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Human-Centered Design and Autism Research

Caroline Finlay Branscome

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Caroline Finlay Branscome

Brief Biography

Degrees

B.S. – Mechanical Engineering

M.A. – Communication (research focused)

MA.Ed. – Curriculum and Instruction (educational psychology focused)

iPh.D. – Human-Centered Design (mixed methods & instructional design)

Jobs

Mechanical engineer, painter, line cook, cashier, ESL teacher, call-center worker, reporter, translator, technical writer, martial arts teacher, higher education instructor, fitness instructor, craft sales….

Brief Biography

Current Employment

Department of Civil Engineering

- Large Course Instructor
- Pathways Program Coordinator
- Experiential Learning Manager

Virginia Tech Center for Autism Research

- Autism-Centered Design Lead
- Steering Committee Member

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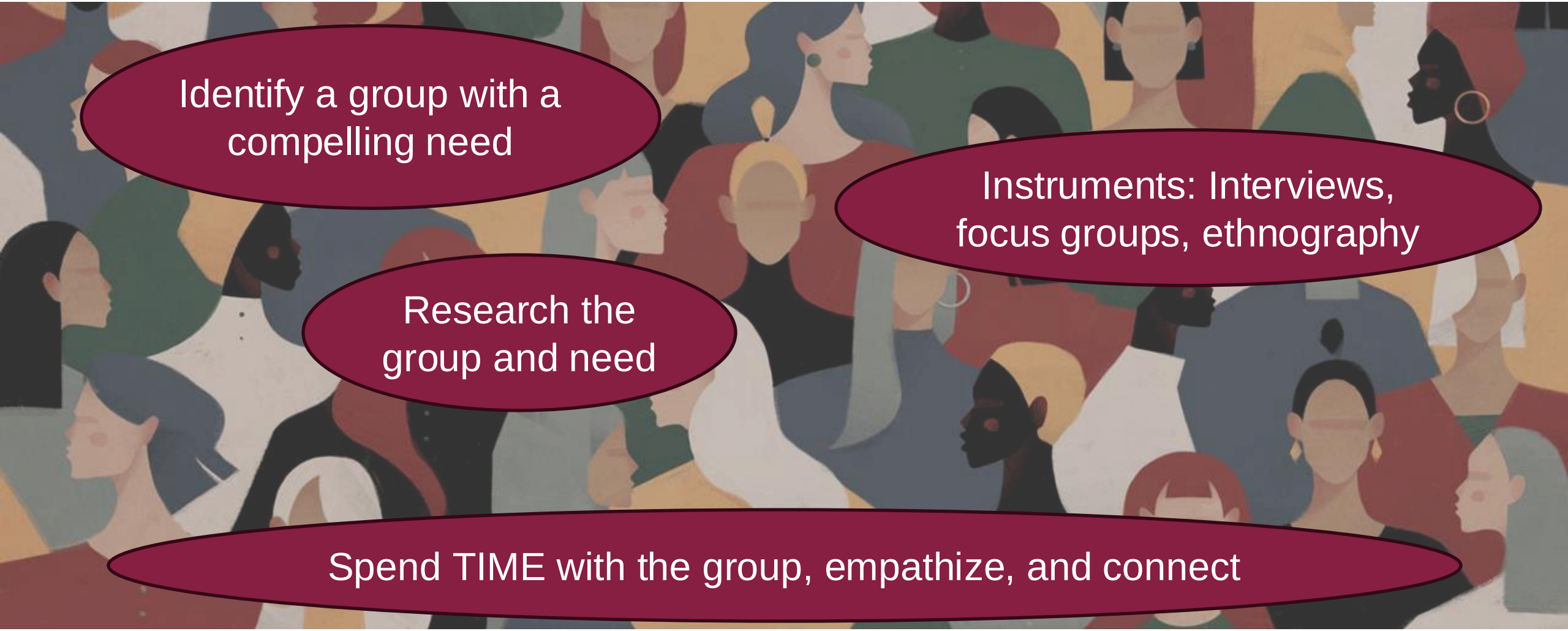
Human-Centered Design (HCD)

HCD Definitions

Human-centered design is a problem-solving technique that puts **real people at the center** of the development process, enabling you to create products and **services that resonate and are tailored** to your audience's needs.

