Human-Centered Mobility and the Benefits for Transit

March 28, 2017
Welcome & Technical Items

• Please mute your phone or computer microphone
• Use the chat box for any technical or accessibility issues
• Email Jordan Snow (jsnow@easterseals.com) if you are having trouble accessing conference audio or chat
Today’s Agenda

• Introduction to NCMM – Jordan Snow, NCMM
• Human-Centered Mobility and Benefits for Transit – Liza Josias, AIR
• Daisy Wall, RouteMatch
• Implications for Mobility Management – Judy Shanley, NCMM
• Question and Answer Session
The mission of the National Center for Mobility Management (NCMM) is to facilitate communities to adopt transportation strategies and mobility options that empower people to live independently and advance health, economic vitality, self-sufficiency, and community.
About the NCMM

• National technical assistance center
• Launched in early 2013
• Jointly operated by three national organizations:
  – Easterseals
  – American Public Transportation Association
  – Community Transportation Association of America
• Cooperative Agreement with the Federal Transit Administration, USDOT
Introducing...

Liza Josias
Senior Researcher
American Institutes for Research
Human-Centered Mobility and Benefits for Transit

Liza Josias
American Institutes for Research

March 2017
Introduction

- American Institutes for Research (AIR) is a not-for-profit firm that conducts social and behavioral science research.
- AIR has more than 30 years of projects supporting individuals with disabilities.
- Human factors engineers apply knowledge of human behavior to design systems, procedures, and equipment to improve human performance and reduce risks.
- Our clients include the Federal Aviation Administration, the Washington Metropolitan Area Transit Authority, and the Transportation Security Administration.
Overview

- What Is Human-Centered Design?
- Human-Centered Design in Context
- Framework for Applying Human-Centered Design
- Investigating, Analyzing, and Planning
- Benefits of Using Human-Centered Design
- Return on Investment From Human-Centered Design
- Data to Inform Human-Centered Design in the Mobility Context
- Resources
What Is Human-Centered Design?

- Human-centered design (HCD) is a framework for building changes and systems around people’s capabilities, limitations, and needs.
- Systems designed around people support how people think, move, and behave.
- Users—riders, employees—will have a more positive experience when systems are designed around them.
Human-Centered Design in Context

• Design systems so that:
  – People are the center of design decisions.
  – Technology, processes, and organizations (including jobs, tasks, training) support how people perform activities.

• Design systems that support people’s limitations and capabilities:
  – Limitations, such as memory, speed, accuracy, fatigue, and patience
  – Capabilities, such as the ability to adapt to different situations and the capacity to transfer knowledge and skills from one task to another
Key Principles for Applying Human-Centered Design

- Gather information about perspectives, capabilities, needs, and expectations of different users.
- Apply an iterative process.
- Involve multidisciplinary and diverse design teams.
Investigating, Analyzing, and Planning

• Investigate:
  – Define users’ needs in a human-centered—not solution-centered—way
  – Gather information about users and their needs. Human Factors Pie helps categorize different aspects of human interactions that need to be considered.

• Analyze:
  – Analyze people’s activities in context.
  – Identify barriers to using the system.
  – Identify what works (the things that users like and use).

• Plan:
  – Apply knowledge of people’s cognitive and physical abilities when developing design requirements.
  – Build systems where all the components work together.

Source: EUROCONTROL (2007)
Benefits of Using Human-Centered Design

**Organization**
- Reduce risk of errors
- Improve system safety
- Increase efficiency
- Improve Return on investment
- Enhance workforce productivity and satisfaction
- Reduce training costs
- Improve customer loyalty

**System Developers**
- Identify and address usability issues through redesign
- Reduce risk of late and costly fixes
- Improve user acceptance
- Reduce costs and time for fixing issues after implementation

**Customers**
- Experience greater customer satisfaction
- Complete activities more efficiently
- Perform activities more safely
- Spend less time and effort learning to use the system
- Experience less frustration
- Be more loyal
Return on Investment From Human-Centered Design

- During Design and Implementation:
  - Reduce the risk of time and cost overruns.
  - Reduce the cost of addressing late fixes.
  - Improve user acceptance rates.

- After Implementation:
  - Increase the revenue generated by the improved system.
  - Reduce costs by improving efficiencies.
  - Increase the volume of repeat customers.

Source: EUROCONTROL (1999)

Source: Design Management Institute (2015)
Data to Inform Transit Organizations Applying HCD

- Caution! Data analytics will only tell you what users DID do. It won’t tell you what they **wanted** to do or **expected** to do.

- Different types of data should be used to develop insight and build a story.

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<tr>
<th>People</th>
<th>Technology</th>
<th>Processes</th>
<th>Organization</th>
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<td>Data analytics</td>
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<td>Interviews</td>
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<td>Focus groups</td>
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<td>Ridership data</td>
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Resources


Department of Health and Human Services. [www.usability.gov](http://www.usability.gov)


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Introducing...

