

Milka Ukkonen

# Occupational safety culture assessment in Finnish Transport Agency





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culture assessment in  
Finnish Transport Agency

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**Keywords:** OSH culture, culture assessment, occupational safety, safety culture

## Summary

The purpose of the thesis is to provide information and present the results of the conducted occupational safety culture assessment commissioned by Finnish Transport Agency. The assessment focused on a research population that consists of a specific group of employees whose job description included regular visiting at worksites. The objective of the assessment was to study the current level of cultural maturity regarding occupational safety and to define development needs. The aim of this process is to advance and support occupational safety procedure development. During the assessment process the thesis author was mentored by a specialist researcher from the Finnish Institute of Occupational Health.

The scientific approach of the thesis is defined as a design research which is a combination of various research methods, both qualitative and quantitative. The assessment was conducted based on the study of the theoretical background on assessing occupational safety culture. A triangulation of analytical, academic and pragmatic assessment approaches was applied by using a questionnaire, semi-structured theme interviews and a workshop with a focus group.

The results of the assessment indicate that the occupational safety culture in the Finnish Transport Agency regarding and amongst the research population is emphasised on the reactive level of cultural maturity, although exceptions within the analysed data of the questionnaire's dimensions and interview themes do exist. The suggestions to develop occupational safety culture amongst the research population, as well as occupational safety procedures in the Finnish Transport Agency, were defined by the author and the workshop's focus group. In general, for development it is proposed to implement interactive communication through networked collaboration and to consider the possibilities of revising responsibilities, procedures and operations of roles and activities in the agency. Furthermore, the revisions as well as the Finnish Transport Agency's occupational safety culture should be clearly defined and publicly stated.

In the future it would be beneficial for the Finnish Transport Agency to revise the used questionnaire to correspond to the various themes of the interviews' content analysis. The tailored questionnaire could be used in a recommended follow-up assessment to ensure that the development proceedings have been applied successfully. Further assessments of occupational safety culture would provide valuable information on the development of cultural maturity in the Finnish Transport Agency.

**Milka Ukkonen: Työturvallisuuskulttuuritutkimus Liikennevirastossa.** Liikennevirasto, tekniikka ja ympäristö -osasto. Helsinki 2016. Opinnäytetyö 15/2016. 49 sivua ja 4 liitettä. ISSN 2343-1741, ISBN 978-952-317-315-6.

**Asiasanat:** työturvallisuuskulttuuri, kulttuuritutkimus, työturvallisuus, turvallisuuskulttuuri

## Tiivistelmä

Tässä opinnäytetyössä esitellään Liikenneviraston toimeksiantaman työturvallisuuskulttuuria koskevan tutkimuksen tulokset. Tutkimuksen kohteena oleva populaatio on Liikenneviraston työntekijät, joiden työnkuvaan kuuluu säännöllinen työmaalla käyminen. Tutkimuksen tavoitteena on selvittää työturvallisuuskulttuurin nykyinen kehitystaso ja määritellä sen kehittämistarpeet, ja siten tukea ja edistää työturvallisuuden menetelmien kehitystä. Tutkimusprosessin aikana opinnäytetyön tekijää mentoroiti Työterveyslaitoksen erikoistutkija.

Työturvallisuuskulttuuritutkimuksen tutkimukselliseksi lähestymistavaksi on määritetty kehittämistutkimus, joka on yhdistelmä kvalitatiivisia ja kvantitatiivisia tutkimusmenetelmiä. Tutkimuksen teoreettinen viitekehys on työturvallisuuskulttuurin tutkimus. Tutkimuksessa sovelletaan analyyttisen, akateemisen sekä pragmaattisen tutkimuksen lähestymistapojen triangulaatiota käyttämällä tiedonkeruumenetelminä sekä kyselylomaketta, puolistrukturoituja teemahaastatteluja että kohderyhmätyöpajaa.

Tutkimuksen tulokset viittaavat siihen, että tutkitun populaation mukaan Liikenneviraston työturvallisuuskulttuurissa painottuu kulttuurisen kehityksen reaktiivinen taso, vaikkakin poikkeuksia analysoidussa datassa, kyselylomakkeen ulottuvuuksissa ja haastatteluiden teemoissa ilmenee. Opinnäytetyössä ehdotetut kehitysehdotukset populaation työturvallisuuskulttuurin ja Liikenneviraston työturvallisuusmenetelmien parantamiseksi määritteli opinnäytetyön tekijä yhdessä työpajan kohderyhmän kanssa. Kehitysehdotuksissa suositellaan yleisesti interaktiivista viestintää osana verkostoituvaa yhteistyötä sekä kehoitetaan harkitsemaan mahdollisuutta roolien ja toimintojen vastuiden, menettelytapojen ja tehtävien uudelleenarviointiin ja muuttamiseen virastossa. Lisäksi kyseiset toimenpiteet ja Liikenneviraston työturvallisuuskulttuuri tulisi määritellä selkeästi ja ilmaista julkisesti.

Jatkossa Liikennevirastolle olisi hyödyllistä tehdä muutoksia työturvallisuuskulttuuritutkimuksessa käytettyyn kyselylomakkeeseen, jotta se vastaisi haastattelujen sisältöanalyysin teemoja. Muokattua kyselylomaketta voitaisiin käyttää suositellussa jatkotutkimuksessa varmistamaan, että kehitystoimenpiteet on tehty ja kehitystä tapahtunut. Työturvallisuuskulttuurin jatkotutkimukset tuottaisivat arvokasta tietoa kulttuurillisen tason kehittämiseksi Liikennevirastossa.

**Milka Ukkonen: Undersökning av arbetarskyddskulturen.** Trafikverket, teknik och miljö. Helsingfors 2016. Lärdomsprov 15/2016. 49 sidor och 4 bilagor. ISSN 2343-1741, ISBN 978-952-317-315-6.

## Sammandrag

I denna avhandling presenteras resultaten för en undersökning av arbetarskyddskulturen på uppdrag av Trafikverket. Populationen som är föremål för undersökningen är Trafikverkets arbetstagare vars arbetsbeskrivning innehåller regelbundna besök till byggarbetsplatsen. Undersökningens syfte är att utreda arbetarskyddskulturens nuvarande utvecklingsnivå och definiera dess utvecklingsbehov och därmed stöda och främja utvecklingen av arbetarskyddsmetoder. Under undersökningsprocessen fungerar Arbetshälsoinstitutets specialutredare som mentor för avhandlingens författare.

Som det vetenskapliga tillvägagångssättet för arbetarskyddskulturen har definierats en utvecklingsundersökning som är en kombination av kvalitativa och kvantitativa undersökningsmetoder. Undersökningens teoretiska ramverk utgörs av en undersökning av arbetarskyddskulturen. I undersökningen tillämpas en triangulation av tillvägagångssätten för analytisk, akademisk samt pragmatisk undersökning genom att använda som datainsamlingsmetoder både frågeformulären, halvstrukturerade temaintervjuer och en målgruppsworkshop.

Undersökningens resultat tyder på att enligt den undersökta populationen betonas den reaktiva nivån på kulturella utvecklingen i Trafikverkets arbetarskyddskultur, även om det förekommer undantag i den analyserade datan, frågeformulärens omfång och intervjuteman. Utvecklingsförslagen som föreslagits i avhandlingen för att förbättra populationens arbetarskyddskultur och Trafikverkets arbetarskyddsmetoder definierades av avhandlingens författare tillsammans med workshopens målgrupp. I utvecklingsförslagen rekommenderar man allmänt interaktiv kommunikation som en del av nätverkssamarbete samt uppmanar att överväga möjligheten till en omvärdering och ändring av ansvar, rutiner och uppgifter inom Trafikverkets roller och funktioner. Dessutom borde ifrågakvarande åtgärder och Trafikverkets arbetarskyddskultur definieras tydligt och uttryckas offentligt.

I fortsättningen skulle det vara nyttigt för Trafikverket att göra ändringar i frågeformulären som använts i undersökningen av arbetarskyddskulturen så att den skulle motsvara teman i intervjuernas innehållsanalys. Den modifierade frågeformulären kunde användas i den rekommenderade fortsättningsundersökningen för att säkerställa att utvecklingsåtgärderna gjorts och utveckling har skett. Fortsatta undersökningar av arbetarskyddskulturen skulle producera värdefull information om utvecklingen av den kulturella nivån i Trafikverket.

## Foreword

Safety critical organisations operating as clients in the infrastructure industry and their predominant occupational safety culture has an impact not only to the contractors' operations but to the entire industry and their overall safety performance. The objective of the thesis is to study the safety culture and the current level of cultural maturity regarding and amongst the research population's occupational safety (especially from the safety management and system point of view) and to define development needs. The aim of this process is to advance and support occupational safety procedure development in the Finnish Transport Agency.

This thesis was written and the assessment conducted by Milka Ukkonen from Laurea University of Applied Sciences. The thesis work was steered and advised by Risto Lappalainen from the Finnish Transport Agency, and in the assessment and data analysis phases of the work the thesis author was mentored by PhD Anna-Maria Teperi from the Finnish Institute of Occupational Health. The thesis work's academic supervisor was Senior lecturer Tuomas Wuorikoski from Laurea University of Applied Sciences.

Helsinki, September 2016

Finnish Transport Agency  
Technology and Environment



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# 1 Introduction

In general, safety culture as a concept and phenomenon has encouraged organisations to pay attention, research, understand and develop this culture. Organisations are aware of the predominant safety culture's effect on their operations. This thesis defines the theoretical background of occupational safety and health (OSH) culture assessment in regard to the conducted OSH culture assessment in the Finnish Transport Agency (FTA). The focus is on how the assessment was implemented and based on the results what could be done to develop the FTA's cultural maturity. The results are based on information gained through methodological triangulation of a questionnaire, interviews and a workshop.

The OSH culture assessment was commissioned by the FTA to be conducted as a bachelor's thesis project. The need for the assessment arose after a pilot project researching safety culture in one of the FTA's units was conducted. The pilot project was similarly commissioned by the FTA and conducted by the Finnish Institute of Occupational Health (FIOH) with one of their special researchers as the lead. Since the thesis author had no earlier experience with safety culture in general, the FTA decided to procure from the FIOH the pilot project's special researcher to mentor the thesis author in the assessment process.

Clear definitions, limitations and justifications of the conducted OSH culture assessment are essential for this thesis to be necessary as a research project itself, but also for it to be fundamentally valuable to the FTA in developing its operations. Thus, the used term 'OSH culture' generally stands for occupational safety and health culture, but likewise EU-OSHA (2011, 19), the other term (health) has not been discussed in this thesis. The assessment has focused specifically on occupational safety (safety culture and climate), this enables the thesis to be commonly discovered and comprehensively utilised in the FTA. However, when it could be presumable the assessment or its results are not reflected on other organisations' conducted safety culture research. And because the conducted OSH culture assessment is an individual assessment focused on a specific group of employees its results are limited for use in other organisations. In addition, when for the most part this thesis discusses the FTA's general OSH culture, it is meant to represent a *specific group* of FTA employees. This specific group of FTA employees, the research population, include those whose job description includes regular worksite visits.

The following chapters of the thesis concentrate on discussing the OSH culture assessment conducted in the FTA and its results, clarifying the concepts while providing the study of theoretical framework, presenting assessment partners, research questions, objectives and background information as well. The thesis has been composed in cooperation with Laurea University of Applied Sciences, the FTA and the FIOH.

## 1.1 Assessment partners

The research and assessment partner, the FIOH, conducted a pilot assessment in one of the FTA's units in 2015 (Teperi et al. 2015). During the pilot assessment it was decided that research and an assessment of occupational safety culture will be conducted as a functional thesis project within the agency. The results of the pilot were announced in December 2015, after which the thesis project started in January 2016. The research and assessment are conducted based on the pilot, regarding what methods were ascertained as useful during the pilot. The functional thesis objective is to assess the FTA's current level of maturity on occupational safety culture and to research what are its development needs.

### 1.1.1 Finnish Transport Agency

The FTA is a multidisciplinary expert organisation that specialises in Finnish transport on state-owned roads, the railway network and waterways including their infrastructure and the overall development of Finland's transport system enabling smooth, efficient and safe travel and transport. The FTA operates under the jurisdiction of The Ministry of Transport and Communications employing 650 professionals and indirectly 12,000 people through projects (The Finnish Transport Agency 2015). The FTA's organisation is composed of two functional areas and four divisions that are divided into twelve departments and again to units.

The FTA's main interest regarding this thesis was to advance and support developing new procedures in the agency. The cooperation amongst the parties supports the agency's procedure to utilise the efficient sharing of knowledge and know-how and assure obtaining and sharing the best procedures. The main contact and the supervisor in the FTA was the occupational safety chief, Risto Lappalainen.

### 1.1.2 Finnish Institute of Occupational Health

The Finnish Institute of Occupational Health (FIOH) is an organisation specialising in research, services and training in the occupational health and safety field (Finnish Institute of Occupational Health 2015). The institute operates under the jurisdiction of The Ministry of Social Affairs and Health employing nearly 700 person-years. The FIOH's organisation is composed of research and service centres, occupational health and occupation health and work organisation with an objective of ensuring that FIOH attains their strategic targets (Finnish Institute of Occupational Health 2016), such as ensuring safe and meaningful work and organisations are supportive (Finnish Institute of Occupational Health 2015).

The FIOH's main interest in being a part of this assessment was to continue cooperation with the FTA, to have more efficiency and value for the client, based on the pilot project results conducted in 2015, as well as to maintain and improve its own competence and visibility in the R&D area of safety culture. The key role of FIOH was to guide the author in the actual assessment process by mentoring in the planning of the methods and instruments to use and in analysing results. The main contact and the mentor at the FIOH in the thesis project was a specialist researcher, PhD Anna-Maria Teperi, who has worked with safety culture and human factors in safety issues for 15 years, especially at safety critical fields of aviation, nuclear industry and railway.

## 1.2 Research questions

The objective of the thesis is to advance and support developing OSH procedures in the FTA. As stated by Kananen (2013, 60), despite various existing models the basic idea of all design research starts by defining a problem. Therefore, to reach the aim of this thesis the research problem of this assessment has to be stated. The research problem of this study is to assess the maturity level of the FTA's occupational safety culture and to define what its development needs are. From the research problem three research questions were derived:

- What factors support the Finnish Transport Agency's occupational safety culture and how do they maintain and develop it in practice?
- What factors weaken Finnish Transport Agency's occupational safety culture and are there any regional differences regarding it?
- How could occupational safety culture be developed in Finnish Transport Agency?

## 2 Theoretical framework - assessment of occupational safety culture

Occupational safety and health is a complicated subject that has been researched and discussed widely for more than two decades. Despite that the main focus of the assessment has been on cultural aspects linked especially to occupational safety, the term 'OSH culture' has been used. As many organisations aim to address, including the European Agency for Safety and Health at Work (EU-OSHA) (2011, 19), the term 'OSH culture' is applied to combine the issues of both work-related safety and health, as one subject, even when the cultural aspects of occupational health are not discussed.

When organisations, their managers and OSH professionals aim for excellence in the field of OSH, the main factor is to ensure the prevention of occupational accidents and the promotion of safe behaviour among an organisation's employees. In order to achieve continuous progress in employee safety, an OSH management system that functions systematically and proactively and is integrated and participative is required. When taking a cultural approach towards OSH and to better understand how an organisation makes its decisions, what its priorities are and why employees act a certain way (attitudes and behaviour), it is essential to know how an organisation can be analysed (EU-OSHA 2011, 9).

### 2.1 Safety-critical organisation

Reiman & Oedewald (2008, 17) define safety-critical organisations as organisations whose operations include or process threats that can cause damage to people or the environment when managed incorrectly. Organisations that fulfil this definition can be identified from various fields, such as the nuclear industry, aviation as well as other companies whose key focus of operation is related to safety due to preventing crimes, processing money or defecate. When analysing and presenting companies' operations the focus is usually on financial factors, but when assessing the described safety-critical organisations' operations, safety has its own value. For a safety-critical organisation, authorities' and public opinion's trust in these organisations' abilities to function safely is their precondition to operate.

The industries differ on how notable the role of ensuring safety is. For industries that have been thought of as safety-critical for a longer period of time, there is a constant focus on ensuring and developing safety, and thus any shortcomings in safety get attention in the media. One of these industries is railway traffic. Other industries that possibly represent threats to employees or the environment do not emphasise safety in the way described earlier in traditional safety-critical industries. An example of these industries would be road traffic and infrastructure manufacturing. In the future, these industries will be focused on more clear demands to manage various safety consequences and company management will focus on possible financial losses due to deficiencies in safety and lack of applying preventive measures. In addition, safe and trustworthy operations are a key component of an organisation's brand (Reiman & Oedewald 2008, 17-18).

## 2.2 The organisational triangle

According to EU-OSHA (2011, 9) there are three main components that an organisation and its activities are composed of; structure, processes and culture. These three organisational components and their connections as a triangle are illustrated in Figure 1.

