



**TALOS**  
ANALYTICS AND CONSULTING

HALIFAX, NOVA SCOTIA, CANADA

# SAFETY CULTURE SCALE AND INTERVENTION TOOLBOX

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NOVA SCOTIA CONSTRUCTION SAFETY  
ASSOCIATION

PREPARED FOR  
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## 1. INTRODUCTION

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The following proposal outlines the scope and general strategies for a 4-year project designed to measure and improve safety culture for construction workers and employers in Nova Scotia. This project proposal reflects the discussions between Bruce C., Jonathan D., and Dylan S. on January 27<sup>th</sup>, 2016. The proposed strategies are not set in stone; however, this document will clearly outline the scope, goals, and expectations of the project and team involved.

I recognize that the Nova Scotia Construction Safety Association (NSCSA) has played an important role in improving safety in the Nova Scotia construction industry and I look forward to supporting the “towards zero strategic plan” by developing a safety culture scale and a number of collaborative safety initiatives.



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## 2. MOTIVATION

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### 2.1 History

In 1994, the number of lost time (LT) injuries in the NS construction industry was close to 1,700. Since the creation of the NSCSA and the integration of their initiatives, the number has been reduced to just over 500 LT injuries. As part of the Towards Zero strategic initiative, this project has been tasked with the goal of improving safety culture and reducing the number of LT injuries in the Nova Scotia construction industry.

### 2.2 Goal Statement

Our goal is to improve organizational safety culture and reduce LT-injuries below 300 per annum for the construction industry in Nova Scotia.

### 2.3 Desired Outcomes

1. Build a detailed report on the safety culture research literature and safety culture change initiatives.
2. Develop and validate a new safety culture scale.
3. Create a toolbox of safety culture interventions/initiatives based on the core factors of the safety culture scale.
4. Validate and report the intervention/initiative effectiveness.
5. Provide an online platform to share and discuss findings with fellow construction employees, employers, and academics.

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### 3. RECOMMENDED APPROACH

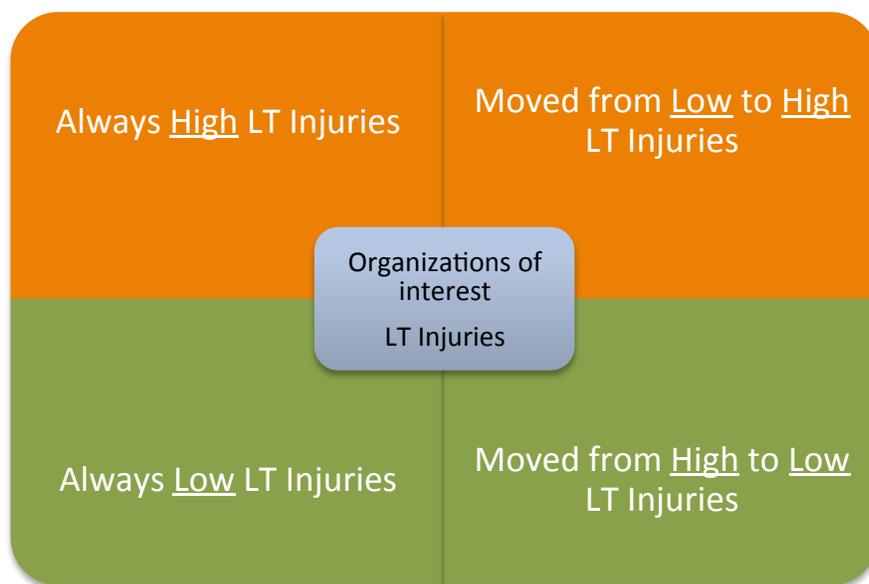
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#### 3.1 Research and Literature Review

Academic journals, professional articles, WCB databases, and organizational case studies will be reviewed for content relating to safety culture or safety culture interventions. The lessons learned from this will help guide a new and innovative direction for the safety culture scale and interventions.

The examination of the WCB database will help us identify the companies of interest (i.e., companies with high and low ratios of LT injuries) for interventions and the safety culture scale validation.

The literature review will summarize past research on safety culture and provide a sound basis on where safety culture research has previously been and where it currently stands now. This research will help guide our strategy for the safety culture scale development and safety interventions. I expect to share this paper in an online format making it accessible to all the stakeholders of the project (including other researchers and members of the construction community).