Setup | Inspiration | Ideation | Implementation

Setup | **Inspiration** | Ideation | Implementation



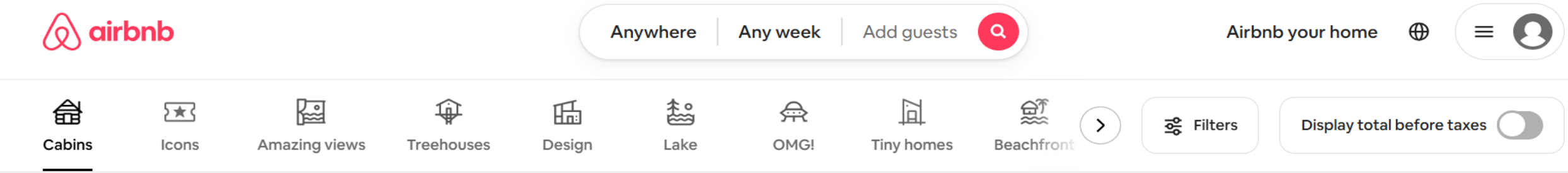
Setup | Inspiration | **Ideation** | Implementation

Setup | Inspiration | Ideation | **Implementation**

HCD Examples

Some VERY popular digital tools were designed using HCD:

Netflix – Spotify – Airbnb – Slack



Airbnb is worth $78 billion

Airbnb discovered that many travelers wanted:

- Lower-cost, comfortable options
- To feel closer to the communities they visit
- Details about potential rentals
- Easy-to-use filters so they can choose based on their needs

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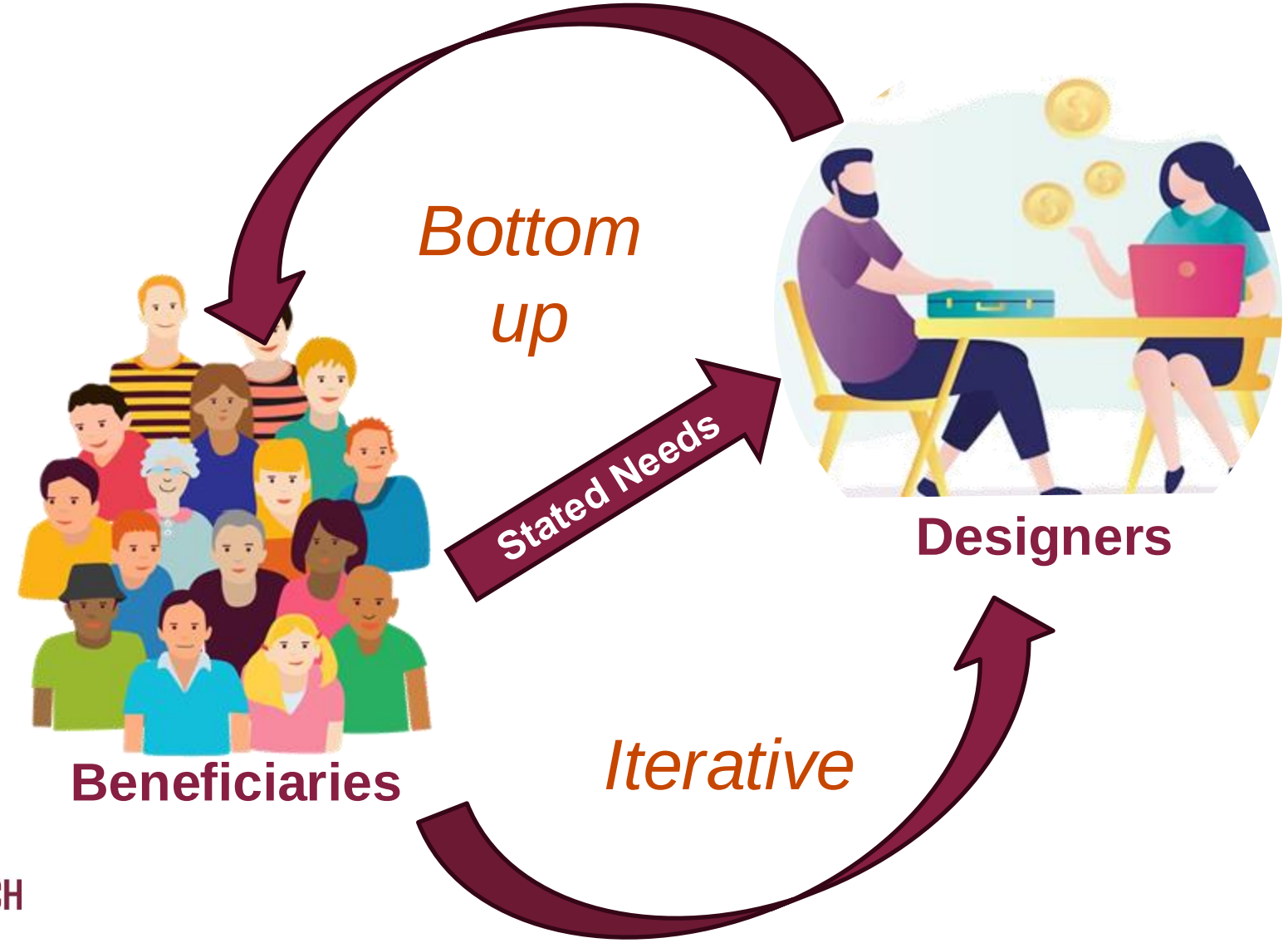
Barriers to HCD: #1 Government-Funded Research Environment