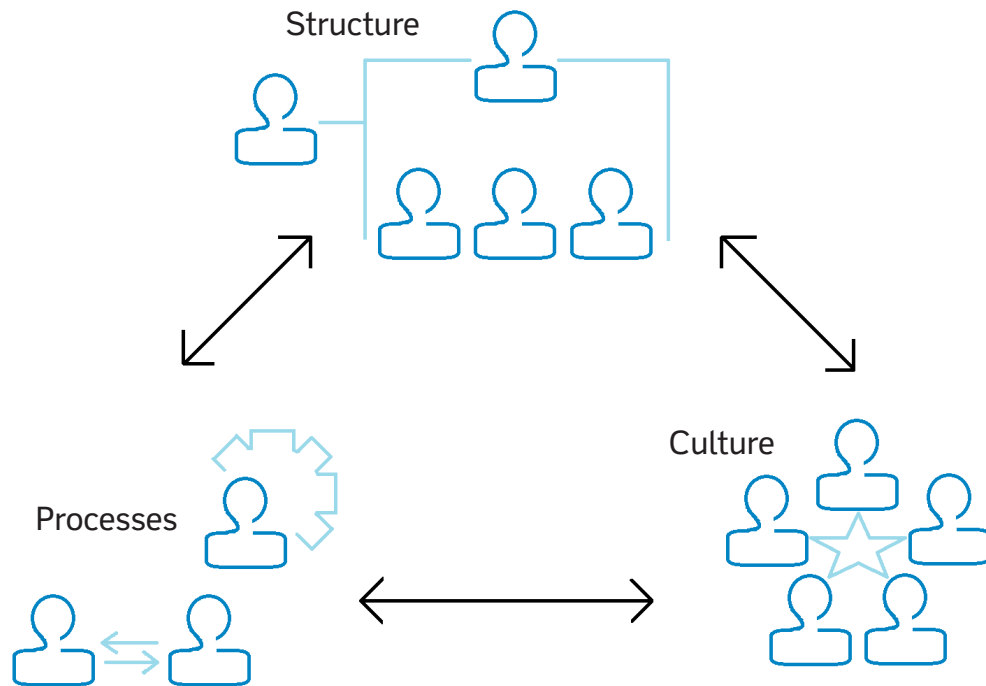


Figure 1: The organisational triangle

Guldenmund (2010, 85) states that the organisational structure determines how to accomplish the organisational mission and by whom, mainly comprising of the formal aspects of an organisation such as distribution of tasks, roles and responsibilities, control, authority and the means of communication. EU-OSHA (2011, 10) determines organisational processes to be the main business and supporting operations of an organisation, comprising management processes and systems, interactional processes, including communication, relationships and information sharing. The organisational culture is defined by Guldenmund (2010, 21) 'the way we do things around here'. It is mainly comprised of the informal aspects of an organisation such as what a group of employees value, or not value, and their common persuasions and beliefs. In an organisation multiple cultures can co-exist, they are commonly linked with different departments, units and occupations and are affected by the national culture, region, sector or industry (EU-OSHA 2011, 10).

The three organisational components operate simultaneously on the employees in an organisation composing a synergy. This organisational triangle is, as the organisational culture, affected by the broader context of national culture, region, industry and also economic and political situation, policies and regulations, etc. (EU-OSHA 2011, 10).

## 2.3 Occupational safety culture

As EU-OSHA (2011, 10) has advised, for better understanding of OSH within an organisation and how to analyse it, the organisational triangle model and its three organisational components can be used to approach OSH. As an illustration, an employee has been in an accident. The conducted investigation of the accident reveals that there have been several 'close-calls' and minor incidents that have not been reported to management, which could have led to actions to reduce the risk of an accident occurring. From the organisational *processes* perspective, it could be said that there is a lack of communication on safety issues in the organisation. This could also suggest that the organisational *structure* is failing, meaning management, supervisors and other employees in the organisation are not aware of their role and responsibilities regarding safety. But the problem could also be the organisational *culture*.

As another example for better understanding the organisational triangle model is non-compliance with work procedures. A common phenomenon is that some employees do not conduct their tasks according to instructions and guidelines which can lead to unsafe acts and higher risk of accidents. This cultural problem is not possible to resolve with traditional approaches, such as training, control and risk-based prevention. In fact, a cultural perspective on OSH issues could be needed to overcome this problem (EU-OSHA 2011, 11).

With these examples was shown that the use of the organisational triangle model, OSH culture can be seen as a confluence of organisational culture and OSH. According to EU-OSHA (2011, 11) OSH culture is about how the informal aspects of an organisation influence OSH culture in a positive or negative way. And this, according to Antonsen (2009, 151) can be done at two levels: firstly, employees' act regarding or disregarding risk by emphasizing beliefs and convictions and defining values and norms, and secondly, by affecting the policies for safe or unsafe behaviour, interaction and communication.

The organisational triangle model and Antonsen's definition together show that the whole interaction between an organisation's structure, processes and especially the organisational culture should be taken into account. This would suggest that cultural factors should not be explored in separation from the two other organisational aspects. EU-OSHA (2011, 11) defined this approach towards OSH and OSH culture as a holistic approach; this is also demonstrated in Figure 2.



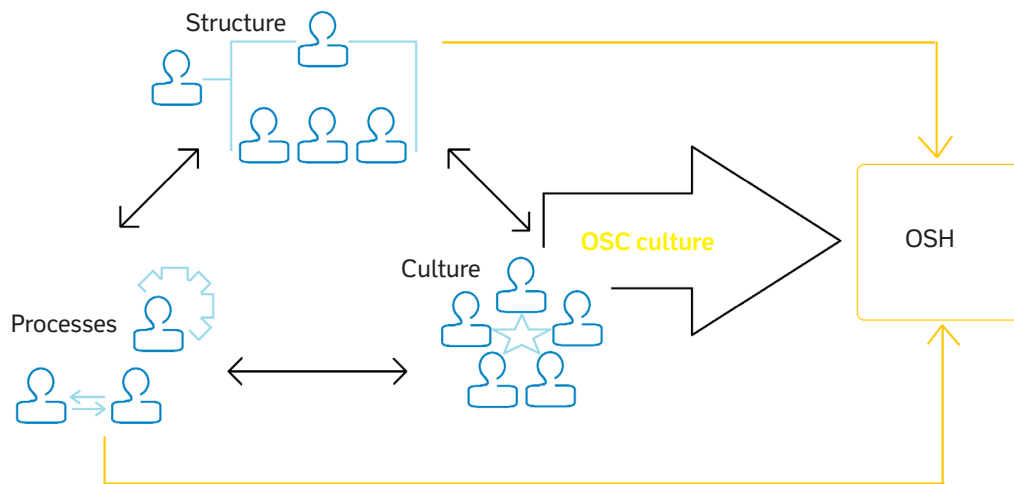


Figure 2: The organisational triangle in relation to OSH

## 2.4 Safety culture

The first official recognition of the term 'safety culture' existence happened in 1986 after the catastrophe of nuclear accident in Chernobyl. In the investigation report one of the reasons for the accident was determined to be 'poor safety culture'. After this first use of this term, many following major accident investigations also identified cultural aspects as incurring factors (EU-OSHA 2011, 12). Since then, according to Antonsen (2009, 10), in high risk industries, such as public mass transportation, the safety culture concept has been used in safety research to highlight the importance of human factors and soft organisational aspects in accident and risk prevention.

As EU-OSHA (2011, 12) states, the abstract concepts of organisational culture and safety culture give researchers freedom in how to understand these two concepts and put them into practice. As examples, Guldenmund (2010, 182) has listed 12 definitions of safety culture as a concept, each differing from one another based on which of the three parts of the safety culture the definition primarily focuses on: core, manifestations or whole. These three parts are discussed more thoroughly in the chapter on cultural layers. The multiple and varying definitions of safety culture, and the fact that there is no widely accepted definition of the concept, would imply that there is a lack of consensus on how the concept is understood (EU-OSHA 2011, 12).

One of the definitions that the European Agency for Safety and Health at Work (2011, 13) uses to determine safety culture is an outcome of the organisations abilities, values and attitudes on the individual and group levels as well as the models of activities that define the dedication to, and the form and competency of, an organisation's health and safety programmes. This definition differs from Teperi's (2014, 17) definition where the safety culture reflects the overall safety management; the norms, guidelines, instructions and procedures as well as the safety leadership, meaning the creation of safety culture by leading and controlling human behaviour. It seems to be that both of these two definitions and points of view are correct. In accordance with Roughton & Mercurio (2002, 22) there is not just one definition for safety culture; it is a factor which should be considered as a value rather than a highly important objective to achieve and this value must be implemented into every aspect of an organisation and its operations.

### 2.4.1 Cultural layers

The layers of safety culture can be applied from the onion model of organisational culture and its three levels that can be studied and analysed. The three cultural layers from the outside to the core are artefacts, espoused values and basic assumptions (EU-OSHA 2011, 13). Guldenmund (2010, 110) defines the outer layer, *artefacts*, as the visible factors of OSH culture, but it is often difficult to comprehend in terms of a fundamental culture. Examples of such visible factors are, personal protective equipment, reports and other documents related to safety (minutes, accidents, incidents), instructions, procedures and job descriptions. The middle layer, *espoused values*, comprises the spoken or written statements by the organisation. Guldenmund (2010, 48) has specified the middle layer to include employees' OSH attitudes towards behaviour (responsibility, working safely and safety communication), people (such as colleagues, supervision and management), factors related to software (safety systems such as safety procedures, training) and hardware (safety measures such as personal protective equipment, preventive measures). And the core, basic assumptions, is the shared *basic assumptions* on safety-related factors in the organisation. These assumptions include the time spent on safety, the assumptions of what is safe and what is not and the organisation's dimensions of time and space related to safety, such as preparation of work, operations and workplace hazards (Guldenmund 2010, 49). These three cultural layers are shown in Figure 3 below.

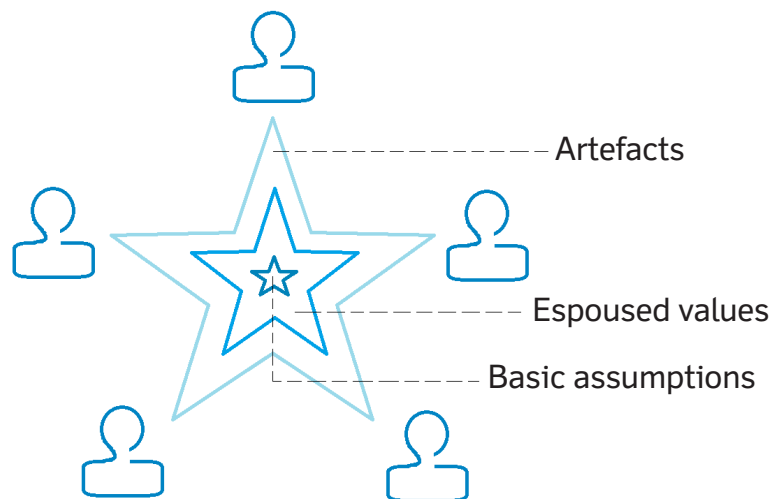


Figure 3: Layers of organisational culture

EU-OSHA (2011, 14-15) stressed that the core, basic assumptions, of an organisational safety culture is invisible. This means that it is not possible to discover the core in a direct way, but rather research of the outer layers is done to see influences of the core in them. For instance, if the espoused values respond when compared to the artefacts in the organisation, such as a management practice, the safety professionals are involved in management decisions, especially to those related to OSH. The incoherencies between espoused values and artefacts reveal the core, basic assumptions, of the OSH culture. Therefore, the cultural core can be analysed only by assessing the espoused values and artefacts.

### 2.4.2 Safety climate

According to EU-OSHA (2011, 15) the terms safety climate and safety culture are not the same, but they and their fundamental concepts are related and commonly used interchangeably. Safety climate can be defined as a temporal reflection of an organisation's safety culture whereas safety culture is the core when considering the layers of safety culture. There are three safety climate perceptions that should be included in safety climate research. To begin with, the research should focus on the way employees prioritise safety when compared to other tasks, this is called relative priorities of competing requirements. Then the research's concentration should be on the possible difference of how management prioritises safety and if safety is compromised under the operational requirements in practice; this is referred to as differences between words and actions. Finally, the focus in the research should be on potential inconsistencies between policies and procedures set by employers and management and how supervisors at lower levels of the organisation put these into practice. As EU-OSHA (2011, 16) stressed, safety climate is thought of as a predictor for safety performance and thus it can be suggested that safety climate would form a starting point for a proactive approach towards OSH.

## 2.5 Occupational safety culture assessment

EU-OSHA (2011, 13) has made a rough distinction between two perspectives on how to study OSH culture. The first perspective is a psychology-oriented research and the second perspective is engineering-based. Apart from these two there is a third perspective to analyse OSH culture, the perspective of organisational (culture) theory, anthropology and sociology. The consideration of OSH culture as being part of the organisational culture that is connected to safety and risks allows, together with the perspective of anthropology and sociology, description of the concept of OSH culture, and particularly analysis of organisational culture's influence on OSH.

Regarding the categorisation above, Guldenmund (2010, 183) has specified three main approaches for studying OSH culture: analytical (psychological), academic (anthropological) and pragmatic (experience based). According to EU-OSHA (2011, 21) these three approaches define how OSH cultural assessments can be conducted, what are the methods to use and instruments to assess OSH culture. In Table 1 the following information on each of the three approaches is provided: the time period focused on by the organisation, the type of information it aims to collect, the characteristics of the research and the possible assessment instruments to use in the chosen approach.

*Table 1: The three main approaches to study OSH culture*

Approach	Focusing period of time	Information aimed to collect	Characteristics of the research	Assessment strategy and instruments
Analytical	Present	Quantitative information	Descriptive	Questionnaires, safety climate scales
Academic	Past	Qualitative information	Descriptive	Fieldwork, for instance observations, document analysis, interviews, focus groups
Pragmatic	Future	Safety culture maturity level	Normative, prescriptive	Workshops with focus group

### **2.5.1 Analytical assessment approach**

The analytical assessment approach, according to EU-OSHA (2011, 22) is the most commonly used approach in safety culture assessments and focuses especially on an organisation's safety climate. Safety climate can be assessed by quantitative means, conducting a questionnaire survey among a group of employees. This method is also known as a safety climate scale that measures employees' shared perceptions of certain safety factors, such as opinions on safety commitment with regard to safety systems. According to Antonsen (2009, 17) the results of safety climate scales (espoused values) are thought to be a predictor of safety culture (basic assumptions). Although, this is also seen as problematic since the possibility of what employees claim to do might be in relevant difference to how they actually act and behave. Guldenmund (2010, 98) has suggested that the reason the approach is the most predominant in assessing safety culture is its simplicity and the fact that it can be conducted from a distance and not by actually experiencing the existing safety culture. This is the reason Guldenmund (2010, 98) highly recommends that "such validation is carried out in the field to check and confirm that conclusions are justified, recognised and are supported by the company under study".

Safety climate is commonly assessed by using standardised questionnaires that give numerical results and, as stated by EU-OSHA (2011, 22), this enables comparison to be made with results gained from earlier assessments and benchmarking with results from other organisations. However, Guldenmund (2010, 118) stresses that despite that results are easy to quantify and thus to a certain extent benchmarking is possible, the potential for efficient comparison is limited.

### **2.5.2 Academic assessment approach**

According to EU-OSHA (2011, 25) the academic assessment approach is a descriptive approach, seeking to understand safety culture and through this to try to support change and improvement rather than judging the safety culture. Guldenmund (2010, 197) points out that this aim of the approach can be achieved by studying the organisation's past. EU-OSHA (2011, 25) states that the organisation's past can be studied with data collection methods that are based on anthropological and sociological research. This would suggest that the information required is collected by using techniques such as document analysis, observations and interviews. Each of these techniques can be connected to a specific cultural layer (artefacts, espoused values, basic assumptions) that it is trying to understand. For instance, personal interviews with safety professionals or organisation's management are arranged for better understanding of management and safety practices, which can represent both artefacts and espoused values. The aim of interviews is to get qualitative evaluations from the experts to gain a more comprehensive insight into this complex context. Thus, open questions in the interview are the most applicable technique, although it can make the interpretation of the results challenging.

### **2.5.3 Pragmatic assessment approach**

The third assessment approach that EU-OSHA (2011, 26) distinguishes is the future-oriented and prescriptive, pragmatic approach. The focus in this approach is on assessing the current state of maturity of an organisation's safety culture's and through this give it a ranking on a predefined cultural maturity ladder, showing cultural maturity's various stages or levels. Guldenmund (2010, 187) stresses that in

practice the focus should be on the organisation's structure and processes of the organisational triangle and the object of the approach is to define what the organisation should do to develop its safety culture to a higher level of maturity. The assessment of the maturity level's rating is done in groups to get a shared opinion and most of all to gain the most important outcome of the rating process: the ensuing discussion on the maturity level (Guldenmund 2010, 188).

#### **2.5.4 Triangulation**

The three approaches differ from one another in terms of the time period they focus on (past, present and future), the research paradigm and the techniques used to conduct each assessment approach. Nonetheless, not only one of them should be thought as an alternative, but all three approaches should be considered as complementary (Guldenmund 2010, 197). In fact, Guldenmund (2010, 120) illustrates that the gathered information from interviews could be used to complement or confirm other data sources, such as checking preliminary findings from a questionnaire study. EU-OSHA (2011, 27) stresses that to understand and explore safety culture, using only one approach or technique is not suitable. Instead, a multi-method and holistic approach should be taken towards safety culture. An approach employing multiple strategies is called triangulation.