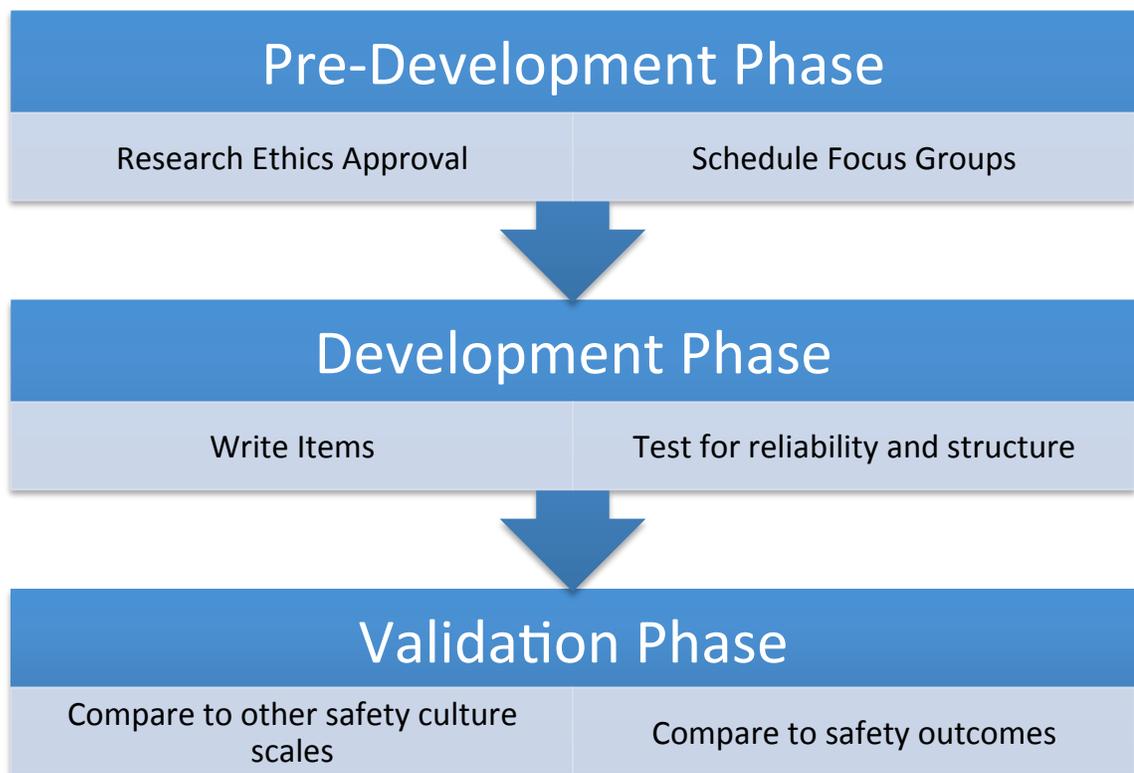


### 3.2 Safety Culture Scale Development and Validation

Following the accepted practices in scale development, a new scale will be built aimed at capturing 3-4 factors or pillars of safety culture. The scale will be developed and validated with a general sample of construction employees and supervisors.

Preliminary factors of the safety culture scale (are subject to change) include:

- **Individual Factors (e.g.)**
  - Personality, attitudes, values
  - Training and experience
  - Fatigue
- **Team Dynamics (e.g.)**
  - Leader and Supervisor influence
  - Co-worker interactions and effect on safety
- **Job/Organizational Factors(e.g.)**
  - Environment and working schedule
  - Job/position characteristics



