

**Table of Contents**

---

## Executive Summary

## 1 Introduction

## 2 Defining a Distribution Environment

## 2.1 Four Ways to Define a Distribution Environment

## 2.1.1 Observation

## 2.1.2 Damage Claims

## 2.1.3 Literature Search

## 2.1.4 Direct Measurement

## 2.2 Inherent Variability of the Environment

## 2.3 Past Efforts to Define the Environment

## 2.3.1 FPL 22

## 2.3.2 IBM Study

## 2.3.3 MSU Consortium

## 3 MADE Study

## 3.1 Alpha Phase

## 3.2 Beta Phase

## 3.3 Challenges

## 3.3.1 Data Collection

## 3.3.2 Data Evaluation

## 3.4 Recommendations

## 3.4.1 Collection Process

## 3.4.2 Analysis Process

## 3.4.3 Presentation of Data

## References

## Appendix

## A Other Shipping Environments

## B MADE Time Line

## C Alpha Phase Report

## D MADE Test Plan

## E MADE Beta Results

## F Performance Study

## G Ergonomics Formula

## H References in Industry