## **2.6 Developing occupational safety culture**

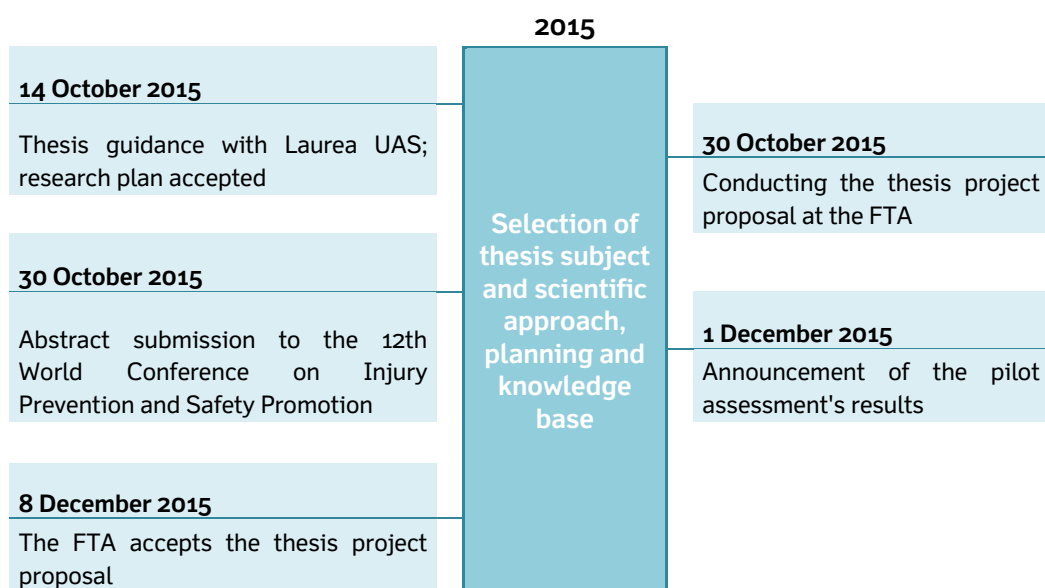
EU-OSHA (2011, 20) argues that the main concentration should not be on changing the organisation's OSH culture, although there is a cultural approach towards OSH culture. As stated by Guldenmund (2010, 54) aiming to change the safety climate or safety culture through assessment is ambitious and time consuming. Therefore, OSH culture should be thought of as an approach to assess how OSH is processed in an organisation and at all its hierarchical levels. The gained information and knowledge from this cultural approach can be used in the process of changing OSH-related practices, processes and policies by adaptation and eventually leading to developed OSH performance (EU-OSHA 2011, 20).

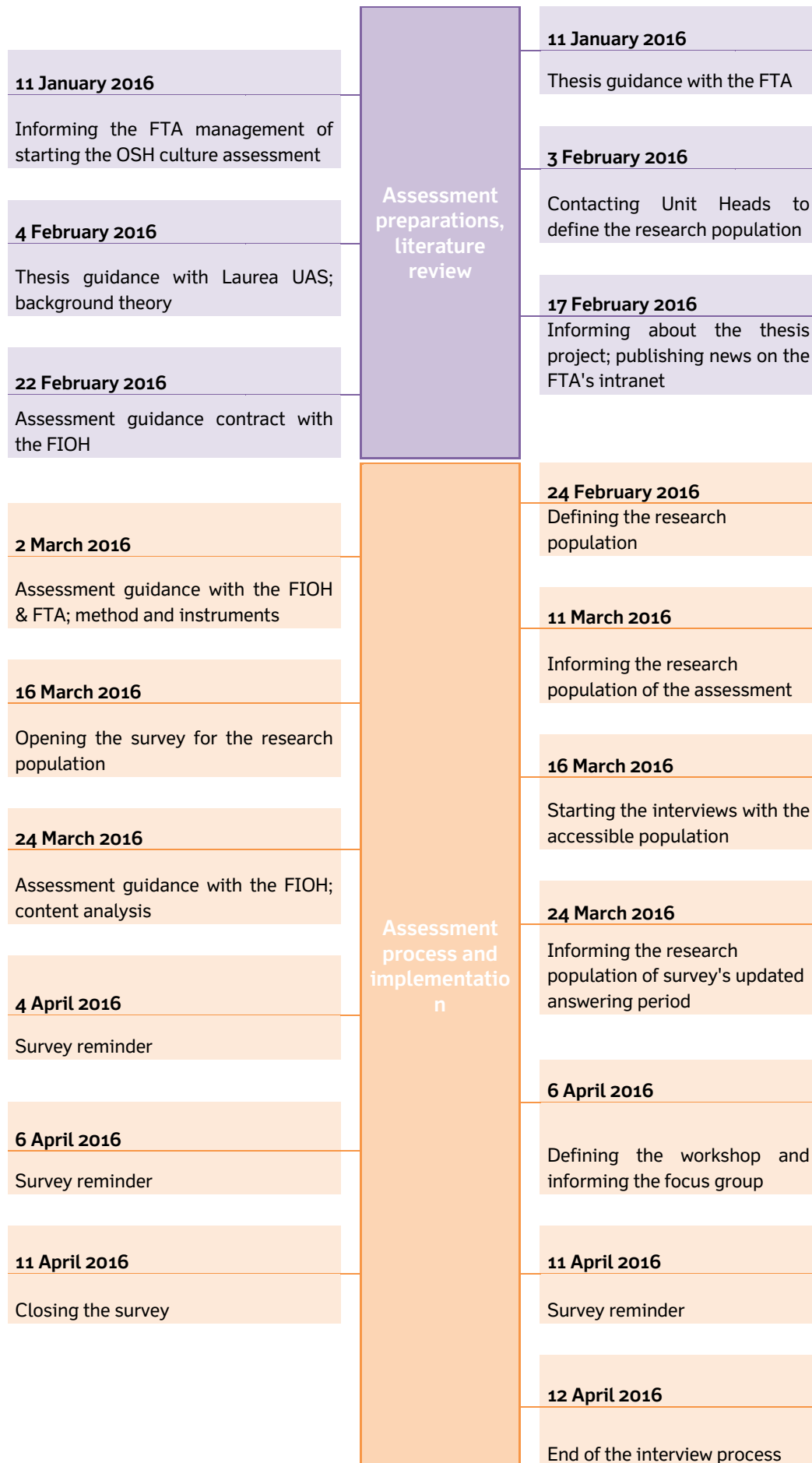
### 3 Assessment process and implementation

The thesis process began in fall 2015 with formalities between the assessment partners and continued by starting the actual assessment process in winter 2016, right after the pilot project and its results were released in December 2015 (Liikennevirasto 2015). Between the fall seasons of 2015 and 2016 the thesis author was in close cooperation with the assessment partners through organised guidance sessions and informal daily discussions during the work week. During the first couple months of the assessment process FTA's security manager, Matti Aaltonen, was implementing research on the safety and security culture of the whole agency. The research was its own, independent study that was not related to the conducted OSH culture assessment. The thesis author participated in Aaltonen's research meetings to ensure unnecessary overlap of the research and the assessment.

The process of FTA's OSH culture assessment is divided into five phases, each objective including various contributing tasks which are introduced in the timeline in Figure 4.

The first phase of the assessment process includes the selection of the thesis subject and the scientific approach of the OSH culture assessment as well as planning of the assessment process and gathering the general knowledge base. The second process phase contains the OSH culture assessment preparations and literature review on the topic. After the preparations, the third phase of the actual assessment process in the FTA was implemented, including conducting the survey for the whole research population, interviewing the accessible population and intervention with the focus group. The implementation of the OSH culture assessment is followed by data analysis and defining FTA's OSH cultural development needs and reporting on them. Finally the assessment process' ends with the thesis submission, which brings together the background theory, the OSH culture assessment in the FTA and its results.





<b>16 March - 27 April</b>	<b>Content analysis and development needs, reporting</b>	
Transcribing the interviews		<b>27 April 2016</b>
		Assessment guidance with FIOH; content analysis
<b>28 April 2016</b>		
Processing the survey results		
		<b>18 - 28 April</b>
		Translating the interview transcriptions, writing abstracts
<b>16 May 2016</b>		
Thesis guidance with FTA; pre-check-up of analysis		
		<b>18 May 2016</b>
		Confining transcription abstracts
<b>24 May 2016</b>		
Thesis guidance with Laurea UAS		
		<b>25 May 2016</b>
<b>25 May 2016</b>		Grouping the confinements
Thesis guidance with FTA; pre-check-up of analysis		
	<b>26 May 2016</b>	
	Thesis guidance with FTA; check-up of analysis	
<b>26 May 2016</b>		
Conducting preliminary analysis and defining development needs		
	<b>26 May 2016</b>	
	Preliminary analysis for workshop focus group	
<b>27 May 2016</b>		
Preliminary analysis to the FIOH mentor		
	<b>1 June 2016</b>	
	Workshop with the focus group	
<b>2 June 2016</b>		
Translating and confining the workshop outcomes		
	<b>3 June 2016</b>	
	Assessment guidance with the FIOH; data analysis and development needs	
<b>20 June 2016</b>		
Thesis author's change of job description in the FTA		
	<b>21 June 2016</b>	
	Thesis guidance with the FTA;	



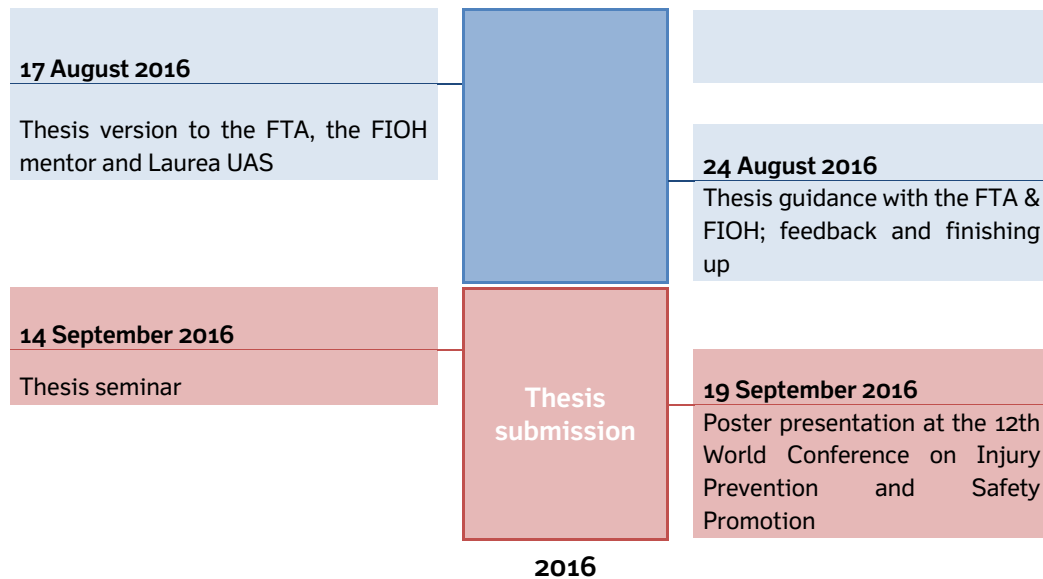


Figure 4: Timeline with focal points on the FTA's OSH culture assessment process

The five phases and contributing tasks all included general functions of an assessment, such as discussions with the assessment partners on the assessment's objectives, needs and validity. The assessment partners and the research population were informed, involved and communicated with during every phase of the assessment process. In addition, through the whole process the assessment's validity and ethical proceeding were discussed and confirmed with the partners and the research population. To justify the made decisions the thesis author conducted a variety of validity evaluations throughout the assessment process. The overall validity and reliability of the assessment are discussed in Chapter 8.2. These functions and proceedings affected directing the results of the assessment to support the FTA's development regarding its aim the develop OSH culture.

### 3.1 Pilot project

The pilot project was conducted in the Railway Maintenance Unit focusing on issues concerning human factors in safety. The assessment instruments used in the pilot project were semi-structured theme interviews, where each employee in the unit was interviewed individually. A human factor tool (HF-tool) was used as an additional instrument in the interviews. The HF-tool, originally described and innovated by Teperi, Leppänen and Norros (2015), was used as background in the doctoral dissertation (Teperi 2012). Finally a workshop was arranged where the compliance of the pilot project's results were discussed and development needs defined. The pilot project ended in December 2015 when the results were presented at the FTA's seminar discussing occupational safety factors.

The results of the pilot project discussed five themes; occupational safety management, changes, working habits, working tools and instructions and responsibility, which were again divided into OSH culture's various maturity stages. *Changes* were experienced as continuous, although they did not have a direct effect on occupational safety, but rather enabled learning and development. An increase in bureaucracy was noted. The unit was committed and valued occupational safety and appreciated openness and *occupational safety management* appeared mainly through

instructions and was highly personalised rather than assigned to a specific position. The line management's role in occupational safety management was unclear. The *responsibility* of the work remained even when it was committed by the contractor. There were differences in *working habits* depending on the region (north, east, south, west). There were enough *working tools* and *instructions* and they were developed, sometimes there were even too many tools to use; information is gained but the know-how to use it did not exist (Teperi et al. 2015, 8-14).

The HF-tool revealed that the unit found that issues weakening OSH culture were the amount of work and pressures related to it, cooperation amongst various parties, pressures and their management, and understanding colleagues' work responsibilities. In support of OSH culture the unit found noted motivation and attitudes, group dynamic, the possibility to affect their own work and working environment as well as following instructions and procedures (Teperi et al. 2015, 16).

The pilot project results concluded that the unit's OSH culture was reactive; there are variations of procedures, though some anticipation is included to operations. The operations are based on instructions and operating accordingly, which is again monitored. The working tools enable the anticipative operations but the challenge is to utilise these tools so that other operations and procedures proceed to functioning as anticipated. Deadlines, managing large entireties and cooperation with multiple partners challenge employees' work. Identified resources included independent work, the working community and good motivation. Behind all these findings is the constant change of the agency as an organisation, its procedures and attitudes (Teperi et al. 2015, 17).

## 3.2 Preparations and implementation of OSH culture assessment in the FTA

A project proposal of the OSH culture assessment was conducted to the FTA since the FTA's occupational safety chief suggested conducting the assessment in the FTA in cooperation with Laurea UAS and the FIOH as a thesis project. After the project proposal was accepted the assessment in the FTA began by informing the extended steering committee, which includes the management team and the directors of the department, of the upcoming assessment process. The extended steering committee was appealed for support in the assessment, especially in committing the employees in the process. Next, the Unit Heads were contacted to define the research population. Since the FTA's occupational safety chief's role is strongly connected to worksites, it was defined that the research population will include FTA employees whose job description includes regular visits at the worksites. In this context 'regular' means two visits in a month or approximately 25 FTA worksite visits in a year. After defining the research population the actual assessment began by opening the survey for the whole research population and interviewing the accessible population. Finally, a focus group workshop was steered by the thesis author where development suggestions were made based on the analysis of preliminary assessment results. During the assessment process, especially in its active implementation, the thesis author was in close interaction with the research partners and the research population to ensure the process was progressing correctly, the commitment of the entire FTA to the assessment and developing its OSH culture.

### 3.3 Scientific approach

As stated by Kananen (2013, 13) the thesis process begins by defining the topic and a research problem. Research questions are derived from the problem for producing a solution. After this the researcher selects the scientific approach, a selection of methods also called the methodology, to answer the research questions and solve the problem.

The scientific approach of this thesis is a design research. In accordance with Kananen (2013, 20) as a scientific approach design research is not a methodology of its own but a combination of various research methodologies, both qualitative and quantitative research methodologies. Research using several methodologies is also referred to as "mixed methodology" or "blended". Hesse-Biber (2010, 3-4) stresses that this combination of methods includes collecting, analysing, and integrating the quantitative and qualitative data in a single- or multi-phase study. Thus, examining the dimensions of the same research problem, more than one method is used while studying the same research question. This incorporation of methods into research refers to triangulation that is used to enhance the credibility of the research results by confining the collected data in order that it primarily confirms and enriches the study's conclusions.

This assessment aims to advance and support developing new procedures in the FTA by assessing the maturity level of the FTA's OSH culture, restricted to employees whose job description includes visiting worksites regularly, and defining the OSH culture's development needs. This is done while using the methods triangulation to produce not only a comprehensive overview of the assessment subject, but to also provide solutions that work in practice (Kananen 2013, 45). The triangulation methods used in this assessment include a survey for an analytical assessment approach, interviews for an academic assessment approach and a focus group workshop for a pragmatic assessment approach. The end result is to provide a combined data analysis of the results based on which development suggestions are presented, acquired by using the chosen assessment methods, which aim to advance and support developing new procedures in the FTA.

### 3.4 Assessment methods

Triangulation, or design research, does not have its own methodology or specified research methods but is a combination of quantitative and qualitative methods whose selection is dependent on the researcher's know-how and preferences. Kananen (2013, 55-57) points out that in design research there are three skills needed. First is the researcher's participation in the operations within the research phenomenon, such as being a part of the work community. The second skill needed is the mastery of processes, meaning the know-how of processes within the organisation being researched. The third skill is mastery of research, which means being able to evaluate the results of development activities. Above all, in assessing an organisation's OSH culture, EU-OSHA (2011, 25-26) stresses that the assessment should preferably be conducted by a person outside the organisation, having the needed expertise in conducting an OSH culture assessment; especially when using academic assessment approach techniques.