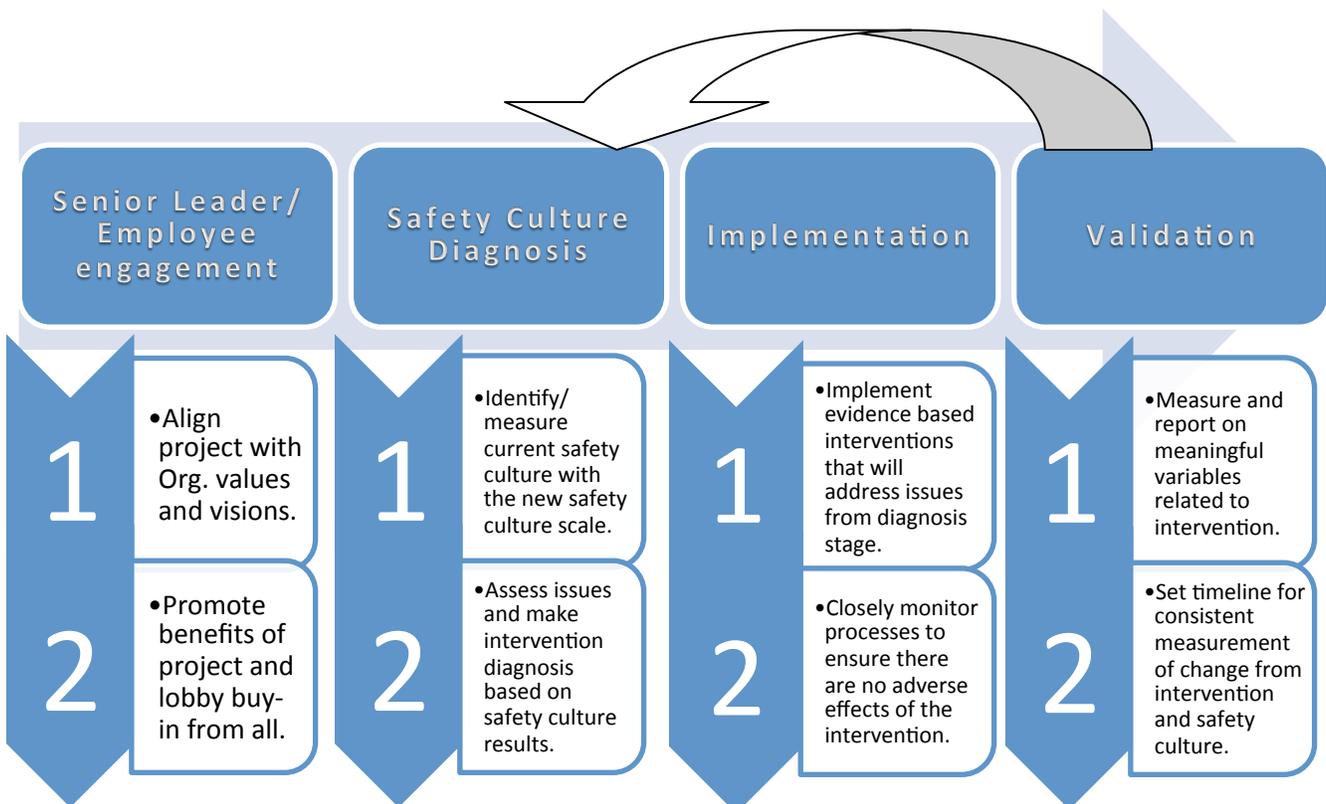
### 3.3 Safety Culture Interventions Creation and Validation

Using the results and framework of the safety culture scale, interventions will be developed and validated using employees from a select group of construction companies in Nova Scotia.

The goal is to develop a toolbox of safety culture interventions designed to combat areas of weakness identified by the safety culture scale. Some interventions will be simpler to initiate, for example, PPE awareness and signage, where as others may require significantly more effort (e.g., online training or safety toolbox talks). Each intervention will have its own research and practical challenges; therefore, each intervention will require particular attention in the planning and development phase.

It is at this point we will reach out to safety researchers and fellow members of the construction community via an online website/forum to start a dialogue on the interventions and safety culture measurement.

Figure 1. Phases of the safety culture interventions validation.



### **3.4 Develop an Online Platform for Dissemination and Discussion**

The creation of a website or online forum will help spark discussion and share the results of the project. The goal of this project is to engage the construction community in an open dialogue about the process and results of the project.

This project will take a collaborative approach by attempting to gain insight from all areas of the safety and construction community. The goal is to disseminate the results and research in an open forum, allowing for discussion and contribution. Although the project will have a collaborative component, the lead researcher, board, and directors of NSCSA will have the final say in the direction of the project. If applicable, significant contributions from the construction community or researchers will be noted, but they will not hold any stake in ownership of the project.

I will develop the online forum website, here are some suggested online website hosts, and costs vary from \$90-150 per year to host.

Wix.com  
Wordpress.com  
Joomla.com

Additional online forums:  
LinkedIn  
Facebook  
NSCSA website

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## 4. PROJECT MANAGEMENT AND PERSONNEL

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### 4.1 Communication Management

1. A monthly progress report and
2. Annual project scope update

Two consistent reports (monthly and yearly) will be utilized to ensure there are open lines of communication and project expectations are aligned. Jonathan D. will be involved in ensuring the communication and the appropriate audiences receive progress reports.

### 4.2 Scope Management

The scope management section will identify the factors that Talos will be involved with in the project.

#### 4.2.1 In-scope

The scope of this project includes:

- Researching and reporting findings from literature searches.
- Collecting data and surveys from employees and employers.
- Developing scales and interventions based on academic best practices.
- Analyze data and report the findings in an accurate and clear manner.
- When required, acquire research ethics approval from a certified research ethics board to conduct research.
- Provide a report to senior management that includes the project framework and the results of the intervention.

#### **4.2.2 Out-scope**

The scope of this project does not include:

- Handling employment disputes resulting from the interventions or reports.
- Guaranteed success of the interventions. The procedures that will be utilized have been shown to be effective in the past, but due to the complex nature of organizations, there is no guarantee of their success. Effective implementation, support, and monitoring will improve the success rate of the interventions.

