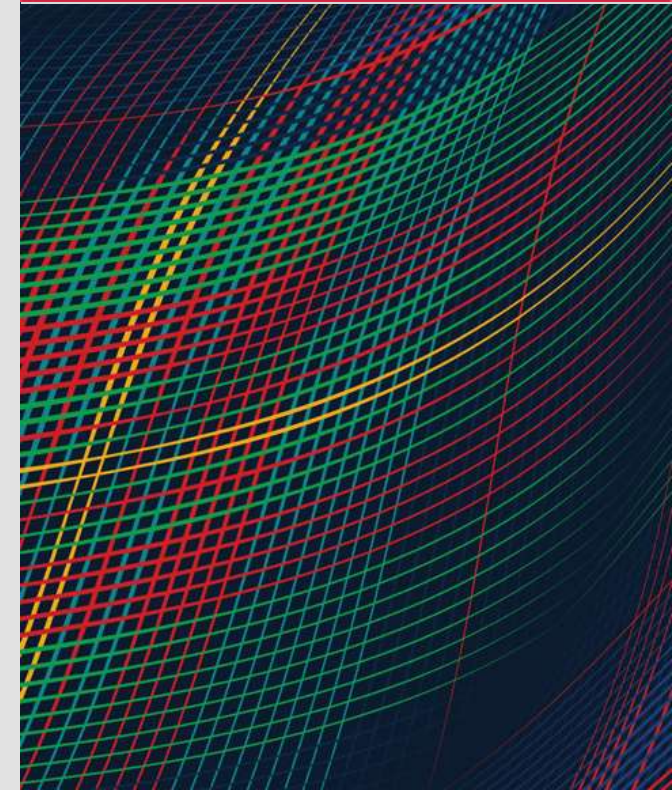


# Impact Assessment / Harms Analysis Templates

**AUGUST 23, 2023**

CDAO PWP 6-761A5 Task 2.3

AI Division, Research and Development, AI/ML



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DM23-0895

Impact Assessment / Harms Analysis Templates

# Introductions & PWP Overview

# SEI AI Division (initial) Team



Principal Investigator

**Carol J. Smith**

Senior Research Scientist

Email: [cjsmith@sei.cmu.edu](mailto:cjsmith@sei.cmu.edu)

**Responsibilities:**

- Guide the team.
- Design and lead appropriate research efforts.
- Contribute expertise to complex technical research tasks.
- Foster collaborative research environment and mentorship.



Design Researcher

**Katie Robinson**

Assistant Design Researcher

Email: [kmrobinson@sei.cmu.edu](mailto:kmrobinson@sei.cmu.edu)

**Responsibilities:**

- Explore user needs for design insights.
- Develop prototypes from refined concepts.
- Collaborate on informed design decisions.

# Task 2.3 Overview

Impact Assessment / Harms Analysis Templates

## 2.3.1. Research & Discovery

SEI will work with the CDAO RAI team and groups across the DoD to identify and study use cases and risk profiles. Analyze information and identify primary use cases and risk profiles to focus on for the effort. Further research and analysis to identify associated needs for each of the selected use cases and risk profiles.

### Deliverables

Sept 2023

- Study protocol and materials
- Analysis and mapping of use cases and risk profiles

Oct – Dec 2023

- Primary use cases and risk profiles identified

# Task 2.3 Overview

Impact Assessment / Harms Analysis Templates

## 2.3.2: Artifact Development

Based on the findings from R&D, the SEI will iterate to create appropriate impact assessments and harms analysis artifacts (tools, processes, and templates) for each of the selected use cases and risk profiles.

The SEI will create prototypes that are useful and usable to support the selected use cases and risk profiles to enable successful impact assessments and harms analysis efforts.