The OSH culture assessment in the FTA began in January 2016 when the researcher, the thesis author, started to build up the general knowledge base on the subject while arranging the preparations and implementing the assessment in the agency. In March 2016 the first assessment method, survey, was opened for four weeks for the research population to answer. The second assessment method, semi-structured theme interview, was conducted during the same time as the survey. The interviews were held with a subset of the whole research population to gain deeper insight into the complex context of OSH culture. The third assessment method, workshop with a focus group, was organised in June 2016 after conducting a preliminary data analysis on the survey and interview results.

### **3.4.1 Analytical assessment approach - NOSACQ-50**

As an analytical assessment approach in the FTA's OSH culture assessment the Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) developed by occupational safety researchers (Kines et al. 2011) and recommended by EU-OSHA (2011, 22-23) was used. In spite of this, it was questioned whether some of the recommended questionnaires would be applicable for OSH professionals in the field (EU-OSHA 2011, 24). However, as stated earlier in the theoretical framework of the thesis, the FTA operates in the field of infrastructure manufacturing and thus can be identified as a safety-critical organisation operating in a high-risk industry in which the NOSACQ-50 has already been applied and confirmed to be a reliable and valid questionnaire, especially in all the Nordic countries. Also, the practical fact of NOSACQ-50 being available in numerous languages, including both English and Finnish, affected application of the questionnaire in the assessment process (EU-OSHA 2011, 38).

NOSACQ-50 is a tool to assess occupational safety climate and evaluate safety climate intervention's influence based on organisational and safety climate and psychological theories. But also based on previous empirical research and acquired results through continuous development process and international studies (National Research Centre for the Working Environment 2016). The questionnaire consists of 50 items across seven dimensions. The dimensions are shared perceptions of management safety priority, commitment, and competence, management safety empowerment, management safety justice, workers' safety commitment, workers' safety priority and risk non-acceptance, safety communication, learning and trust in co-workers' safety competence and workers' trust in efficacy of safety systems. A more comprehensive definition of the dimensions can be perceived from Appendix 1, where the template of NOSACQ-50 and gained answers are presented. As a result of the research population's shared perceptions of the FTA's safety climate, a reflection of the research population's perception of the true value of safety in the FTA, a diagram is formed (EU-OSHA 2011, 38).

After informing and being in contact with the steering committee and the research population of the upcoming OSH culture assessment, the NOSACQ-50 was distributed to the whole research population via email. The template of the questionnaire, with adjustments, was copied as a whole to an online survey tool, Webropol. The adjusted NOSACQ-50 template with the research population's composed answers can be seen in Appendix 1. The link to the Webropol survey was included in the email sent to the research population. During the four-week answering period, regular reminders were sent to the research population to complete the questionnaire.

### **3.4.2 Academic assessment approach - semi-structured theme interview**

As an academic assessment approach in the FTA's OSH culture assessment a semi-structured theme interview was used that was conducted by combining and editing interview questions used in the pilot project and interview questions used in the FTA's safety and security culture research that was implemented in the beginning of 2016 by Aaltonen. New interview questions based on the pilot project's results were also created. By combining and editing already used interview questions and creating new questions coherence amongst independent research projects in the FTA was ensured but also unnecessary overlapping was avoided, thus enabling the researches' results to support each other and additionally possibly discovering root causes for already made observations.

The interview frame consists of 12 questions across five main themes: management, commitment and involvement, policies and strategic objectives, organisation, responsibilities and guidelines, implementation, monitoring and audits and challenges in interfaces. The semi-structured theme interview frame can be seen from Appendix 2. In addition to the five main themes background information, positive closing question and general feedback or any other additions are included in the interview frame. In the 12 interview questions are included two additional questions in case the interviewee is sententious. Originally the interview frame consisted of 15 questions but three of them were found to be unavailing and thus were removed from the interview frame. The conducted interview frame was chosen for application due its correspondence to a core construct of a safety climate concept (EU-OSHA 2011, 22) and thus enabling a cross checking for the results gained from the NOSACQ-50 and the interviews.

### **3.4.3 Pragmatic assessment approach - workshop**

As a pragmatic assessment approach in the FTA's OSH culture assessment a workshop was applied. As stated by Morgan (1998, 15) the workshop method was applied to gain insight into how and why the specific assessment results were gained by discussions in the focus group. In addition, this type of a follow-up can help the researcher develop for future assessments. The workshop was arranged for a focus group that consisted of the research population's superiors, the OSH personnel and the occupational safety chief. An invitation to the workshop was sent to eight people, however, some forwarded the invitation to a substitute if they could not participate. Eventually the workshop consisted of five participants and the workshop leader, the thesis author. One week before the workshop the preliminary analysis was sent to the focus group for them to go through the material and come up with at least one development suggestion based on the results. The workshop lasted for 1.5 hours during which the OSH culture assessment process was introduced and preliminary analysis briefly discussed with the help of workshop material. The workshop material is presented in Appendix 3.

## 4 NOSACQ-50

The OSH culture assessment in the FTA began with the NOSACQ-50. The questionnaire was used as an analytical assessment approach to provide quantitative data in the assessment. Hesse-Biber (2010, 6) states that by using mixed methods in a research project, in this case triangulation, enables the researcher to cross-check the research results. In the FTA's OSH culture assessment the objective was to cross-check the qualitative data, the key results, with the quantitative data.

The NOSACQ-50 results are presented as a diagram scaling the seven dimensions introduced before from 1 (poor) to 4 (good). The diagram was drawn up automatically when entering the questionnaire's data to an Excel spreadsheet provided by Det Nationale Forskningscenter for Arbejdsmiljø (2015). It has been proposed that there is a link between the NOSACQ-50 score categories and levels of safety culture: the pathological (less than 2.4), reactive (2.4-2.69) and calculative (2.7-2.99) levels to the proactive (3.0-3.30) and generative (greater than 3.30) levels (Det Nationale Forskningscenter for Arbejdsmiljø 2016). This proposed link is applied in this assessment. Det Nationale Forskningscenter for Arbejdsmiljø (2015) addresses that the questionnaire's seven dimensions include from 6 to 9 items each. The items can be identified to be divided into groups of either being asked positively or negatively.

### 4.1 NOSACQ-50 analysis

At the beginning it was planned that the link to the questionnaire would be open to the research population for two weeks, but because of the Easter holidays this was postponed. Eventually the link to the questionnaire was open for four weeks.

The NOSACQ-50 was applied in the assessment since, as already mentioned, it had already been tested in all the Nordic countries. Despite that the questionnaire's reliability and validity had been confirmed, it emerged from the questionnaire's comments and feedback that some of its dimensions or items are not directed to an organisation operating as a client but rather to organisations operating as project supervisors. In fact, a clear definition of what was meant by occupational safety and from the perspective of operating as a client or project supervisor would have been needed. In addition, the options in categorising items was identified as restricted but its aim was recognised.

### 4.2 NOSACQ-50 results

In Figure 5 below the questionnaire's results are presented as a diagram scaling the seven dimensions. As the diagram shows dimension 5, worker's safety priority and risk non-acceptance, is deviant with its scale of 1.92 being clearly on a pathological level. The dimension's deviation draws attention in particular since it is in relation with dimension 4, worker safety commitment (scale 2.41, reactive level), and dimension 6, peer safety communication, learning and trust in safety ability (scale 3.02, proactive level). The remaining dimensions 1 (management safety priority and ability), 2 (management safety empowerment), 3 (management safety justice) and 7 (workers' trust in the efficacy of safety systems) have their scales on a reactive level.

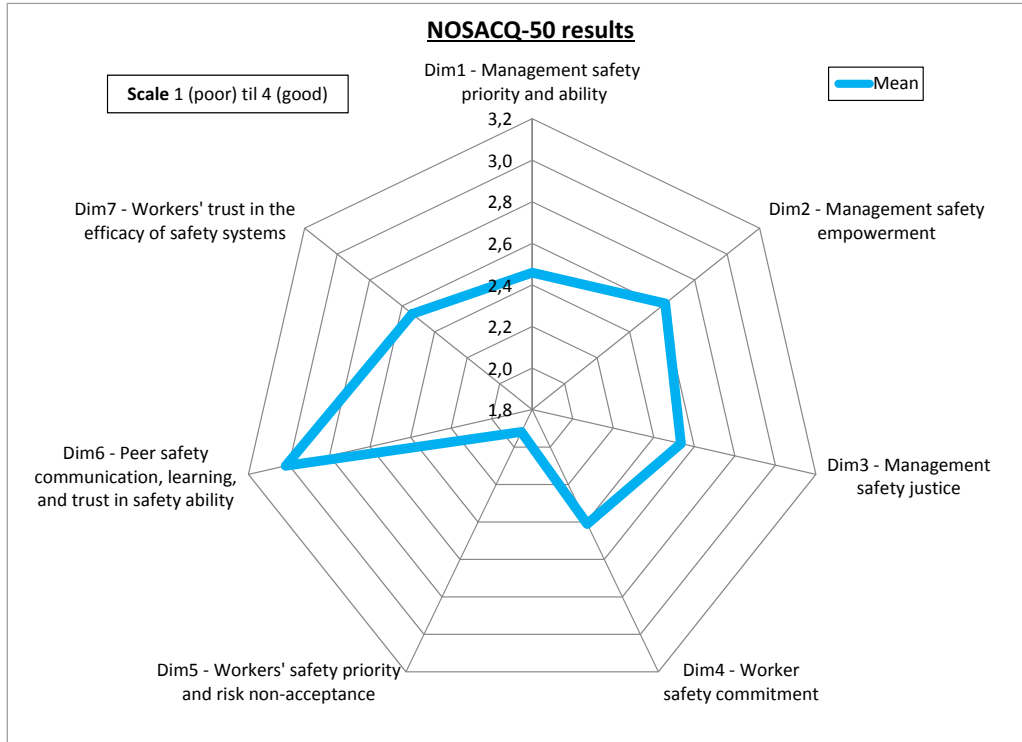


Figure 5: NOSACQ-50 results

## 5 Semi-structured theme interviews

As well as a questionnaire, in the FTA's OSH culture assessment semi-structured theme interviews were used. They were used as an academic assessment approach to provide qualitative data in the assessment. Qualitative data is the main information gained in this assessment, adding a narrative understanding especially when cross-checking the quantitative data (Hesse-Biber 2010, 6).

In accordance with Kananen (2013, 127-129) the qualitative material was analysed by using content analysis and examining the material after creating themes. The semi-structured theme interviews were recorded and the researcher also took handwritten notes. Each interview recording was transcribed and condensed, after which the abstracts were translated into English. Eventually there were 28 pages of transcribed data in abstracts.

### 5.1 Semi-structured theme interview analysis

Eventually a subset of seven people, 10 % of the research population, was gathered and interviewed. Based on the Unit Heads' addressing of the research population, the thesis author selected the interviewees amongst the population. The interviewees' office location (due to the pilot project's results of areal differences), job description (project manager or expert) and field of expertise (road, railway, or waterways) affected the selection of interviewees. Based on these, the thesis author invited different interviewees to interviews. By this, a versatile overview on OSH culture was gained and not only a perspective of a specific group of professionals. This approach proved to be correct because the individual interview's materials supported each other although various points of view and differing opinions were stated. Also observations of the pilot project's result of areal differences were further researched. The interviewees were interviewed individually in Finnish either in person or virtually by using Lync meetings in the form of a phone call or video connection. Before each interview the thesis author contacted the interviewees individually to, as illustrated by Gillham (2005, 12), ensure the ethics and identify the purpose of the research by providing an informed consent to be signed. The informed consent template can be seen from Appendix 4. Due to the signed informed consents no individual interviewees are referred to by name in the following chapter where the translated and confined transcription abstract is combined and presented from all seven interviews.

### 5.2 Semi-structured theme interview results

The qualitative material gained from the semi-structured theme interviews was examined and divided into nine themes; attitudes and strategy in the FTA, management participation, communication, challenges in interfaces, implementation of occupational safety, employee expertise in the FTA, the role of a safety coordinator, occupational safety management and occupational safety chief's role.



### 5.2.1 Attitudes and strategy in the FTA

To maintain and develop OSH culture the FTA's strategic goals are set high and it is desired to keep them there, but the operative actions to implement the strategy to production and to the field are light compared to the strategy's pursued value. This is despite that the FTA's management strives towards the strategy's set objectives and its guidance is for future. Also occupational safety is generally considered as important in the FTA and is seen as part of the work. The factors and issues that have affected the creation of the working culture is the organisational structure that is to some extent scattered, mainly because of the regionalisation of employees; this is weakening the FTA's OSH culture. Nonetheless the organisational structure and hierarchy is in some departments flat. The regionalisation has created small working communities in regions. The cooperation there is close-knit but on the other hand there is very little work with and amongst other employees in the FTA, especially in Northern Finland. To be more precise, the sense of community is lacking and the highest level of the HSE culture step ladder is not reached. There are no incoherencies observed between the FTA's strategy and objectives set for occupational safety, but safety is not highlighted either; strategy is emphasised on digitalisation. In fact, it is perceived that there is a strategy mind-set in the FTA but for some reason implementation is lacking. Thus, the implementation of occupational safety is perceived to be committed by the project supervisors. The employee viewpoint is that the FTA is "a freeloader on project supervisors' know-how while the in-house know-how and its importance is forgotten." Processes are conducted by consultants leading to a situation where the FTA's employees do not gain cumulative learning experiences, success and failure. Thus only the compulsory documentation is conducted by the FTA and thus the valuable substance tasks remain at minimum.

It emerged from the interviews that to develop OSH culture in the FTA, the management and employees responsible should implement the strategy in practice. The implementing of the strategy should be applied in a language so that its understanding will be assured in every department and unit amongst all employees. In addition, the interviewees addressed that the FTA should bring the OSH culture "attitude forward" and stress that "FTA is a socially responsible operator."

### 5.2.2 Management participation

Generally, amongst the FTA's employees there is a feeling that the management is 'distant', especially in regional locations, leaving the employees to do their expertise work independently. However the employees perceive the management as being approachable, although this is not visible in everyday work. In addition, the management not involving themselves in the employees' expertise work shows trust. The FTA's management is not visibly participating in the theme of occupational safety. It discusses related issues and by task dividing the participation in occupational safety is left for the operative level to conduct. In fact, the management immediately reacts to anomalies and safety faults; risks are not taken. It was stated in the interviews that for better understanding the management should familiarise themselves with the employees' specialised expertise and topics and start to participate in occupational safety.

### 5.2.3 Communication

Communication on occupational safety in the FTA generally is seen as a part of OSH implementation and their operations but is based on the principal of need, especially amongst colleagues. Communication is founded on acts and decrees and emphasised in publications, instructions, projects' safety documentation and reports as well as provides information about changes and incidents. A lot of information is available but the challenge is transmitting it to every concerned party and for them to find the specific information. The FTA's management's communication on OSH is one-way, such as registering the received information example statistics or distributing messages through intranet or email when it is needed, for example information about current issues. Communication about OSH between units and departments is considered as a constant problem; it is mainly through and concerning projects and procurements and the issue is how to gain and transmit the information from planning and procurement to construction and finally to maintenance. In one of the departments the presence of an occupational safety chief has affected increasingly the amount of discussions on occupational safety.

It was stated in the interviews that to develop communication on OSH at every organisational level the FTA should make it visible and start to implement it regularly in an interactive way where topics are discussed based on practicalities faced at the worksites. However, it was also stated that "continuous display of occupational safety does not advance the positive attitudes towards it." Thus, the sessions should be both organised officially with short bulletins and topic openers and unofficially by discussing made observations.

### 5.2.4 Challenges in interfaces

The FTA does not have major challenges in interfaces with its stakeholders. To maintain and develop cooperation the FTA organises seminars where collaborators are invited. However, in developing OSH culture and occupational safety operations the FTA mainly conducts worksite monitoring with project supervisors where the FTA's employees from different units and departments participate. The project supervisors, especially larger companies, have their own objectives set and more strict instructions and training regarding occupational safety in the company. The basics in occupational safety are in good shape with the project supervisors and their operating is exact, only small issues have occurred occasionally and those are intervened, reported and treated right away. The FTA's regular repetitions and demands regarding reporting in OSH have created the procedures to be more automatic and reluctance and time delays with project supervisors have finished. As a challenging factor in interfaces, the FTA's employees have noticed that the extension of instructions have created the time consuming procedure of reporting to project supervisors, in particular the problem is the integration of systems. Another threat that employees identified is the case of having external visitors at the worksites; looking after the safety of guests at the worksite can actually endanger the FTA employees.

Fundamentally, the FTA's cooperation with other actors in the transportation systems helps to create an image and increase value for both transportation systems and the FTA. Since there are no considerable problems in OSH with the collaborators, it emerged from the interviews that the FTA should continue to consistently require the collaborators to invest in occupational safety. It would maintain the positive attitudes

and communication, possibly even advance the development of OSH systems. Especially the integration of project supervisors' and FTA reporting systems. Briefly, the collaborators, such as the project supervisors' overall know-how in implementing safety tasks and performing safety management, support the FTA's OSH culture and OSH operations which is why the project supervisors should be more involved in developing OSH culture rather than the FTA operating on its own trying to improve the image and develop value creation. After all, project supervisors have the experience and practical proceeding models which can affect employees' change of attitude and occupational safety becomes self-evident.