Barrier #1 – How the Government Funds Research

Comparison: Human-Centered Design



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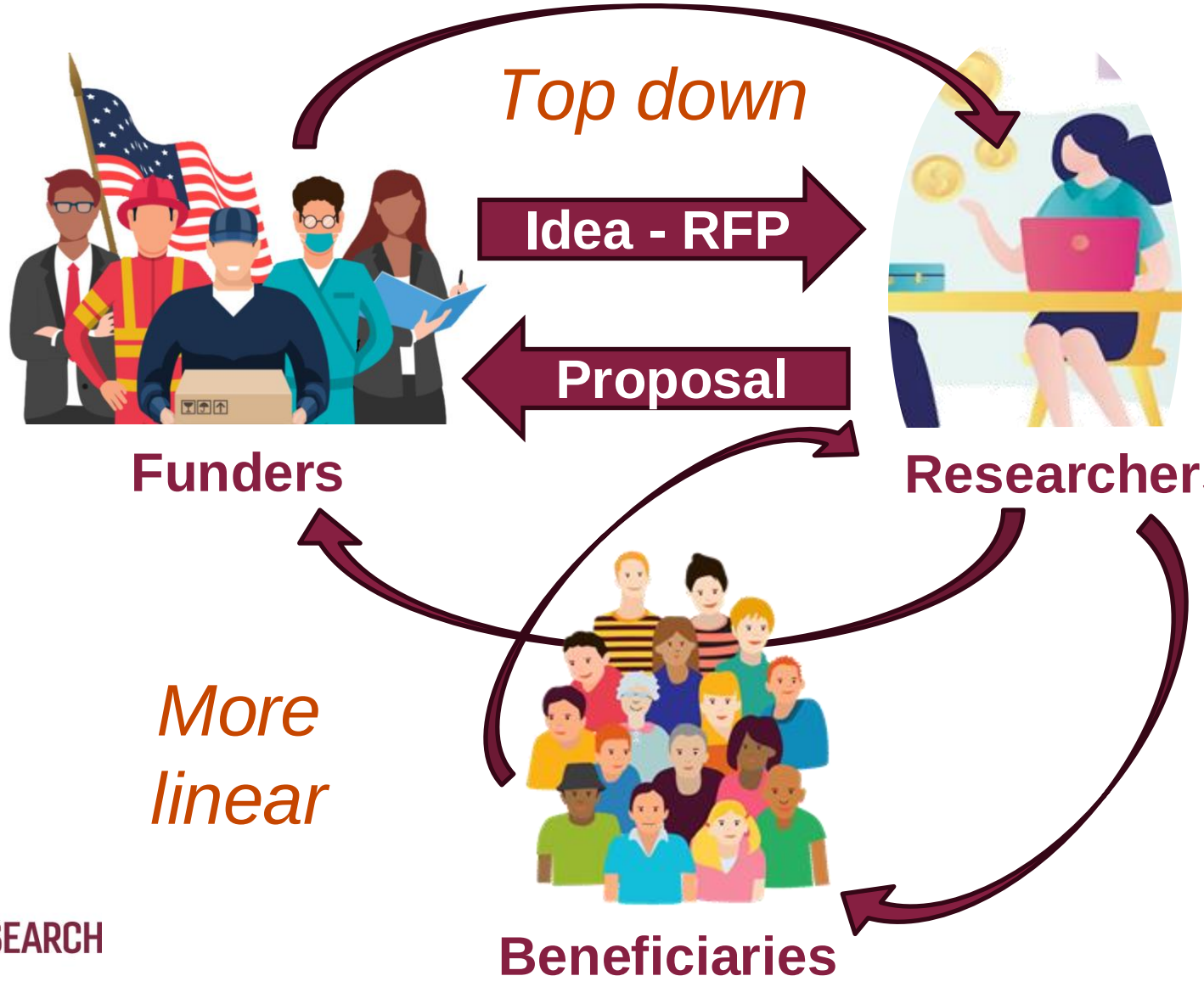
Barrier #1 – How the Government Funds Research