#### **4.3 Stakeholders**

4.3.1 NSCSA Board

4.3.2 Bruce Collins and Jonathan Dixon

4.3.3 Dylan Smibert

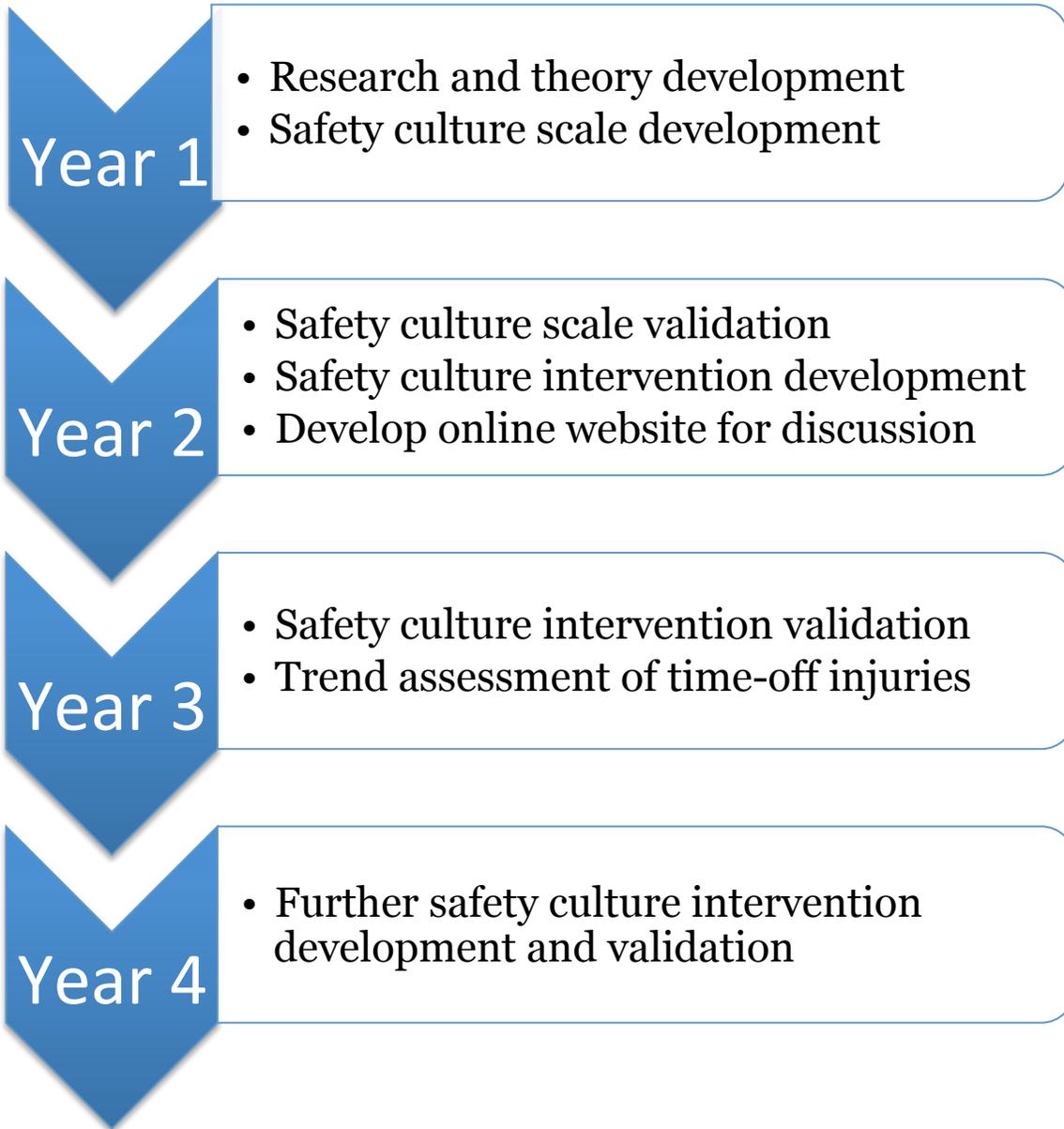
4.3.4 NSCSA affiliated construction organizations and employees.

#### **4.4 Personnel**

This project will require one Research Project Leader (Dylan Smibert) and a research affiliate (Jonathan Dixon) to aid in the administration of this project. Additional guidance from Bruce and other members from the NSCSA will be openly accepted.

#### 4.5 Estimated Timeline

An annual timeline will be set and agreed upon by both parties. In general, a large portion of the first years will involve planning, research, and safety culture scale development while subsequent years will be developing and assessing the utility of the safety culture interventions.



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## 5. CONTACT

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