#### **5.2.5 Implementation of occupational safety**

To maintain and develop the implementation of occupational safety the FTA enables its employees to visit worksites providing all the needed equipment, such as instructions, personal protective equipment and guidelines. In fact, the FTA's occupational safety management tools and procedures are related to worksite monitoring, such as document review, reporting of anomalies and competencies based on which possible interventions are conducted. For this, occupational safety is defined as its own theme in safety documentation. The document templates' continuous updating is trusted as well as shares essential information. The FTA's instructions, document templates guiding the procurement processes and their development as well as training, support the OSH culture. However, the FTA's employees feel that these tools for monitoring, reviews and reporting are not comprehensive despite that the FTA has developed its instructions that are based on legislation to be functional and support occupational safety comprehensively on a long-term basis. The problem with the guidelines and instructions is the uncertainty of their set obligations.

Factors weakening the FTA's OSH culture concern the guideline and instruction system; they are extensive and variegated and strongly based on government acts and decrees. Individually, the instructions are good but as a whole the instruction catalogue is not functional. This may lead to a possible situation where either the client (FTA) or the project supervisor do not read it or even go through it. Briefly, the guidelines and instructions on occupational safety are massive and not approachable. Procedures are heavy and the understanding is inadequate. If joint discussions and information sharing does not happen, areas of risk may not be exposed. Thus, deviant interpretations may not be revealed. Occupational safety in employees' jobs is seen as a challenging combination including document checking where the know-how to conduct reviews is not sufficient. This means that training and education regarding the instructions and guidelines do not correspond to OSH requirements.

To develop the implementation of occupational safety the FTA should develop an assessment tool for its own employees to revise their operations and procedures, such as "a checklist on occupational safety related to checking factors regarding their work." For better understanding of the instructions and guidelines on the employee level, the units could go through the instruction regarding their tasks jointly for clarification and to determine a common policy. One interviewee stated that this has been already implemented in one of the FTA's units. As one of the interviewees stated "introductions and guidelines should be moderate to follow; this would increase following them", such as the worksite introduction processes compared to the worksite visit. In addition, the FTA should arrange training and education for its employees when a new regulation on occupational safety is adopted in the same way

as when, for example, new human resources software is introduced. "There is a need for concrete and practical-based training and education." The FTA should also continue cooperating with consultants, project supervisors and other operators in the field to develop occupational safety operations and to gain a practical point of view of training in the field of transport. "The one-day theoretical training currently offered does not advance the level of learning to the ability of practical implementation." Above all, the supportive factor of occupational safety in the FTA is the social pressure created by the working community and its powerful effects on following set regulations. Colleagues and other employees are taken care of regarding occupational safety and even if the working environment changes (office or worksite) occupational safety is constant.

### **5.2.6 Employee expertise in the FTA**

The FTA's role of being an example in implementing occupational safety has had an impact on employee commitment to do so in their work as well. Generally, in the FTA occupational safety in employees' work is perceived to refer only to personal protective equipment, documentation and monitoring. Employee views on occupational safety in their job is connected to safety documentation of both planning and constructing worksites. Connected to this is the client's responsibility to transmit the information to the project supervisor and monitor its accurate updating where the responsibility is considered overwhelming. To maintain and develop OSH culture the FTA has provided the possibility for its employees to participate in occupational safety development in expertise-related projects "which has been reinforcing" and "a pleasant addition to tasks". The longer an employee has been in the FTA and in the field of transport the more that employee has authorisation and responsibility to carry out tasks although the supervisors keep track of the validity employee competencies.

As a weakening factor in employee expertise and OSH culture, despite the general view that employees in the FTA follow the instructions, is the fact that there is no actual understanding of colleague expertise, responsibilities and how they implement occupational safety in their work. Thus, every employee is questioned to assure they are conducting processes accordingly. Also, the client's (FTA) responsibility is great and thus it was stated that the level of knowledge about safety legislation should be higher than it currently is. In the field of safety the level of professional expertise is minor compared to other fields in the FTA. Safety experts have a lot of responsibilities but not the resources to control them in the way required by safety management and especially in the way that the knowledge would be absolutely in-house the FTA in the form of employee expertise. "Time and resources are spent for other functions but investments are not made in safety."

Furthermore, a factor supporting the FTA's OSH culture is the fact that the FTA's employees are very committed to implementing occupational safety in their jobs, especially younger employees. The reason for this could be that the FTA has invested in education, the instructions are individually good, the occupational safety chief is strongly supportive of projects and supervisors support the employees in their working roles and tasks.

### **5.2.7 The role of a safety coordinator**

As an unexpected result during the assessment, the role of a safety coordinator appeared to be a factor causing uncertainty amongst the FTA's employees. It was perceived that implementing occupational safety is not succeeding regarding the safety coordinator's role, its competencies, training and education, guidance and responsibilities. The FTA's policy on employees operating as safety coordinators is not clearly stated in terms of responsibilities and insurances and thus the role of a safety coordinator is not appealing to employees. The issue of operating as a safety coordinator is how the transfer of responsibilities is accomplished and verifying the proceeding responsibilities. "A clear structure and management is needed in this process and transformation phase."

### **5.2.8 Occupational safety management**

To maintain and develop OSH culture in practise the FTA has occupational safety management tools and procedures addressed to the FTA's employees, including introductions, familiarisations, training and procurement process-related documents. These emphasise individual learning but help is given to access and find the information. In general, the occupational safety management tools and procedures are based on collecting and reporting anomalies as well as documenting and document updates. Further factors supporting OSH culture are crisis communication, informing the public and clearly defining shared responsibilities. Although, the entire process of crisis management in accident situations is made difficult because of the personalisation of occupational safety management and the occupational safety chief's role. In addition in weakening OSH culture in the FTA, the visibility of occupational safety is incorrect and thus forwarding issues is not successful. Regarding occupational safety management in the FTA the focus is on the worksite. The FTA is a flat organisation with monumental projects where only one or two FTA's employees are working. Responsibilities are set by acts and decrees but the employees do not have the time, know-how or capabilities. Briefly, the FTA's employees feel that they have to conduct responsible tasks without resources. To develop occupational safety management and encourage its employees to implement its principles, it was suggested that the FTA could include salary incentives for excellent safety performance during operations. This could be linked to a project receiving a bonus where occupational safety would be attached.

### **5.2.9 Occupational safety chief's role**

To maintain and develop OSH culture in practice the FTA has succeeded in profiling employees in an occupational safety-related roles that are supporting colleagues in their work. In addition the occupational safety chief is proactively organising events, participating in them and along with projects. As a root cause factor in weakening the FTA's OSH culture is the strong personalisation of the occupational safety chief's role. It has caused the deficiency of communication on matters of occupational safety, including bearing the crisis management and communication in accident situations. Issues in occupational safety might not be transmitted to the occupational safety chief if the concern is that the involvement can emphasise intervention and coercive actions rather than giving guidance in the situation and being supportive. Furthermore, guidance should be more justified and interactive instead of setting requirements as a written demand without deeper reasoning. Thus, it emerged from the interviews that the occupational safety chief should change the procedures to

respond to the specific project's needs and wishes as well as to act as a supportive operator showing trust towards the FTA's expertise on occupational safety factors as one of the interviewees stated: "Good management is leadership, leading the expertise. It is trust towards the employees, not overwhelming and unnecessary patronising."

## 6 Workshop

As a pragmatic assessment approach in the FTA's OSH culture assessment a workshop, an intervention, was used with the fundamental purpose of generating the researcher's development suggestions, but some feedback and comments on the assessment, as well as the preliminary findings by the workshop focus group were made. As Kananen (2013, 90) states an intervention is applied to adjust the development suggestions based on testing. In this case the testing was made by presenting preliminary analysis and development suggestions to the focus group.

The workshop proceeded in the form of discussion where observations and development suggestions on the preliminary analysis by the focus group to the workshop leader (the thesis author) were made. Some of the preliminary analysed grouped topics were observed to be in need of more specific determiners and the magnitudes and meanings were questioned. In addition, suggestions for broadening the OSH culture assessment and possible future research proposals were made. In general, the preliminary analysis and the development suggestions were commonly found to be in cohesion with the focus group's basic understanding and earlier experience on the themes.

### 6.1 Workshop analysis

Although the attendance of FTA's personnel in the workshop was sufficient it was clear that some that did not attend would have benefitted from participation. The discussions during the workshop were beneficial for the assessment, both questioning of results and agreeing on findings on a larger scale appeared. The focus group clarified the findings for the researcher and therefore the reliability of the OSH culture's preliminary analysis was confirmed for the researcher. As a whole the workshop verified the researcher's thoughts about the remarks acquired in the thesis' theoretical framework as well as in all the assessment approaches and their results.

### 6.2 Workshop results

As illustrated by Morgan (1998, 70) the workshop's primary data source was note-based analysis. During the workshop the researcher took notes on the focus group's key questions, remarks and development suggestions on the thesis, assessment and its preliminary analysis. The fundamental suggestion for the thesis was to clearly define that the assessment's purpose was to especially study the OSH culture of a specific group of the FTA's employees. The results of the questionnaire generated questioning on the dimensions shown in the diagram, especially their relations. Suggestions on the reasons for interview data findings were made. For example, regarding the theme on attitudes and strategy in the FTA and the finding that the FTA was perceived as being a freeloader relying on project supervisors' know-how, it was suggested that the reason for this was that the FTA's employees do not have a full understanding of what the FTA requires from the project supervisors. An additional reason was that the FTA only provides introductory information, and to complement that information is the project supervisor's responsibility. A remark on the findings of management participation and its corresponding to the work-satisfaction survey's overall results was made.

A suggestion was made to cooperate with the other operators in the industry to prepare and develop instructions to process the challenges in interfaces. The focus group agreed that the employees' know-how should be absolutely within the FTA when discussing employee expertise in the FTA. In addition, a development suggestion was made to create a communication tool for peer support amongst the FTA's project management, such as utilizing an app. In fact, a similar development suggestion of a regular peer support by using get-togethers and meetings was made when discussing the role of a safety coordinator. This role was seen as one of the more demanding jobs in the FTA. To develop occupational safety management in general, the focus group suggested that the FTA should give bonuses for fulfilling occupational safety expectations. When discussing the occupational safety chief's role it was agreed that a role mapping would be beneficial. Primarily, it was stated that what occupational safety in the FTA is and how it is implemented should be clearly defined and disclosed.



## 7 FTA's OSH culture assessment results reflected on the HSE culture step ladder

To demonstrate the FTA's OSH culture assessment results, reflections on themes introduced earlier are presented in five stages of the HSE (health, safety and environment) culture step ladder. According to EU-OSHA (2011, 33) the HSE culture step ladder was developed by Shell Exploration & Production for organisations to improve their HSE performance and help in the development process. As stressed by Holstvoog et al. (2006, 1-3), the HSE culture step ladder characterises the five levels of cultural maturity helping organisations to identify the differences between the current level of cultural maturity and the level aimed for. Therefore this demonstration is to clarify for the FTA the differences of aimed levels and the present realities which would be followed by the development process. In accordance with EU-OSHA (2011, 33-34) this development phase is described by the five levels of the HSE culture step ladder; **pathological** meaning people are only motivated by regulatory compliance; **reactive** where safety is seen as important but actions are taken only when an accident occurs; **calculative** meaning systems are in place to collect and analyse data but their effectiveness is not always proven; **proactive** where leadership and values in safety motivate continuous improvement with involvement and providing advice and finally **generative** where HSE is seen as how an organisation operates including exceeding already set high standards, interactive communication as a norm but continuously preparing for the unexpected by being informed.

As stressed by Teperi, Vorne and Sipponen (2015, 5), before reaching the goals set for OSH culture the current stage of cultural maturity has to be assessed. Thus the results of the FTA's OSH culture assessment as a whole are demonstrated by reflecting its themes on the HSE culture step ladder and its five levels of cultural maturity in Figure 6 below. The figure is refined in accordance with (Holstvoog et al. 2006, 2).

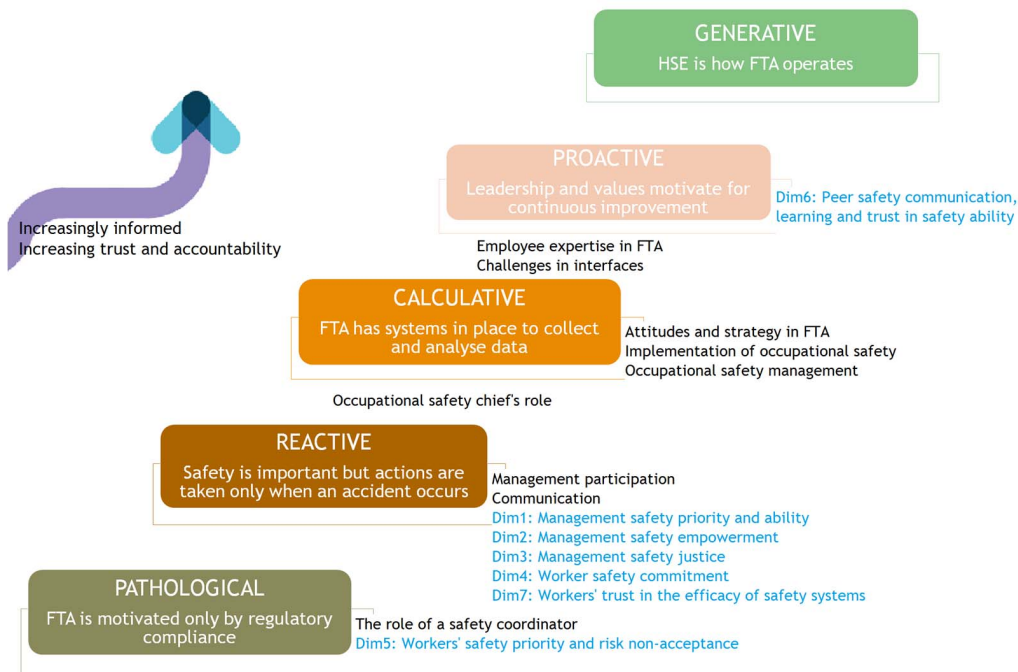


Figure 6: FTA's OSH culture assessment results reflected on the HSE culture step ladder

As can be seen in Figure 6 where the FTA's OSH culture assessment results are reflected on the HSE culture step ladder, the themes of semi-structured interviews and dimensions of NOSACQ-50 are emphasised on the reactive level of cultural maturity. In reactive approaches, as stated by Hollnagel (2007, 221), barriers are used to guarantee safety, which by itself is insufficient although in general barriers are necessary. Hollnagel (2007, 226) defines specifically 'organisational barriers', meaning barriers that organisations implement and initiate are in the form of instructions, rules and procedures applied by employees rather than the organisation. As an example, a work permit that is supposed to prevent working. In the FTA these reactive approaches, organisational barriers, are used and it can be detected from the assessment results. However, in accordance with Hollnagel (2007, 229) occupational safety cannot be guaranteed only by using barriers as reactions or responses in preventing accidents from reoccurring. Occupational safety must be proactive as well, even when it requires taking risks.

## 8 Conclusions

The objective of the thesis was to advance and support developing OSH procedures in the FTA by assessing the maturity level of FTA's OSH culture and defining its development needs. To reach the aims an assessment was conducted by using a triangulation method where analytical, academic and pragmatic assessment approaches were combined. Based on the assessment results, supporting factors, and on the contrary weakening the FTA's OSH culture, are also defined. Additionally, how the FTA maintains and develops OSH culture in practice is described and possible regional differences are studied. Finally, suggestions to develop OSH culture in the FTA are presented.

### 8.1 Answering research questions

The OSH culture assessment was based on three central research questions that were derived from the research problem. While reflecting on the assessment results attained by using the triangulation method, the chapter also attempts to answer the research questions. The answered research questions form the conclusions for the FTA's OSH culture assessment and this thesis.

*Research question:* What factors support the Finnish Transport Agency's occupational safety culture and how do they maintain and develop it in practice?

In the assessment results was stated that a factor supporting the FTA's OSH culture is the management's approachability, although it is not visible in everyday work. However, this is also seen as management showing trust. As a supporting factor the amount and availability of information is also derived. And it was mentioned that the FTA does not have major challenges in interfaces with its stakeholders, such as project supervisors. On the contrary, this result was highly questioned in the workshop by the focus group. Implementation of occupational safety is based on the FTA's instructions, document templates guiding the procurement processes and their development as well as trainings. These are found to be supporting factors. In other respects, processes are guided technically and not through human interaction. This policy can, indeed, be observed from the assessment results as a whole.

To maintain and develop OSH culture the FTA organises seminars where collaborators are invited. Regarding employee expertise, the FTA has provided the possibility to its employees to participate in occupational safety development in expertise-related projects "which has been reinforcing" and "a pleasant addition to tasks". Also, the occupational safety chief is proactively organising events, participating in them and along with projects. In short, well-functioning practices do exist and those mentioned above can be defined as networked collaboration where, according to Engeström & Kerosuo (2007, 344) learning is seen as activities that are constructed and explored by following the emerging objects and outcomes of activities, also referred to as inter-organisational learning.