Daisy Wall
VP, Community Engagement
RouteMatch
Voices of Transit
A Webinar Series Fostering Insightful Dialogue From Around The Industry

“Human Centered Mobility and Benefits for Transit”
Presenter: Daisy Wall, Routematch
Introduction

- Routematch’s mission is to **transform rider experiences** and **engage communities**.
- Provide **passenger transportation** technologies to more than **600** transit agencies.
- Team of **170 passionate** individuals.
- FTA Sandbox, VTCLI & MSAA **grant recipients**.

**A BRIDGE**
connecting individuals with opportunities

**A CHOICE**
towards social & environmental responsibility

**A COMMITMENT**
to inclusivity & providing access for all

**A CHANCE**
to create new, meaningful connections & interactions
Overview

- Why is a **human** factors approach relevant to **transit** now?
- Common challenges for both **disabled** and **choice** riders
- **First mile last mile** case example & how a human factors approach fits in
- **Student riders** case example & how a **human factors** approach fits in
- Elevating the **rider experience**
- A few more **thoughts** from the **field**
Customer Expectation = Personalization

Source: Deloitte, “Disruptive Trends for Smart Mobility” - March 2015
Mobility = More Choices
Common Challenges for Disabled Riders.

- Lift operation and safety while vehicle is boarding, departing and en route
- Crime
- Insensitive drivers
- Difficult to use
- Need help getting on transportation/"Having no one whom to depend on"
- Trip planning
- Equipment does not fit transportation
- No service

First Mile, Last Mile Case Example

York Region Transit

- Each customer has his own distinct profile. All passengers have needs.
- Planning is key.
- Use your existing resources.
- Human-factors approach + operational efficiency
- Technology can help.

Voices of Transit
Common Challenges for Choice Riders.

- Unreliability, especially when stuck in vehicle or during connections/transfer points.
- Getting picked up in 10 minutes or less./Long wait at transfer stop.
- Delays at point of origin.
- Missed departure due to wrong real time traveler info.
- Unable to board due to overcrowding.


“Passengers’ Perception of and Behavioral Adaptations to Unreliability in Public Transportation” in November 2016, Transportation Research Board annual meeting.- Berkeley’s Department of Civil and Environmental Engineering
Student Riders Case Example

West Virginia’s Tri State Transit Authority and “The Green Machine”

- Go where customers are, not where we think they are.
- Get creative.
- Follow their lead.
- Be willing to make adjustments to serve the need.
Elevating the rider experience.

Chicago & Northwestern Train Parlor - 1940’s

Stockholm Public Transport - Today
A few more thoughts...

- Bring staff into the fold.
- What’s a rider’s plan B?
- Leverage ideas and technologies from other industries and daily life.
Thank you!
Introducing...

Judy Shanley, PhD
Co-Director, NCMM
AVP, Education and Youth Transition
Easterseals, Inc.
Implications for Mobility Management

- Mobility management is an approach to designing and delivering transportation service
- Starts and ends with the customer
- Establishes a community vision in which the entire transportation network works together
- Delivers the transportation options the best meet the community’s needs

Why is human factors information important to mobility management?
Who is a mobility manager?

• A problem solver
• An advocate for those who need transportation
• A facilitator of groups
• A teacher, communicator and cheerleader
What does a mobility manager do?

• Understands the population they’re advocating for
  – Environmental scan, inclusive planning, and solicitation of feedback

• Builds networks
  – Transportation providers and planners
  – Workforce development and educational agencies
  – Healthcare agencies
  – Elected officials
Customer/Rider Implications for Human Factors Data

- Enhance engagement of customers
- Improve rider satisfaction
- Increase ridership and the use of mobility options
System/Service Implications for Human Factors Data

• Improve alignment between mobility services and rider conditions
  – Reduce inefficiencies in services that are incompatible
  – Better use of scarce resources
  – Improved perception by public because of improved efficiencies of service delivery

• Enhance rationale for creating a network with increased service options to fill gaps

• Diverse mobility service providers may join networks
Tap into Resources

National Center for Mobility Management

National Aging and Disability Transportation Center

National Rural Transit Assistance Program

ACL Transit Planning 4 All
Take Advantage of Our Resources

• Webinars, Newsletters, Products
• Mobility Management & Information Practices Database (MMIP)
• Technical Assistance – ask your liaison
  – Link to Liaisons
Thoughts, Ideas, Questions?

• Please use the Q&A module to submit questions
• Conversation starters
  – Do you have an example of how you’ve used human factors information in your own practice or community?
  – What are your perceived barriers to accessing and using this type of data?
    • Financial?
    • Procedural?
• Ask away!
Thank you!

When the meeting ends you will be taken to our evaluation.

We appreciate your feedback!

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