### Deliverables

Oct – Dec 2023

- Initial artifacts for selected use case(s) and risk profile(s)

Jan – March 2024

- Study protocol and materials for 2.3.3
- Additional artifacts for selected use cases and risk profiles

# Task 2.3 Overview

Impact Assessment / Harms Analysis Templates

## 2.3.3 Evaluation and Iteration

Engage with development teams to test and iterate and improve the artifacts through evaluations. The SEI will make improvements to the artifacts and prepare them for transition to CDAO for implementation.

The output of this task will enable more effective and efficient impact assessments and harms analysis efforts for the selected primary use cases and risk profiles.

### Deliverables

April – June 2024

- Improved artifacts based on feedback

July – Oct 2024

- Vetted artifacts
- Guidance for development and implementation of artifacts

# Discussion



# Project Goals

What is the outcome desired from this work?

What impact will the templates have on DoD?

Who will use the templates and how?

What sources of impact or harms should we examine (data, model development, interface/interaction design)?

# CDAO Requests

Use cases (DoD and NIST)

Risk profiles (DoD and NIST)

# Impact Assessments

# Impact Assessment - Assumptions

Include benefits and risks of system (full implementation) to the DoD, to end users, to those affected by the system, and to broader society.

Conducted prior to development (or early stages), and continuously throughout operation.

Different types of systems, contexts, end users, etc. require different types of impact assessments.

Excluding: Very high risk implementations of AI.

# Types of Impacts

## Positive

- Efficiency / effectiveness
- Better solutions
- User experience / usability

## Negative

- Complexity
- Risk
- Harms (next topic)

# Existing Impact Assessments

## Open Canada: Algorithmic Impact Assessment

Page 1 of 13

**Project Details**

**Name of Respondent**  
The name of the respondent is the name of the person that answers the questions.

**Job Title**

**Department**  
Choose...

**Branch**

**Project Title**

**Project ID from IT Plan**

<https://open.canada.ca/aia-eia-js/?lang=en>

## IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being



<https://ieeexplore.ieee.org/document/9084219>

## ECP: Artificial Intelligence Impact Assessment (AIIA)



<https://ecp.nl/wp-content/uploads/2019/01/Artificial-Intelligence-Impact-Assessment-English.pdf>

# Harms Analysis

# What do we mean by harm?

Assumption: Harms are negative.

## Types of harms

- Discrimination/prejudice (racism, sexism, etc.)
- Financial
- Privacy
- Physical harm (autonomous vehicles)
- Psychological
- Social harms
- Sustainability/environmental

Excluding: Hardware/Cybersecurity



# Microsoft: Types of Harm

- Risk of injury (physical, emotional or psychological injury)
- Denial of consequential services (opportunity loss, economic loss)
- Infringement on human rights (dignity loss, liberty loss, privacy loss, environmental impact)
- Erosion of social & democratic structures (manipulation, social detriment)

# 3Q-Do No Harm Framework: Categories of Harm

CATEGORIES OF HARM	DEFINITION
Financial	Negative impact on finances, property, or other resources
Health	Negative impact on mental, emotional, or physical health
Time	Inefficient or unproductive activities, processes, or systems
Fairness/Equity	Perpetuating or facilitating prejudice, bias and/or unfairness
Safety	Physical and/or emotional wellbeing compromised by fear, danger, or uncertainty
Privacy	Lack of control over personal information
Misinformation	Creation, spread and/or amplification of false or inaccurate information intended to deceive
Control	Inability to freely direct information, activities, or systems
Transparency	Lack of disclosure of information, activities, or systems

3Q-Do No Harm Framework, Lisa D. Dance. <https://serviceease.net/3q-do-no-harm-framework>