*Research question:* What factors weaken the Finnish Transport Agency's occupational safety culture and are there any regional differences?

As addressed in the assessment results the weakening factors for the FTA's OSH culture can be identified as follows. The operative actions to implement the FTA's strategy into production and to the field are light. Also, the organisational structure is to some extent scattered, which can have the effect that little cooperative work is done among the FTA employees. This could have had an effect on employees' feel of community and thus the FTA not being able to reach the highest, generative, level of cultural maturity on the HSE culture step ladder; especially when considering regionalising. It was stated that the FTA is seen as "a freeloader on project supervisors' know-how while their know-how and its importance is forgotten". The focus group suggested that the reason for this finding could be that the FTA's employees do not have a full understanding of what the FTA requires from the project supervisors as well as since the FTA only provides introductory information, the complementation of which is the project supervisor's responsibility. Processes are conducted by consultants leading to the FTA's employees not gaining cumulative learning, succeeding and errors and only the compulsory documentation is conducted by the FTA and thus the valuable substance tasks re-main at minimum.

Generally amongst the FTA's employees the management is perceived as being distant, especially in certain regions. It was perceived that the management leaves the employees to do their expertise work independently. It was also stated that the FTA's management is not visibly participating in the theme of occupational safety. Communication is based on the principal of need, especially amongst colleagues and the information sharing is mainly one-way. Employees are not assisted to find and study the essential information. The same conclusion of the importance of improving the FTA's employees' know-how through familiarisation, competence and training was gained by Aaltonen (2016, 19). Again, processes are guided technically and not through human interaction. The theme of employee expertise in the FTA revealed that there is no actual understanding of colleagues' expertise, responsibilities and how they implement occupational safety in their work. Thus, questioning that every employee in the FTA conducts processes accordingly exists. This result can be identified in dimension 5, worker's safety priority and risk non-acceptance, and its relation to dimension 4, worker safety commitment and dimension 6, peer safety communication, of the NOSACQ-50 diagram.

It was also stated that the FTA's employees feel that they have to conduct responsible tasks without resources. The pilot project (Teperi et al. 2015) got the same result on time pressure and rush. Also the strong personalisation of the occupational safety chief's role weakens the OSH culture. It would seem that the FTA's employees see the safety chief as having the role of placing blame or punishing people, which affects employees' willingness to share information about problems related to safety. As stated by Dekker (2012, 39), it is the complexity of just culture, "wanting everything to be transparent, but not tolerating everything" but not mixing the just culture's openness to uncritical tolerance. Furthermore, as stated by one of the interviewees, "good management is leadership, leading the expertise. It is trust towards the employees, not overwhelming and unnecessary patronising". Thus the complex of occupational safety management vs. leadership should be considered. On the other hand, as stated earlier about conducting responsible tasks without resources, the same phenomenon can be identified in the occupational safety chief's role. The occupational safety chief's resources alone are not sufficient to act as a supportive operator since the resources of an only full-time occupational safety professional, the chief, goes to reactive measures when incidents occur. The occupational safety-

related resources are inadequate to conduct effective preventive processes in occupational safety-related operations.

*Research question:* How occupational safety culture could be developed in the Finnish Transport Agency?

Primarily, OSH culture needs to be clearly defined, publicly stated and it has to be commonly understood amongst the employees. To develop OSH culture in the FTA the management should familiarise themselves with the employees' specialised expertise by managerial involvement. Similar results on management participation were gained in a work-satisfaction survey and thus the development suggestion was supported by the focus group in the workshop. Communication should be regular and interactive. Thus, sessions should be both organised officially with short bulletins and topic openers and unofficially by discussing made observations. To develop implementation of occupational safety it was proposed to conduct an assessment tool for the FTA's own employees to revise their operations and procedures.

For better understanding of the instructions and guidelines on the employee level the units could go through the instruction regarding their tasks jointly for clarifying and to find a common policy since it was stated in the interviews that "there is a need for a concrete case and practical-based trainings and education." Concerning the role of a safety coordinator it was also stated that "a clear structure and management is needed in this process and transformation phase". Again, it would seem that processes are guided technically and not through human interaction. To develop the occupational safety chief's role it was stated that guidance should be more justified and interactive instead of setting requirements as a written demand. For this, leadership operations and supporting actions/actors would be needed to implement such processes. This is why it would be beneficial to consider the responsibilities of the occupational safety chief and the overall organisation in the FTA. The role of occupational safety chief should be defined by superiors and the FTA's management.

Bearing in mind that OSH culture has not been earlier defined in the FTA as a whole, conducting this assessment will hopefully have an effect on the FTA's management to start taking actions to first of all clearly define and publicly state the FTA's OSH culture and secondly start to continuously implement and develop it. Since the occupational safety chief's presence in a certain department has affected the department's communication, especially on meeting discussions, it would be beneficial for the FTA if the occupational safety chief starts to attend other departments' and units' meetings to interact and learn from other fields of transport.

The FTA has no major challenges in interfaces with its collaborators. In fact, the FTA's cooperation with other actors in transportation systems helps to create an image and increase value for both transportation systems and it is recommended that the FTA boost cooperation with other authors in the field of transportation such as logistics and traffic operators, transportation system operators, as well as Finnish citizens using the roads, railways and waterways. This cooperation and development has succeeded. Now the same know-how should be transferred within the organisation.

In implementing occupational safety and to ensure employees' complete understanding regarding obligations, the FTA should organise education and training to implement OSH comprehensively and to increase awareness of obligations rather than leaving the employees to find the instructions from the intranet and read them individually. In addition, to develop OSH culture regarding employee expertise the FTA should continue supporting the view that occupational safety is pervasive and amongst the FTA's employees' occupational safety is perceived as the most important factor.

Regarding the occupational safety chief's role; to avoid the monotonous and repetitive point of view in occupational safety that the personalisation of the occupational safety chief's role has caused the recommendation for the FTA to conduct mapping on occupational safety chief's role by defining the network and activities regarding the role and list down the role's expectations (Human Resources at MIT n.d.). Based on the role mapping a clear divide on the activities should be made amongst the occupational safety chief and an occupational safety expert to take responsibility. This same method can be used to define the roles and responsibilities amongst project managers, safety coordinators and the occupational safety chief.

## 8.2 The validity and reliability of the assessment

This thesis, the OSH culture assessment conducted in the FTA, was implemented by using methodological triangulation, in other words a design research. Design research is a combination of various methods which is why the credibility (validity and reliability) evaluation has to be conducted by using the credibility criteria of each used method (Kananen 2013, 181); in this case the criteria of quantitative and qualitative research elements. As Kananen (2013, 181-182) stresses, accurate documentation of what, why and how the assessment was conducted is the basis of a credible study project. Also the recorded and presented solutions must be justified.

### 8.2.1 Credibility of quantitative research element

Reliability of a quantitative research element means the consistency of the assessment results. That is that similar results would be derived if the assessment would be repeated. The sub-categories of reliability are stability, which evaluates how the tool is maintained over time, and consistency, which evaluates how the same factors are measured by different parts of the tool (Kananen 2013, 183-184). Thus, the only way to ensure the reliability of the quantitative research element, the questionnaire, would have been revising it. On the other hand, as Kananen (2013, 184) states, the questionnaire has already influenced, contaminated, the research population. Thus, the author decided not to revise the questionnaire. Furthermore, as emphasised in the thesis, the assessment's aim is to develop the OSH culture, whereas the consistency of results in the quantitative method is required. The solution for this new problem is presented in the recommendations for further research.

Validity of a quantitative research element means that the correct factors are assessed. The sub-categories of validity are external validity and internal (contents, structural and criteria) validity (Kananen 2013, 183). The quantitative research element, the questionnaire, was sent to the whole research population, that is, the specific group of the FTA's employees whose job description included regular visiting at worksites. Kananen (2013, 185) points out that in these complete research projects, usually design research, the external validity is not a concern since all units of assessment are researched. When the research population is small, in this case less than a hundred, all concerned are easy to reach and thus it is not sensible to apply a method of sampling. On the other hand, even with the possibility to participate in the OSH culture assessment, not all from the research population answered the questionnaire. In accordance with Kananen (2013, 186) generalising is not the aim of design research and thus external validity is not important. This assessment focuses on a specific group of employees in the FTA and thus it is not transferable to other comparable organisations.

Regarding internal validity, more specifically content validity, it is important that correct tools are used (Kananen 2013, 186). Thus, the justifications and documentation of applying the questionnaire, NOSACQ-50, are presented in the thesis and shown in Chapter 3.4.1. As Kananen (2013, 186) points out, in design research it is important to use a tool that is associated with development when assessing the objective. This was one of the reasons for using NOSACQ-50 in the OSH culture assessment and this is further discussed in recommendations for future research. Kananen (2013, 187) also indicates that content validity is similar to structural validity in that the concepts of the quantitative research elements are evaluated regarding the functionality of individual concepts. The functionality of individual concepts of NOSACQ-50 applied in this OSH culture assessment was commented on in the questionnaire. As stated earlier, in the thesis where feedback about applying the questionnaire template was presented, some of the items of the questionnaire's dimensions did not completely correspond to the needs where an organisation, operating as a client, was researched. Recommendations for further assessment regarding the concepts are presented in Chapter 8.4.

Kananen (2013, 187) states that the criteria validity of internal validity is based on referring to other research with similar supportive results. In this thesis support is gained from the presented pilot project's results similar to the conducted OSH culture assessment's results. In addition, similar observations of the results of the FTA's safety and security culture research authenticated by Aaltonen are used for support.

## **8.2.2 Credibility of qualitative research element**

Kananen (2013, 189-190) stresses that the credibility evaluation of qualitative research element is difficult. This is especially true when the objects of the assessment are human beings who think, feel and can change opinions without reasons. Thus, the credibility of the qualitative research element is emphasised on its various stages. To begin with, the evaluation of ability to assess is enabled by documenting the justifications of used data collecting, analysis and interpretation methods. These issues are presented in chapters discussing the semi-structured theme interviews and workshop with the focus group.

Secondly the consistency of interpretation can be made by creating themes based on the research material the research material and confirmed by another researcher (Kananen 2013, 190). To ensure consistency a special researcher from the FIOH mentored the thesis author in implementing the assessment in its various stages and commented on the preliminary analysis. Kananen (2013, 190) points out that these two credibility factors could have been confirmed simply by having the concerned person read material, for example, having the interviewed employee read the translated and confined transcription abstracts. However, this confirmation method was not applied in the OSH culture assessment. On the other hand, the translated and confined transcription abstracts and development suggestions were discussed in the workshop with the focus group. Regarding the workshop with the focus group, as EU-OSHA (2011, 25-26) stresses, a specialist as a pair in conducting the workshop would have increased its value since the method was more open than the semi-structured theme interviews and the discussions might have been influenced by group dynamics. However, the workshop helped the author gain more qualitative insight into the interview results and all in all guiding the discussions helped to gain an interpretable outcome.

Thirdly, as illustrated by Kananen (2013, 191) the saturation in this design research was reached since the individual translated interview abstract repeated various elements creating themes and the themes and made observation were supported by the focus group in the workshop. Finally, as stated by Kananen (2013, 191-192) an accurate description of the assessment set up, object and aim is required for transferability. This enables applying the results in determining the situation's comparability regarding the initial assumptions. The thesis author has enabled the transferability by describing the OSH culture assessment as accurately as possible.

### 8.3 Self-evaluation of scientific approach

In design research there are three skills that are needed; participation, mastery of processes and mastery of research, claimed by Kananen (2013, 55-57). The thesis author's participation in the assessment operations was in two roles, working as a trainee in the FTA and writing a bachelor's thesis in Laurea UAS, while conducting the OSH culture assessment as a researcher. The thesis subject was commissioned by the FTA and after the project proposal was accepted the thesis author started the planning phase of the thesis project and began to build a knowledge base on the subject. The implementation of assessment preparations went simply and promptly since the thesis author was familiar with the agency due to already working there as a trainee. The earlier working experience in the FTA proved to be helpful during the assessment process, the thesis author could master the FTA's processes.

It emerged from the feedback that when informing the research population about the thesis project, a more clear definition of what was meant by occupational safety would have been needed. In the implementation phase of the assessment process it was clear that the author's basic know-how of the agency's processes and operations was a benefit. Especially, it speeded up the interviews since the professional terminology was familiar. Afterwards, regarding familiarisation to the phenomenon, it would have been beneficial to conduct the qualitative research methods and the content analysis first. After which there would have been an initial understanding for developing the quantitative research methods. In other words conducting the



adjustments for NOSACQ-50 template (for its dimensions and items), before applying the method.

In the content analysis phase the FIOH mentor was essential in understanding the phenomenon of the OSH culture and its themes in the FTA. The thesis author's mastery of research was not comprehensive and thus a mentor was supportive during the assessment process. The guidance in analysing the data and afterwards commenting on the results were supportive throughout the process. In particular the theme 'occupational safety chief's role' was ethically challenging for the thesis author because of the earlier and current cooperation of a supervisor and trainee. In this the support and guidance of the thesis author's superior in the FTA, the head of the unit, was invaluable. On the whole the guidance sessions with the Laurea UAS supervisor, the FTA supervisor and FIOH mentor were helpful in finding implementation solutions. During the thesis project the thesis author gained valuable know-how on occupational safety in the field of infrastructure and on OSH culture which enabled professional growth.

## 8.4 Recommendations for further assessment

The conducted OSH culture assessment focused on a research population that consisted of a specific group of the FTA's employees whose job description included regular visits at worksites. The assessment was the first in its defined category implemented in the FTA. The objective of the assessment was to assess the current level of cultural maturity regarding OSH and to define its development needs in order to advance and support development of occupational safety procedures. Thus, the results of the assessment open up an interesting possibility for further assessment. As emphasised in credibility evaluation, a further assessment aim is to develop the OSH culture, whereas the consistency of results in the quantitative method is required. The solution for this problem is to conduct a follow-up.

It is highly recommended to conduct a follow-up on OSH culture development in the research population to ensure that the development suggestions have been properly implemented and cultural maturity has developed. For the follow-up it would be beneficial to revise the used questionnaire, NOSACQ-50, to correspond to the various discussed themes of the interview content analysis. The tailored questionnaire would ensure that the development proceedings have been applied successfully by combining the NOSACQ-50 diagram to the HSE culture step ladder. As stated in the credibility evaluation, in design research it is important to use a tool that is associated with development when assessing the objective. A regular follow-up and further assessments of OSH culture would provide valuable in-formation in developing the cultural maturity of the FTA.

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## Liikenneviraston työturvallisuuskulttuurin kehitysvaiheen kartoitus

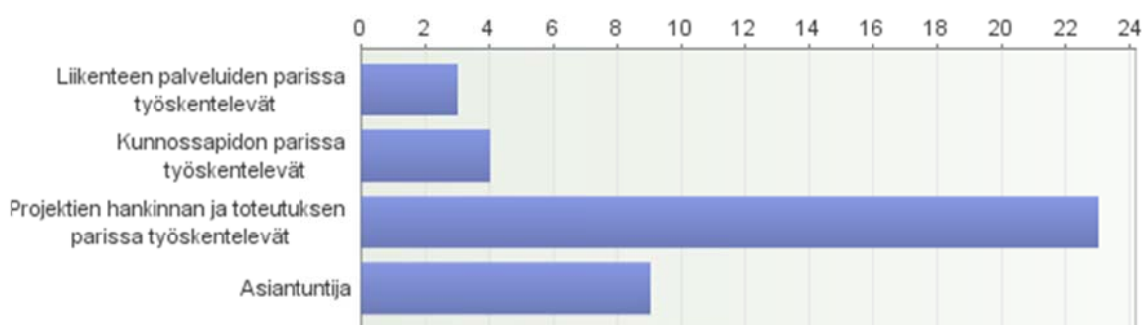
1. Olen lukenut kyselyn esittelyn ja hyväksyn kyselyyn vastaamisen mainituilla ehdoilla.

Vastaajien määrä: 39



2. Mihin Liikenneviraston henkilöstöryhmään kuulut?

Vastaajien määrä: 39



Tämä kysely on laadittu Pohjoismaisen työturvallisuusilmapiirikyselyn (NOSACQ-50) pohjalta. Kysely on Pohjoismaisen työympäristöasiantuntijaryhmän kehittämä.

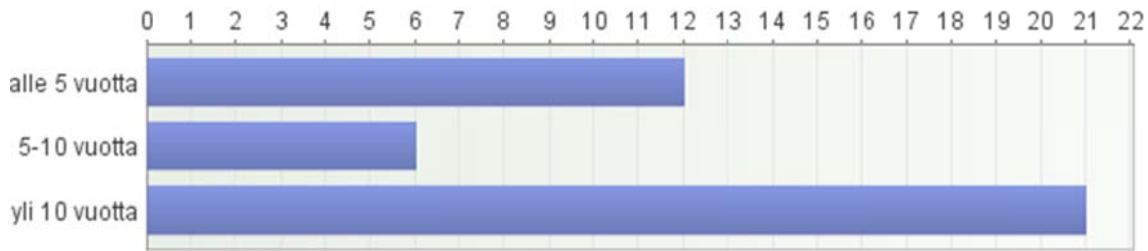
3. Minkä väylämuodon parissa työskentelet?