Comparison: Federally Funded



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Barrier #2 – How Research Collaborators are Paid

Funders

Funding

Results

Researchers

Market Rate

Expert Consultant

Consultants are paid by check

Collaborators and informants are "research participants" and often compensated with gift cards

Beneficiary Advisors

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Barriers to HCD:
#3 – Social Perceptions of Disability

Barrier #3 – How Culture Regards Disability

Ableism is discrimination against people with disabilities based on the belief that typical abilities are superior. Ableism is rooted in the assumption that disabled people require ‘fixing.’

Barrier #3 – How Culture Regards Neurodivergence

Neurodivergence from neurotypical people isn't yet accepted as a different, but equally valuable, way of being human.

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Barriers to HCD:
#4 STEM – Psych/Sociology Divide

Barrier #4 – STEM-Psychology/Sociology Divide

Knowledge can be objectively observed and documented

VS

Knowledge is messy and contextual

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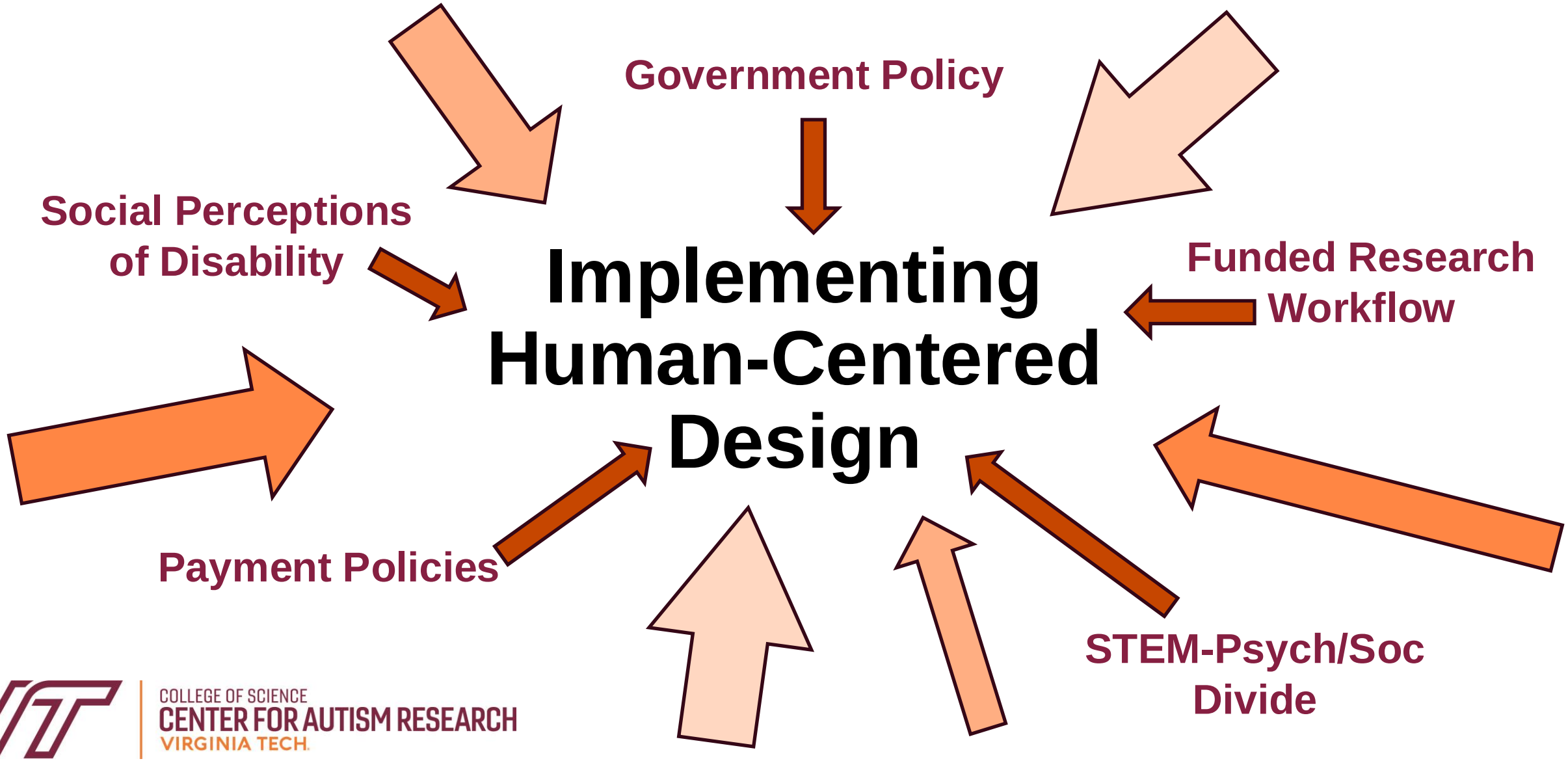
Implementing HCD: Solutions

Pushing for HCD and Fighting Ableism: Context



Fighting Ableism: ADVOCATES

Groups at Virginia Tech and across the nation advocate for acceptance and inclusion of neurodivergent people at the personal, community, university, and state and national levels.

Nothing About Us Without Us

Human-Centered Design in Autism Research

Implementing HCD

Work with pro-social, caring researchers

Call out tokenism

Be nice

Make meaningful connections with researchers

Make advisors important

Be firm

Work with, not against, teammates

Insist on inclusive, not pathologizing, language

Recruit, represent, and advocate for our autistic advisors.

Have thick skin

Advocate for bottom-up, needs-based design

Nudge

Be enthusiastic about HCD

Seek pro-social funding

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HCD at VTCAR
Advisory Committee

VT Self-Advocate Advisory Committee (SAAC)

Background

VTCAR and friends needed feedback from autistic adults on research projects and general needs, so they established the SAAC.

- The 6-7 committee members are paid for their expertise as consultants, not research participants.
- Committee members created a charter by consensus.
- Recruitment acknowledges that demographically diverse members provide expertise on a broader range of topics.

The committee meets via Zoom 4x/year.

VT Self-Advocate Advisory Committee (SAAC)

Purpose: Advise research projects. Projects may be at any stage.

