Plan Overview

A Data Management Plan created using DMPTool-Stage

Title: Extended Reality for Cabin Safety I: A Translational Study of Extended Reality Technology in Training and Research

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Funder: United States Department of Transportation (DOT) (transportation.gov)

Template: U.S. Department of Transportation: Data Management Plan (DMP)

Project abstract:

A translational study provides an informed approach to solving issues based on scientific research. This study provides background information on XR technology; discusses its use, value, and potential; and provides suggestions for practical application to solve certain issues based on the research. A review of the ELEVAID evacuation simulation computer program is also evaluated for its use in aircraft cabin safety research. In this study, several qualitative and quantitative findings are reviewed to provide a better understanding of the use of XR technology across an array of disciplines. Important considerations for implementing this tool are discussed herein with a focus on positive knowledge transfer and reduced cognitive load. These constructs are supported further by offering psycho-social and physiological considerations when implementing this technology in learning. Finally, an examination of integrating the technology into aviation training and research is presented along with identified gaps in the research for future investigation. The conclusions of this study show XR is mature enough to conduct certain scientific studies; does possess the necessary elements for a positive transfer of knowledge in training by mitigating cognitive load factors; and does address a large gap in current training methodologies by allowing participants to experience anomalous and dangerous scenarios without physical harm. Data-driven implementation of XR technology in key areas of cabin safety research, emerging technology and trends, flight attendant training, and passenger education has the potential to assist the Federal Aviation Administration in the development of adequate tools and systems to advance its mission.

Start date: 03-02-2021

End date: 10-30-2021

Last modified: 03-27-2023

Copyright information:

Extended Reality for Cabin Safety I: A Translational Study of Extended Reality Technology in Training and Research

Question not answered.

Recommended Citation:

Breeding, L. L., Weed, D. B., & Beben, M. S. (2021). *Extended reality for cabin safety I: A translational study of extended reality technology in training and research.* (Report No. DOT/FAA/AM-21/TBD). Federal Aviation Administration.

Change Log:
2021-07-29: Initial DMP written.

2021-12-29: Updated title to reflect report title. Corrected and updated the recommended citation.

Question not answered.

0. Dataset and Contact Information:

Extended Reality (XR) for Cabin Safety I: A Translational Study of XR Technology in Training and Research

DOT/FAA/AM-21/TBD

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Federal Aviation Administration, Civil Aerospace Medical Institute

http://www.faa.gov/go/oamtechreports/

2021-07-29

1. Data Description:
Extended Reality (XR) for Cabin Safety I: A Translational Study of XR Technology in Training and Research

This study provides background information on XR technology; discusses its use, value, and potential; and provides suggestions for practical application to solve certain issues based on the research. A review of the ELEVAID evacuation simulation computer program is also evaluated for its use in aircraft cabin safety research.

The first iteration of this study will produce a report without a numerical dataset.

This report describes research of the extant literature and makes conclusions about the use, reliability, and validity of using XR in training and research therein.

The literature review was conducted between March 2021 and May 2021.

No numerical data were used in this report. However, the cited resources in this report provided context and historical background information. The report advances the literature on the subject as it relates to the aviation

sector.

The potential users of this report are policy makers and advisors; airline safety managers; airline training managers and developers; research teams; academia; and other industries.

The potential value of this report is advancing the literature on a new and novel technology used in training and research. This report provides the basic framework from which future study will be built upon. In the future, this research should focus on specific investigations of cabin safety research, flight attendant training modalities, emerging technologies, and passenger education.

Question not answered.

Levi L. Breeding, Principal Investigator

I will review this plan at least once quarterly to ensure adherence.

2. Standards Employed:

Resources for this project include using ProQuest, Google Scholar, and other online libraries for peer-reviewed journal articles. For non-scholarly information, Google search engine was used to understand the current market and growth of the technology.

Question not answered.

Versions of the report are identified by using a sequential numbering system to indicate major and minor revisions.

Question not answered.

Question not answered.

Question not answered.

Question not answered.

A current web browser will be needed to access the online report. The report will be generated in Adobe PDF file format, which will require, at minimum, PDF reader software.

The author managed and maintained all versions of the report, using track changes when necessary, to preserve the content and intent of the report.

3. Access Policies:

The report will be made available to the public domain and will be made available at http://www.faa.gov/go/oamtechreports/

This report does not contain private or confidential information.

No concerns are associated with this report.

This report does not contain PII.

4. Re-Use, Redistribution, and Derivative Products Policies:

This report is managed by the Federal Aviation Administration. The report is in the public domain, and may be re-used without restriction. Citation of the report is appreciated. Please use the following recommended citation:

Breeding, L. L., Weed, D. B., & Beben, M. S. (2021). Extended reality (XR) for cabin safety I: A translational study of XR technology in training and research. Retrieved from http://www.faa.gov/go/oamtechreports/

The Federal Aviation Administration holds the intellectual property rights to this report.

Question not answered.

Question not answered.

Question not answered.

5. Archiving and Preservation Plans:

This report will be archived at http://www.faa.gov/go/oamtechreports/

Question not answered.

This report will be located and archived at http://www.faa.gov/go/oamtechreports/

Question not answered.

Question not answered.

Question not answered.

Question not answered.

Question not answered.

Question not answered.

6. Policies Affecting this Data Management Plan:
This data management plan was created to meet the requirements enumerated in the U.S. Department of Transportation's "Plan to Increase Public Access to the Results of Federally-Funded Scientific Research" Version 1.1 << https://doi.org/10.21949/1520559 >> and guidelines suggested by the DOT Public Access website << https://doi.org/10.21949/1503647 >>, in effect and current as of July 29, 2021.

Planned Research Outputs

Report - "Extended Reality (XR) for Cabin Safety I: A Translational Study of XR Technology in Training and Research"

A translational study provides an informed approach to solving issues based on scientific research. This study provides background information on XR technology; discusses its use, value, and potential; and provides suggestions for practical application to solve certain issues based on the research. A review of the ELEVAID evacuation simulation computer program is also evaluated for its use in aircraft cabin safety research. In this study, several qualitative and quantitative findings are reviewed to provide a better understanding of the use of XR technology across an array of disciplines. Important considerations for implementing this tool are discussed herein with a focus on positive knowledge transfer and reduced cognitive load. These constructs are supported further by offering psycho-social and physiological considerations when implementing this technology in learning. Finally, an examination of integrating the technology into aviation training and research is presented along with identified gaps in the research for future investigation. The conclusions of this study show XR is mature enough to conduct certain scientific studies; does possess the necessary elements for a positive transfer of knowledge in training by mitigating cognitive load factors; and does address a large gap in current training methodologies by allowing participants to experience anomalous and dangerous scenarios without physical harm. Data-driven implementation of XR technology in key areas of cabin safety research, emerging technology and trends, flight attendant training, and passenger education has the potential to assist the Federal Aviation Administration in the development of adequate tools and systems to advance its mission.

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Extended Reality (XR) for Cabin Safety I: A Transl ...	Report	2021-11-30	Open	None specified		Creative Commons Attribution 4.0 International	None specified	No	No