Vastaajien määrä: 39



#### 4. Kuinka pitkään työurasi on organisaatiossa jatkunut (nykyinen organisaatio tai sitä edeltävät)?

Vastaajien määrä: 39

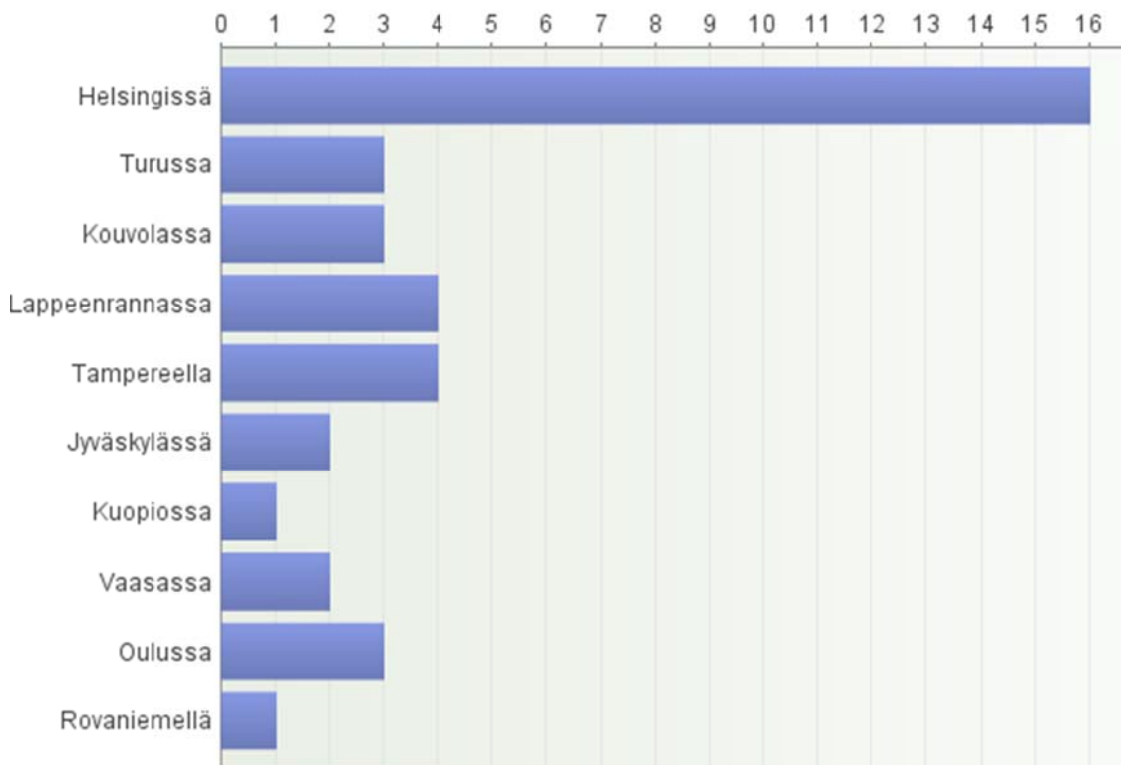


Kyselyn tarkoitus on kartoittaa sinun käsityksesi työturvallisuudesta Liikennevirastossa.

Vastauksiasi käsitellään tietokoneella ja niitä käsitellään luottamuksellisesti. Yksittäisiä vastauksia ei esitetä missään. Sinulla on oikeus jättää vastaamatta koko kyselyyn. Huomaathan, että et pääse siirtymään seuraavaan kysymykseen ennen kuin olet vastannut kysymyksen jokaiseen kohtaan.

#### 5. Pääasiallinen toimipisteeni sijaitsee

Vastaajien määrä: 39



Kerro seuraavassa osiossa, kuinka näet johtajien ja työnjohtajien tällä työpaikalla hoitavan työturvallisuusasioita. Vaikka jotkut kysymykset voivat vaikuttaa hyvin samanlaisilta, vastaa jokaiseen.

## 6. Työturvallisuusjohtamisen tärkeys

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Johto kannustaa työntekijöitä työskentelemään turvallisuussääntöjen mukaisesti - myös silloin, kun työaikataulu on tiukka	1	2	16	20	39	3,41
Johto varmistaa, että jokainen saa tarvittavan turvallisuustiedon	1	9	22	7	39	2,9
Johto katsoo muualle, kun joku on huolimaton turvallisuuden suhteen	21	14	4	0	39	1,56
Johto asettaa turvallisuuden työnteon edelle	0	11	23	5	39	2,85
Johto hyväksyy työntekijöiden riskinoton, kun työaikataulu on tiukka	16	17	5	1	39	1,77
Me Liikennevirastossa työskentelevät luotamme johdon kykyyn hoitaa turvallisuutta	0	6	27	6	39	3
Johto varmistaa, että turvallisuusongelmat, jotka havaitaan turvallisuuskierroksilla/-tarkastuksissa, korjataan välittömästi	0	9	22	8	39	2,97
Kun on havaittu riski, johto ei piittaa korjaustoimenpiteistä	14	22	3	0	39	1,72
Johdolta puuttuu kyky hoitaa turvallisuutta kunnolla	12	19	8	0	39	1,9
Yhteensä	65	109	130	47	351	2,45

## 7. Työturvallisuuden mahdollistaminen

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Johto pyrkii suunnittelemaan mielekkäitä ja toimivia turvallisuuskäytäntöjä	0	9	26	4	39	2,87
Johto varmistaa, että jokainen voi vaikuttaa työnsä turvallisuuteen	0	6	25	8	39	3,05
Johto kannustaa työntekijöitä osallistumaan työntekijöiden turvallisuuteen vaikuttavien päätösten tekemiseen	0	5	26	8	39	3,08
Johto ei koskaan ota huomioon työntekijöiden turvallisuutta koskevia ehdotuksia	18	21	0	0	39	1,54
Johto pyrkii siihen, että työpaikalla jokaisella on hyvä osaaminen koskien turvallisuutta ja riskejä	2	4	24	9	39	3,03
Johto ei koskaan kysy työntekijöiden mielipidettä ennen kuin tekee päätöksiä turvallisuudesta	10	27	0	2	39	1,85
Johto ottaa työntekijät mukaan tehdessään päätöksiä turvallisuudesta	0	7	25	7	39	3
Yhteensä	30	79	126	38	273	2,63

## 8. Työturvallisuuden oikeudenmukaisuus

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Johto kerää tapaturmatutkimuksissa luotettavaa tietoa	0	2	27	10	39	3,21
Johdon taholta tulevien rangaistusten (kielteisten seurausten) pelko estää työntekijöitä ilmoittamasta läheltä piti -tapauksista	20	17	1	1	39	1,56
Johto kuuntelee huolellisesti kaikkia, jotka ovat olleet mukana tapaturmassa	1	5	31	2	39	2,87
Johto etsii syytä, ei syyllisiä, kun tapaturma sattuu	2	5	26	6	39	2,92
Johto syyttää tapaturmista aina työntekijöitä	17	20	2	0	39	1,62
Johto kohtelee työntekijöitä oikeudenmukaisesti, jos heille sattuu tapaturma	0	5	28	6	39	3,03
Yhteensä	40	54	115	25	234	2,53

Kerro seuraavassa osiossa, kuinka näet työntekijöiden tällä työpaikalla hoitavan työturvallisuusasioita. Vaikka jotkut kysymykset voivat vaikuttaa hyvin samanlaisilta, vastaa jokaiseen.

## 9. Työntekijöiden työturvallisuuteen sitoutuminen

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Me Liikennevirastossa työskentelevät yritämme kovasti yhdessä saavuttaa korkean turvallisuustason	0	3	19	17	39	3,36
Me Liikennevirastossa työskentelevät varmistamme yhdessä, että työpaikka pidetään aina siistinä	1	7	27	4	39	2,87
Me Liikennevirastossa työskentelevät emme välitä toistemme turvallisuudesta	16	22	1	0	39	1,62
Me Liikennevirastossa työskentelevät emme tee mitään havaituille riskeille	15	23	1	0	39	1,64
Me Liikennevirastossa työskentelevät autamme toisiamme työskentelemään turvallisesti	0	2	30	7	39	3,13
Me Liikennevirastossa työskentelevät emme ota vastuuta toistemme turvallisuudesta	10	25	4	0	39	1,85
Yhteensä	42	82	82	28	234	2,41



## 10. Työturvallisuuden tärkeys työntekijöille ja riskien hyväksyttävyyttä

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Me Liikennevirastossa työskentelevät pidämme riskejä väistämättöminä	5	19	14	1	39	2,28
Me Liikennevirastossa työskentelevät pidämme pikkutapaturmia normaalina osana jokapäiväistä työtä	15	23	1	0	39	1,64
Me Liikennevirastossa työskentelevät hyväksymme vaarallisen käyttäytymisen niin kauan kuin tapaturmia ei satu	21	18	0	0	39	1,46
Me Liikennevirastossa työskentelevät rikomme turvallisuussääntöjä saadaksemme työn valmiiksi ajoissa	19	20	0	0	39	1,51
Me Liikennevirastossa työskentelevät emme koskaan hyväksy riskinottoa, ei siinäkään tapauksessa, että työaikataulu on tiukka	0	11	17	11	39	3
Meidän Liikennevirastossa työskentelevien mielestä työmme ei sovi pelkureille	18	16	2	3	39	1,74
Me Liikennevirastossa työskentelevät hyväksymme riskinoton työssä	11	25	3	0	39	1,79
Yhteensä	89	132	37	15	273	1,92

## 11. Työntekijöiden välinen työturvallisuuden kommunikaatio, oppiminen ja luottamus työturvallisuuden mahdollistamiseen

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Me Liikennevirastossa työskentelevät yritämme löytää ratkaisun, jos joku osoittaa turvallisuusongelman	0	2	24	13	39	3,28
Me Liikennevirastossa työskentelevät tunnemme olomme turvalliseksi työskennellessämme yhdessä	0	3	24	12	39	3,23
Me Liikennevirastossa työskentelevät luotamme suuresti toistemme kykyyn varmistaa turvallisuus	0	7	29	3	39	2,9
Me Liikennevirastossa työskentelevät opimme kokemuksiemme pohjalta ehkäisemään tapaturmia	0	3	27	9	39	3,15
Me Liikennevirastossa työskentelevät otamme vakavasti toistemme mielipiteet ja ehdotukset turvallisuudesta	0	4	24	11	39	3,18
Me Liikennevirastossa työskentelevät puhumme harvoin turvallisuudesta	13	20	6	0	39	1,82
Me Liikennevirastossa työskentelevät keskustelemme turvallisuusasioista aina, kun niitä ilmaantuu	0	6	25	8	39	3,05
Me Liikennevirastossa työskentelevät voimme puhua vapaasti ja avoimesti turvallisuudesta	0	1	17	21	39	3,51
Yhteensä	13	46	176	77	312	3,02

## 12. Työntekijöiden luottamus turvallisuusjärjestelmän tehokkuuteen

Vastaajien määrä: 39

	Täysin eri mieltä	Eri mieltä	Samaa mieltä	Täysin samaa mieltä	Yhteensä	Keskiarvo
Meidän Liikennevirastossa työskentelevien mielestä hyvällä työsuojeluvaltuutetulla on tärkeä rooli tapaturmien torjunnassa	1	5	28	5	39	2,95
Meidän Liikennevirastossa työskentelevien mielestä turvallisuuskierroksilla/tarkastuksilla ei ole mitään vaikutusta turvallisuuteen	15	22	2	0	39	1,67
Meidän Liikennevirastossa työskentelevien mielestä turvallisuuskoulutuksesta on hyötyä tapaturmantorjunnassa	1	0	25	13	39	3,28
Meidän Liikennevirastossa työskentelevien mielestä turvallisuuden ottaminen huomioon ennakosuunnittelussa ei ole mielekästä	23	15	0	1	39	1,46
Meidän Liikennevirastossa työskentelevien mielestä turvallisuuskierrokset/tarkastukset auttavat löytämään vakavia vaaroja	0	2	24	13	39	3,28
Meidän Liikennevirastossa työskentelevien mielestä turvallisuuskoulutus ei ole mielekästä	17	21	1	0	39	1,59
Meidän Liikennevirastossa työskentelevien mielestä on tärkeää, että on selkeät turvallisuustavoitteet	0	0	18	21	39	3,54
Yhteensä	57	65	98	53	273	2,54

13. Jos haluat lisätä jotakin vastauksiisi tai jos sinulla on kommentteja tutkimuksesta, voit kirjoittaa ne tähän.

Vastaajien määrä: 11

-	Kysymykset kohdistuivat huonosti Tilaajina toimivaan organisaatioon.
-	Turha kysely. Samat tulokset olisi saanut noin kymmenellä kysymyksellä.
-	Kaikessa tekemisessä on riskejä. Kyse on siitä, miten niitä hallitaan. Jos et tee mitään, vältät kaikki riskit - paitsi tietysti terveysriskit, jotka ovat isot silloin, kun et käytä energiaasi.
-	Turvallisuuden varmistaminen projekteissa jää pitkälti projektin vastuuhenkilön vastuulle. Urakoiden turvallisuuteen liittyvien vastuiden määrittely on epäselvä. Erityisesti olen huolissani Liikenneviraston työntekijöiden oikeusturvasta, jos urakoitsijan henkilöstölle sattuu vakavia tapaturmia.
-	Olipa hurmoshenkinen kysely! Valitettavasti väliällä mennään jo liian pitkälle, eikä itse työsuorituksella ole enää mitään väliä. Turvallisuuskoordinaattorin vastuu pitää ratkaista, ei kierrellä ja kaarrella, eikä sysätä kaikkea vastuuta työntekijälle. Nyt johto esille tässä kysymyksessä.
-	Turvallisuuskoordinaattorina toimimisen vastuut tulisi yhtenäistää toimialoittain aj tuoda riittävän selvästi esille. Tällä hetkellä vastuut ovat epäselvät. Liikenneviraston tulisi ottaa turvallisuuskoordinaattorina toimimiseen vastuuvakuutus työntekijöille, jotka toimivat ko. tehtävässä.
-	Kysymysten osalta vastausvaihtoehdot olivat rajalliset ja ohjaavat lopputulosta, joka ilmeisesti on haluttu. Olisi voinut olla lähestymistapa, jossa olisi ollut myös nykykäytäntö on huono, on hyvä, on parannettavaa. Olisi hyvä jos turvallisuutta ohjeistavat olisivat olleet joskus oikeissa projekteissa ja oikeissa töissä, jossa turvallisuus konkretisoituisi.
-	Ylipäätään turvallisuuteen suhtautuminen on ristiriitaista. Johto suhtautuu siihen vakavasti, erityisesti, jos selkeä riski tunnistetaan, keskijohto ja osa projektijohdosta suhtautuu turhan yliolkaisesti, kun riski ei ole vielä konkretisoitunut. Tulisi kuitenkin kaikessa turvallisuudessa pyrkiä enemmän ennakkointiin ja kirjoittaa tämä ennakkointi myös selväksi tavoitteeksi ja toimintatavaksi, niin työ- kuin liikenneturvallisuudessa!
-	Monesti kyllä suunnitellaan turvallisuutta etukäteen, mutta miten on seurannan laita ja reagoinnin, jos havaitaan puutteita tai virheitä ennakkosuunnittelussa? Onko sille aikaa, halua ja resursseja esim. hankkeissa? Siis tapauksissa, kun joku asiantuntija havaitsee puutteen ennen kuin mitään oikeasti on tapahtunut? Toki silloin toimitaan, kun onnettomuus on tapahtunut, mutta eikö se ole selvästi liian myöhäinen vaihe?
-	Johdon on tehtäviä antaessaan varmistettava, että tekijöillä on riittävästi osaamista, kykyä ja aikaa annetun tehtävän suorittamiseen. Johdon on myös seurattava, tuleeko työ tehdyksi: liian usein työt annetaan, mutta niiden etenemisestä (tai etenemisen edellytyksistä) ei juurikaan kiinnostuta. Tällainen asenne voi johtaa hutilointiin ja omavaltaisiin päätöksiin sekä tarpeettomaan riskinottoon.
-	Koulutus ei ole riittävää vastuuseen nähden
-	olis in toivonut yhtä vaihtoehtoa lisää - "en osaa sanoa" Nyt oli liian musta valkoisia vastauksia. Lisäksi aluksi selvitys: mitä on työturvallisuus. Tarkoitetaanko henkilöstön työturvallisuutta vai palveluntuottajien vastaavaa. Nythän Liikenneviraston työsuojelu painottuu vai työmaille ei omaan henkilöstöön.