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Brainstorming Needs

Share experiences and challenges; ideate potential aids

Identify themes; propose aids; iterate with SAAC

Developing Proposals

Concretize needs and viable aids; review proposals

Use expert feedback

Choosing Research Methods

Make sure methods are autism-friendly

Use autism-friendly methods; learn about autists

Analyzing Results

Provide insight; suggest further research

Reconsider results and applications

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HCD at VTCAR
STEM Lab Mentors

STEM Lab Mentors

Develop an AI and in-person hybrid mentoring program for autistic students working in on-campus STEM labs

Project Goals

- Provide autistic students with valuable on-campus job experiences allowing them to apply and develop their unique strengths
- Foster acceptance and a broader understanding of autism within STEM fields
- Educate STEM lab managers and teams about ableism and autism

"Autistic individuals will directly guide the proposed mentoring program, ensuring that their perspectives, experiences, and unique insights play a crucial role in shaping it."

STEM Lab Mentors

Researchers & Paid Advisors

1. Advisors shared their experiences during college and at work.
2. Researchers developed a draft survey for STEM students with autism. Advisors heavily edited it.
3. Advisors reviewed results and provided insight.
4. Researchers used the results to create an online training program for STEM lab supervisors.
5. Advisors reviewed the draft and provided feedback.

STEM Lab Mentors

Project Outcomes

- Grant proposals that build on the study
- A complete story board (script, audio, visual) for an online mentoring training program for STEM lab supervisors

Training modules are in production!

Oak Ridge Affiliated Universities (non-profit with government funding)

Funder **Researchers** **Advisors**

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HCD at VTCAR

Bolster the Manufacturing Workforce

Bolster the Manufacturing Workforce

Investigate how intelligent robots could support neurotypical and autistic manufacturing workers

Project Goals

- Improve workers' autonomy, competence, and relatedness (connectedness).
- Improve the employment rate of autistic adults.
- Bolster the manufacturing workforce.

Bolster the Manufacturing Workforce

Proposal: “This effort will lead to greater innovation and inclusivity in STEM work and training environments”

Bolster the Manufacturing Workforce

Paid Autistic Advisors

1. Are a mix of manufacturing industry experts and autistic manufacturing workers.
2. Advise technical team members on research methods, data analysis and interpretation, and real-world applications.

We are recruiting committee members who must be:

- Be 18 or older
- Identify as autistic
- Have work experience on a manufacturing floor

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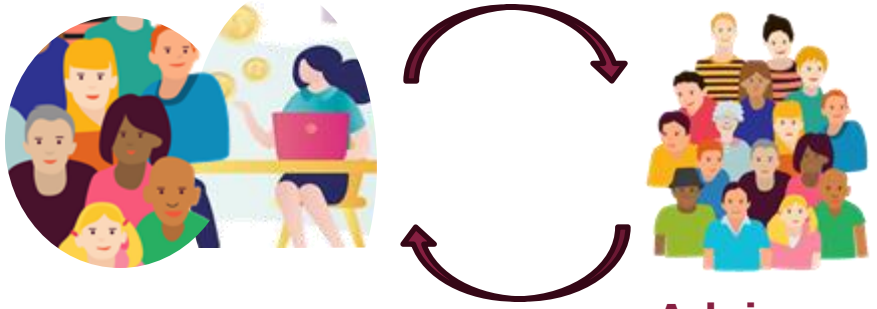
HCD at VTCAR
Autism College Support Program

Autism College Support Program

Group Goals

Support autistic student success:

- Transitioning to college
- Succeeding in college
- Transitioning to the workplace



Researchers & Professionals (Psychologist, Career Development Specialist, Disability Support Specialist & me)

Advisors (SAAC)

Autism College Support Program

Progress

1. SAAC identified broad needs of autistic university students.
2. Researchers and professionals designed a survey based on SAAC expertise.
3. SAAC reviewed the survey.
4. Researchers and professionals administered the survey to autistic students
5. SAAC shed light on the results.

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HCD at VTCAR

Improving the Sensory Environment at Virginia Tech

Themes

Human-Centered Design in Autism Research

THEMES

The cultural and funding environments are not conducive to HCD

Researchers need to be educated about autism and HCD

Avoid tokenism

Make sure advisors have real power

Change is slow

Questions?

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