material better? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>
<p>Encumberance</p> <p>Do you think the provided material is a good and effective way to teach the basics of security for a new employee within their first weeks? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Yes</p>
<p>Profitability</p> <p>Is E-learning a better way to teach, as opposed to the auditorium, new employees security in this company? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Yes</p>
<p>Mandatory</p> <p>The material will be mandatory like the auditorium. Will you be more inspired to re-do the material after three years again? *</p> <p><input type="radio"/> 1 - Will avoid</p> <p><input type="radio"/> 2 - Most likely - No</p> <p><input type="radio"/> 3 - Most likely - Yes</p> <p><input type="radio"/> 4 - Definetly</p>

<p>Mood 1</p> <p>Scale 1-4 your opinion toward E-learning before starting the learning module *</p> <p><input type="radio"/> 1 - It is useless</p> <p><input type="radio"/> 2 - It will probably be useless</p> <p><input type="radio"/> 3 - It might be useful</p> <p><input type="radio"/> 4 - It is very useful</p>
<p>Mood 2</p> <p>Scale 1-4 your opinion toward E-learning after the learning module *</p> <p><input type="radio"/> 1 - It was useless</p> <p><input type="radio"/> 2 - It was mostly useless</p> <p><input type="radio"/> 3 - It was mostly useful</p> <p><input type="radio"/> 4 - It was very useful</p>
<p>New Employment</p> <p>Would the material effectively speed up a new employee's integration to the company's safety culture if it was given to be completed within the first two weeks of employment? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Yes</p>

Appendix 4 E-Learning Survey (No Auditorium)

<p>Content</p> <p>How interesting was the content? *</p> <p><input type="radio"/> 1 - Not interesting at all</p> <p><input type="radio"/> 2 - Somewhat interesting</p> <p><input type="radio"/> 3 - Mostly interesting</p> <p><input type="radio"/> 4 - Very interesting</p>
<p>E-Learning</p> <p>Scale from 1-4 your opinion toward the E-learning material given *</p> <p><input type="radio"/> 1 - I did not learn anything</p> <p><input type="radio"/> 2 - I learn better in an auditorium</p> <p><input type="radio"/> 3 - I received mostly good information</p> <p><input type="radio"/> 4 - I learned very well</p>
<p>Learning Types</p> <p>Did the E-learning material answer better to your data gathering requirements? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>
<p>Recommendations</p> <p>Did the recommendations/suggestions about workplace protocol seem clear? *</p> <p><input type="radio"/> 1 - I do not remember them</p> <p><input type="radio"/> 2 - I remember some of them</p> <p><input type="radio"/> 3 - I remember most of them</p> <p><input type="radio"/> 4 - I remember all of them</p>

<p>Timing</p> <p>The auditorium material takes 2h or more to go over with the presenters. How long did it take now at your own pace? *</p> <p><input type="radio"/> 1 - Less than 30min</p> <p><input type="radio"/> 2 - 30-60min</p> <p><input type="radio"/> 3 - 1h-1,5h</p> <p><input type="radio"/> 4 - More than 1,5h</p>
<p>Pacing</p> <p>Going at your own pace, do you think you learned more than you would have in an auditorium? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>
<p>Encumberance</p> <p>Do you think the provided material is a good and effective way to teach the basics of security for a new employee within their first weeks? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Yes</p>
<p>Profitability</p> <p>Do you think E-learning is a good way to teach an introduction to security in the company? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Yes</p>
<p>Mandatory</p> <p>The material is mandatory to go through every three years. Will you be inspired to re-do the material after three years again? *</p> <p><input type="radio"/> 1 - Will avoid</p> <p><input type="radio"/> 2 - Most likely - No</p> <p><input type="radio"/> 3 - Most likely - Yes</p> <p><input type="radio"/> 4 - Definetly</p>
<p>Introduction</p> <p>Did you find the E-learning material to be a good introduction to the security of the company? *</p> <p><input type="radio"/> 1 - No</p> <p><input type="radio"/> 2 - Mostly - No</p> <p><input type="radio"/> 3 - Mostly - Yes</p> <p><input type="radio"/> 4 - Yes</p>
<p>Mood 1</p> <p>Scale 1-4 your opinion toward E-learning before starting the learning module *</p> <p><input type="radio"/> 1 - It is useless</p> <p><input type="radio"/> 2 - It will probably be useless</p> <p><input type="radio"/> 3 - It might be useful</p> <p><input type="radio"/> 4 - It is very useful</p>

Mood 2

Scale 1-4 your opinion toward E-learning after the learning module *

- 1 - It was useless
- 2 - It was mostly useless
- 3 - It was mostly useful
- 4 - It was very useful

New employment

Would the material effectively speed up a new employee's integration to the company's safety culture if it was given to be completed within the first two weeks of employment? *

- 1 - No
- 2 - Yes