Kiitos kyselyyn vastaamisesta ja osallistumisestasi Liikenneviraston työturvallisuuskuulttuurin kartoittamiseen.

dd.mm.2016

## OSH culture assessment, interview frame

### Background information

1. Where is your office located at?

–

2. What is your job description?

–

### Management, commitment and involvement

1. Describe your unit's/organisation's management in general and occupational safety management more specifically. *((organisational structure))*

–

2. How employees are committed implementing occupational safety in their job? In your perception, what factors have affected it? *((expertise from different fields and their professional OSH culture))*

–

3. How would you describe interaction and communication on occupational safety in your organisation? *(general factors relating occupational safety, singular events)*

- a. Within your unit/department *(working in team and its functionality)*

–

- b. Between units/departments

–

4. How does management communicate on occupational safety, how is it a part of the theme? *(meetings, spoken feedback; style and content)*

–

### Policies and strategical objectives

5. Have you observed any incoherence between objectives set in Finnish Transport Agency's strategy or policies and objectives set for occupational safety?

–

### Organisation, responsibilities and guidelines

6. ~~Have there been any changes in operating environment or in the organisation? What?~~

—

dd.mm.2016

7. What kind of are the occupational safety guidelines and instructions for your industry? Is it functional and usable?

-

8. What does occupational safety mean in your job? How is it taken into account? What does your unit need to (special) pay attention to in implementing occupational safety?

-

- ~~9. Has the current situation in society affected to organisation's/unit's occupational safety implementation?~~

—

### **Implementation, monitoring and audits**

- ~~10. Technology and equipment used in work; are you satisfied and are they functional?~~

—

11. What occupational safety management tools and procedures are in use? (reporting, auditing, training, intervening to faults) ((functionality, standards, routine, problems))

-

### **Challenges in interfaces**

12. How organisation's collaborators participate in developing occupational safety operations?

-

13. Have you noticed any problems related to occupational safety with collaborators? (policies, interaction) On the contrary, what has functioned well with the collaborators?

-

14. Please relate of a surprising or unexpected even where was limited resources. How did you react? What was a key factor? Where was succeeded and what had weaknesses? ((occupational safety critical factor, OSH cultural interfaces, occupational safety management))

-

### **Closing**

15. What factors in Finnish Transport Agency support occupational safety? In your opinion, where has been succeeded in occupational safety?

-



### ***Feedback and additions in general***

-




**Liikenneviraston  
työturvallisuuskulttuurin  
kartoitus**

Työpaja – työturvallisuuskulttuurin kehitysvaiheen kartoitus Liikennevirastossa

## Työpajan ohjelma

1. Kartoitusprosessin esittely
  - Tutkimuksen kohde ja metodit
2. Tulokset (keskustelua)
  - Alustavan analyysin ja kehitysehdotusten läpikäynti
    - Kyselyn tulokset
    - HSE culture step ladder
  - Työpajaan tuodut kehitysehdotukset sekä muut havainnot



## Kartoitus

### Taustaa ja tutkimuksen kohde

- Pohjautuu Radan kunnossapito-yksikössä suoritettuun pilottitutkimukseen
- Liikenneviraston työntekijät, joiden työnkuvaan kuuluu säännöllinen työmailla käyminen, 63 liikennevirastolaista

### Metodit

- Kysely, koko tutkimuksen kohteelle
- Teemahaastattelut, 10% tutkimuksen kohteesta
- Työpaja, tutkimuskohteen esimiehet, työsuojeluhenkilökunta sekä työturvallisuuspäällikkö

### Yhteistyössä

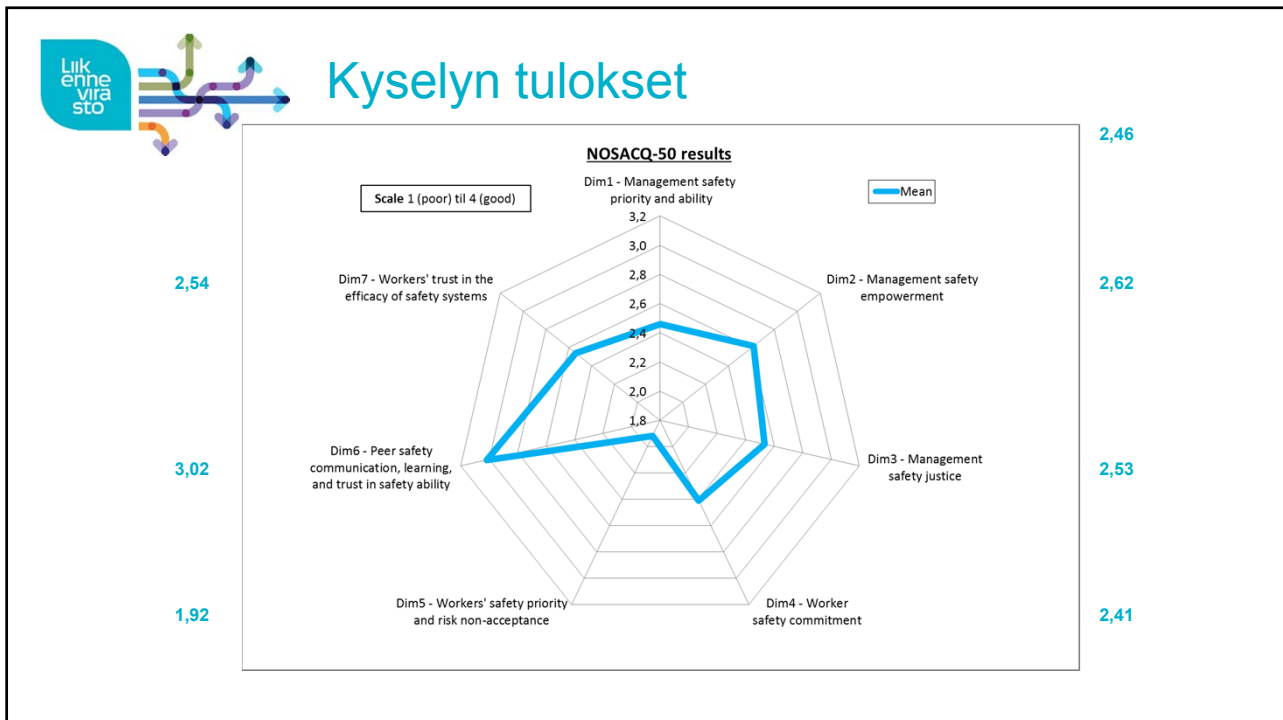


Finnish Transport Agency



## Kysely – NOSACQ-50

- Kysely laadittiin Pohjoismaisen työturvallisuusilmapiirikyselyn (NOSACQ-50) pohjalta. NOSACQ-50 on Pohjoismaisen työympäristöasiantuntijaryhmän kehittämä.
- Kyselyn tarkoitus oli kartoittaa Liikenneviraston työntekijän käsitys työturvallisuudesta Liikennevirastossa.
- Kyselyyn vastasi 39/63 → 62% tutkimuksen kohteesta
  - Vastausprosentti on erittäin hyvä
  - Virhemarginaali ja luotettavuustaso vielä varmistamatta



**Attitudes and strategy in FTA**

- Occupational safety is generally considered as important
- The organisational structure is scattered, mainly because of the regionalisation
- Regionalising has created small working communities, cooperation there is close-knit but there is very little work with and amongst other employees in FTA
- Strategic goals are set high but operative actions to implement the strategy are light
- Safety is not highlighted in strategic objectives. There is a strategy mindset in FTA and in contrary the project supervisors who actually commit and implement occupational safety but it is required by their organisation
  - FTA is "a freeloader on project supervisors know-how while the own know-how and its importance is forgotten"
- FTA should implement the strategy in practice in a language that its understanding will be assured. In addition FTA should bring "the attitude forward" and stress that "FTA is a socially responsible operator"





## Management participation

- Management is felt distant, especially in regions, leaving the employees to do their expertise work independently – on the other hand management is approachable and it not involving in employees' expertise work shows trust
- Not visibly participating to the theme of occupational safety, discusses on related issues and by task dividing the participation is left for the operative level to conduct
- Reacts immediately to anomalies and safety faults
- For better understanding the management should familiarise to the employees' specialised expertise and topics and start to participate in occupational safety



## Communication

- Communication on occupational safety is a part of OSH implementation and operations but is based on the principal of need, especially amongst colleagues
- It is founded on acts and decrees and emphasised on publications, instructions, projects' safety documentation and reports as well as informing of changes and incidents
- FTA's management's communication on OSH is one-way (registering the received information or distributing messages when it is needed)
- Communication on OSH between units and departments is felt as an everlasting problem, it is mainly through and concerning projects and procurements
- FTA should make communication visible and start to implement it regularly in an interactive way where topics are discussed based on practicalities faced at the worksites.
- It would be beneficial for FTA if the occupational safety chief starts to attend on other departments' and units' meetings to interact and take influences from other fields of transport.



## Challenges in interfaces

- FTA organises seminars where collaborators are invited, mainly in developing OSH culture and occupational safety operations FTA conducts worksite monitoring
- The project supervisors' have their own objectives set and more strict instructions and training regarding occupational safety in the company, FTA's regular repetitions and demand regarding reporting in OSH have created the procedures to be more automatic
- The extension of instructions have created a time consuming procedure of reporting to project supervisors
- Having external visitors at worksites, concerning after them sets the FTA's employees in danger
- FTA's cooperation with other actors in transportation is helping to create an image and increase value
- FTA should continue consistently to require the collaborators to invest in occupational safety
- The collaborators' overall know-how in implementing safety tasks and performing safety management support FTA's OSH culture and OSH operations
- FTA should boost the cooperation with other authors in the field of transportation



## Implementation of occupational safety

- FTA's employees feel that the tools for monitoring, reviews and reporting are not comprehensive, there is uncertainty of their set obligations.
- The guideline and instruction system is extensive and variegated, strongly based on government acts and decrees
- In document checking the know-how to conduct reviews is not sufficient, training and education regarding the instructions and guidelines is not corresponding
- For better understanding of the instructions and guidelines on employee level the units could go through the instruction regarding their tasks jointly for clarifying and to find a common policy.
- FTA should
  - conduct an assessment tool for its own employees to revise their operations and procedures
  - arrange properly directed training and education to its employees when a new regulation on occupational safety is set
  - continue on cooperating with other operators in the field
  - organise education and trainings to implement OSH comprehensively and to reduce the unawareness of obligations rather than leaving the employees find the instructions from intranet and read them individually



## Employee expertise in FTA

- FTA being an example in implementing occupational safety has affected employees' commitment to be one in their work as well
- The client's responsibility to transmit the information to the project supervisor is felt overwhelming
- The possibility to participate in occupational safety development in expertise related projects "has been bracing" and "a pleasant addition to tasks"
- The longer an employee has been in FTA the more s/he has authorisation and responsibility to carry out tasks
- No actual understanding of colleagues' expertise, responsibilities and how they implement occupational safety in their work
- Responsibility is great, thus the know-how of safety legislation should be on a higher level
- In the field of safety the professionals and expertise is slight when compared to other fields in FTA. Safety experts have a lot of responsibilities but not the resources to control them, especially in a way that the know-how would be absolutely within FTA.



## The role of a safety coordinator

- As a non-expected result during the assessment the role of a safety coordinator appeared to be a factor causing uncertainty amongst FTA's employees
- It was perceived that implementing occupational safety is not succeeding regarding the safety coordinator's role, its competencies, training and education, guidance and responsibilities
- FTA's policy on its employee operating as a safety coordinator is not clearly stated in terms of responsibilities and insurances and thus the role of a safety coordinator is not appealing
- The issue operating as a safety coordinator is how the transfer of responsibilities and verifying the proceeding of responsibilities. "A clear structure and management is needed in this process and transformation phase."



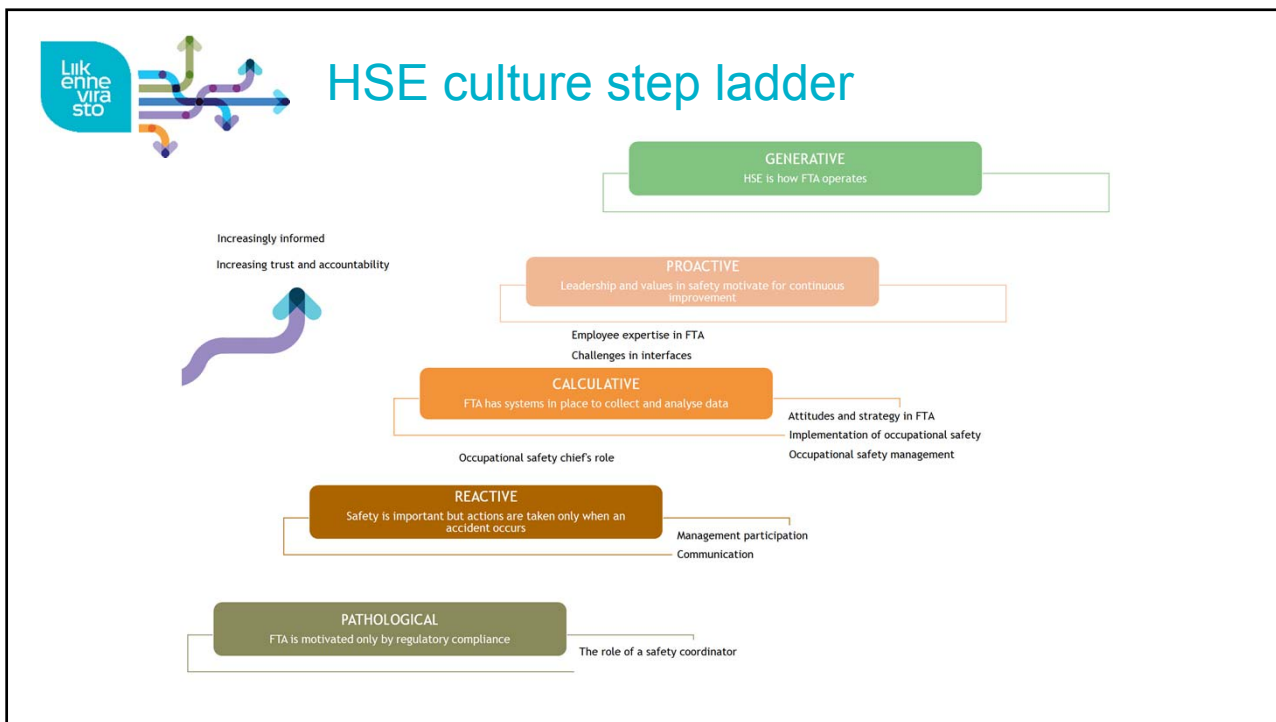
## Occupational safety management

- The focus is on the worksite, tools and procedures addressed to FTA's employees, emphasised on individual learning
- Based on collecting and reporting anomalies as well as documenting and document updates
- In crisis communication, the public informing and shared responsibilities are clear  
 ↳ crisis management in accident situations is made difficult because of the personalisation
- The visibility of occupational safety is incorrect, thus forwarding issues is not succeeding
- FTA is a flat organisation with monumental projects where only one or two FTA's employees are working with responsibilities set by acts and decrees, employees do not have the time, know-how and capabilities to conduct the work
- To develop occupational safety management and encourage its employees to implement it, FTA could include recompensing of safety performance in its operations, linked to project receiving bonus where occupational safety would be attached



## Occupational safety chief's role

- FTA has succeeded on profiling employees in occupational safety related roles, supporting colleagues in work
- Occupational safety chief is proactively organising events, participating them and along with projects
- The strong personalisation of occupational safety chief's role
  - A deficiency of communication is bearing the crisis management and communication in accident situations
  - Issues might not be transmitted if the concern is that the involving can be emphasising on intervention and coercive actions rather than giving guidance in the situation and being supportive
  - Guidance should be more justified and interactive instead of setting requirements as a demand without deeper reasoning
- Procedures should be changed to respond the specific project's needs and wishes + act as a supportive operator showing trust towards the FTA's expertise
- To avoid the monotonous and repetitive point of view FTA should conduct mapping on occupational safety chief's role
- Based on the role mapping a clear divide on the activities should be made amongst various roles in FTA



dd.mm.2016

## Henkilökohtainen suostumus tutkimukseen osallistumiseen ja aineiston käyttämiseen tutkimushankkeessa

Olen saanut riittävästi tietoa tutkimuksesta

*"Liikenneviraston työturvallisuuskulttuurin kehitysvaiheen kartoitus"*

ja haluan osallistua siihen liittyviin tutkimusosioihin. Olen tietoinen, että osallistuminen on vapaaehtoista, ja voin syytä ilmoittamatta peruuttaa suostumukseni tutkimukseen, jonka jälkeen tietojani ei käytetä enää tutkimuksessa.

Samalla annan suostumukseni siihen, että vastaukseni voidaan liittää osaksi yllä mainitun hankkeen tutkimusaineistoa, joka on Liikenneviraston käytettävissä tutkimustarkoitukseen tämän hankkeen puitteissa. Tuloksista raportoidaan siten, että yksittäistä vastaajaa ei voi tunnistaa, eikä osallistujan henkilöllisyys tule tietoon.

Haastattelut ääninauhoitetaan; minulle on kerrottu aineiston käsittelytavoista.

Tutkimushanke kestää 1.1.2016 - 31.7.2016

Tutkimuksen vaihe, haastattelu dd.mm.2016

Samalla annan suostumukseni, että haastatteluni saa nauhoittaa.

Paikka Aika \_\_\_ / \_\_\_ 2016

Tutkimukseen osallistujan allekirjoitus Nimenselvennys

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Vastaanottajan allekirjoitus

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