Automated vehicle Services for People with disabilities – Involved Responsive Engineering
(ASPIRE Center)

Quarterly Progress Report #1

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Topic:	Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities
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1. Accomplishments

Aim 1: Systematic Review: We will conduct a comprehensive review of the literature to more clearly understand the current trends and implications for future travel related to accessible automated vehicles and services.

- **Specific Objectives:**

    1. Project management
    2. Registration of Systematic Review
    3. Collection of grey literature and EndNote set up
    4. Strategize basic search

- **Major Activities:**

    1. Project management: In this quarter, we officially had a virtual kick-off meeting with the UTC staff and US DOT personnel to discuss post award requirements such as grant deliverables and other terms & conditions. Additionally, also developed an internal timeline with key milestones and assembled a team to successfully execute the research activities under Aim 1.

        Planned timeline:

Timeline	Key milestones
Aug-Sept 2020	- Systematic review registered in PROSPERO. - EndNote library created. - Grey literature collected, entered/organized in respective folders. - Basic search strategy developed. - Disability framework drafted. - Options for organizing articles finalized.
Oct 2020	- Grey literature collection completed. - Search terms finalized and executed. - Citation screening completed. - EndNote database updated accordingly.
Nov-Dec 2020	- References screened and citation chain created. - Publications scored using the GRADE methodology. - PRISMA Flow Diagram drafted. - Articles grouped and summarized according to themes. - Table with each article, key study details, factors that determine evidence quality, and summary of findings generated. - Published frameworks or strategies for understanding the needs of travelers with the disabilities with respect to functional, personal, or environmental contexts compiled and reported. - Manuscript drafted and reviewed by advisory board.
Jan 2021	Research gaps generated based on areas where evidence is determined to be low or very low according to GRADE for Aim 2 purposes.

2. Registration of Systematic Review: Before initiating the review, we registered it in International Prospective Register of Systematic reviews (PROSPERO) which is an open access online database of systematic review protocols on health-related topics. Registration in PROSPERO not only avoids duplication and reduces reporting bias but also provides transparency in the review process and helps counter publication bias by providing a permanent record of prospectively registered reviews.

3. Collection of Grey literature and EndNote set up: Grey literature refers to publications outside traditional scientific/academic literature and includes sources such as websites, policies, white papers, press releases, reports, presentations, and government documents. This quarter we created a Qualtrics link (https://pitt.co1.qualtrics.com/jfe/form/SV_eP7SnQWVpAM70Nf) to collect grey literature from advisory board committee members, investigators and colleagues. This enabled people to submit links to websites or upload files. When someone completed the form, our team received a notification and the references sent were cataloged. These were subsequently entered into respective folders in EndNote which is a commercial reference management software. Four folders have been created for the purposes of Aim 1: previously known articles, grey literature, primary search results, citation chain results.

4. Strategize basic search: This quarter, PubMed was used to develop search terms. The list was generated using MeSH terms, subheadings and keywords that have already been used in published literature. This list (Column 1- Target population; Column 2- intervention/themes) of search terms were sent to advisory board members to get their feedback. (https://pitt.co1.qualtrics.com/jfe/form/SV_2lE17I4BDw8KsC1). This will allow us to revise the keywords that we will be using to search the scientific literature on automated vehicles and services for people with disabilities in the next quarter.

Aim 2: **Understand the needs of Users and Providers:** We will conduct surveys, focus groups, and journey mapping of stakeholders, including individuals with disabilities, their travel companions and/or caregivers, designers, medical providers, and mobility service experts (e.g. vehicle manufacturers and modifiers, as well as adaptive driving training instructors). The survey will be refined using pilot surveys, focus groups and journey mapping and then distributed broadly to all key stakeholders.

- **Specific Objectives:**

    1. Institutional Review Board (IRB) compliance
    2. Submit amendments as needed

- **Major Activities:**

    IRB protocol has been initiated (STUDY20090111) on PittPRO which is University of Pittsburgh's Human Research Protection Office (HRPO) on-line research application and is currently under development. We plan to have at least two separate Pitt IRBs; 1 IRB for Focus Groups & Journey mapping + 1 IRB for pilot survey (with an amendment later for final survey). All investigators and study personnel have received training in research practice fundamentals, including research integrity and protection of human subjects.

    Research gaps identified in Aim 1 will be used in the iterative development of the Voice of the Consumer and Provider surveys for Aim 2.

2. Changes/Problems

    a. Actual Problems or delays and actions to resolve them
      Nothing to Report.

    b. Anticipated Problems/Issues
      Nothing to Report.

3. External Collaborations

We have added two additional members (please see highlighted) to our Advisory Board and have been continuously engaging them in Aim 1 activities during this quarter.

NAME	AFFILIATION	ROLE
Lawrence Williams	Merlin Mobility, Inc.	Accessible Automated Vehicle Expert
Ryan Klem	Toyota Mobility Foundation of North America	Transportation, Vehicle, and Mobility Expert
John L. Tague, Jr.	JT Disability Consulting Services LLC	Accessible Transportation Expert
Lee Page	Paralyzed Veterans of America	Accessible Transportation Expert
Danny Langfield	National Mobility Equipment Dealers of North America	Accessible Vehicle Expert
William Chernicoff	Toyota Mobility Foundation of North America	Transportation and Vehicle Expert
Jon Duvall	US Department of Veterans Affairs – Pittsburgh Healthcare System	Engineering, Accessible Transportation Use, and Research
Nahom Beyene	Navity, Inc. and RAND	Mobility Services Expert
Bob Mitchell	Autonomous Transportation Consultant	Engineering, Design, Regulatory
George Coulston	Innovation Institute, University of Pittsburgh	Technology Transfer and Start-Ups
Hillary Roman	City of Pittsburgh and Allegheny County	Americans with Disability Act Coordinator
Diana Cooper	Hyundai Motors	Accessible Automated Vehicle Expert
Carol Wright	Easter Seals, Inc	Accessible Transportation Expert

Over the quarter, Dr. Cooper has served as a panelist and participated in panel discussions such as below to name a few:

- PAVE/USDOT Webinar "AVs for All: Inspiring Solutions for Accessible Design"
- Heinz History Center and Western Pennsylvania Disability History Consortium "Exclusion to Autonomy: The History & Future of Accessible Transportation".
- PennDot Task Force Meeting

We received several interests from colleagues nationwide involved in similar research and have held many collaboration meetings. These meetings have resulted in additional collection of grey literature and we plan to involve them in the next project phases as well.

4. **Outcomes/Impact**

   Nothing to report in this quarter.

5. **Education and Workforce Development**

   In this quarter, we engaged PhD students in the literature review activities (Aim 1) and will continue to engage more students from consortium university.

6. **Performance metrics**

   We have identified a high impact journal to publish our findings from the systematic review and will report more details in the next quarter.