# Existing Harms Analysis Methods

## What Could Go Wrong? Card Game



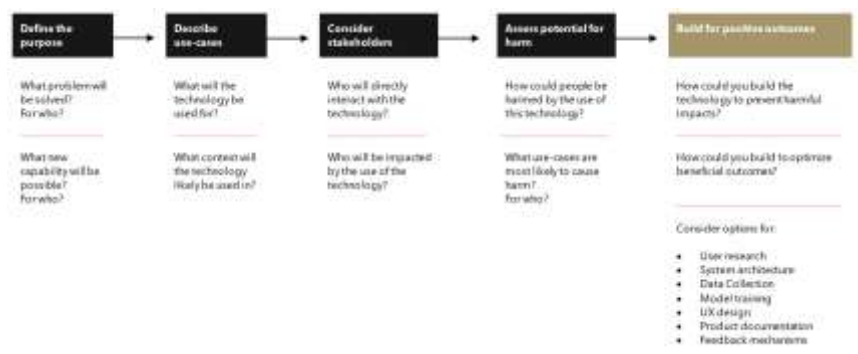
What Could Go Wrong?  
<https://doi.org/10.1145/3409251.3411734>

## 3Q-Do No Harm Framework



3Q-Do No Harm Framework, Lisa D. Dance.  
<https://serviceease.net/3q-do-no-harm-framework>

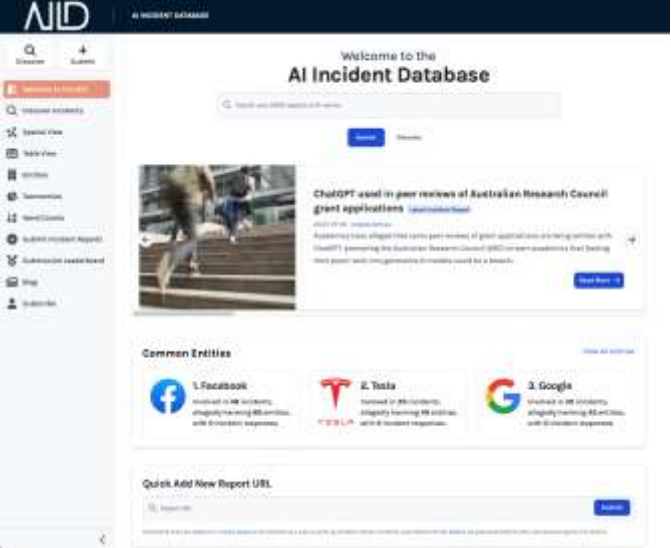
## Microsoft Harms Modeling



Microsoft Harms Modeling: <https://learn.microsoft.com/en-us/azure/architecture/guide/responsible-innovation/harms-modeling/>

# Incident Databases

## AIID



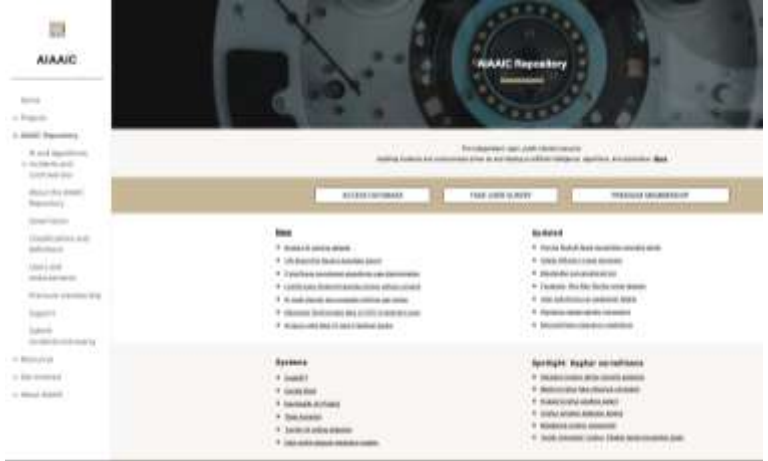
<https://incidentdatabase.ai/>

## Where in the World is AI?



<https://map.ai-global.org/>

## AI and algorithmic incident and controversies (AIAAIC)



<https://www.aiaaic.org/aiaaic-repository/ai-and-algorithmic-incidents-and-controversies>

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