



# RESNA



MAY 12-16 2025 · CHICAGO, IL USA · REHABWEEK.ORG

## Switch It Up: From Adapted Toys to Therapeutic Gaming

Mia Hoffman & Seong-Hee Westlake





## Disclosure – Mia Hoffman & Seong-Hee Westlake

- Relevant Financial Relationships
  - Little Lake Tech provided demo switches
- Relevant Nonfinancial Relationships
  - Mia is a PhD Candidate at University of Washington
  - Seong-Hee is a rehabilitation engineer at University of Michigan

Please do not take photos or videos of children's likeness.



# Outcomes

- Identify different types of switches and other controls
- Understand how to modify and position gaming controls for pediatric clients
- Select games that match a child's interests, cognition, and abilities.
- Learn how to use free tools currently on the market to create simple custom games that meet specific therapeutic goals

# Play is essential....



It's a human right!



[1] Fiss et al. *Behav Sci* 2023 [2] Lifter et al. *Infants & Young Child.* 2011

**What switch-adapted  
technology can you think of?**

# Switch-adapted toys provide opportunity

- Increases access to independent play<sup>1,2,3</sup>
- Increases access to cognitively-appropriate toys<sup>1,3</sup>
- Support cause-and-effect learning<sup>3</sup>
- Foster social interaction<sup>3</sup>
- Practice self-initiated movements<sup>3</sup>



# Ongoing challenges with switch adapted toys



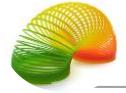
- Cost 3-5x more than off-the-shelf toys
- Not easily found in all geographic areas
- Adapting yourself... technical skills required
- Families and clinicians may need support to use regularly

*Image from UW HuskyADAPT*

# Developmentally Inspired Pediatric AT



**Adaptive** over time to limit need for multiple devices



**Flexible** for both needs of child and their therapy goals



**Durable** to kid wear and tear and multiple environments



**Low-Cost** to improve technology access for families



Socially welcoming **Aesthetic** to enhance peer interaction



**Accessible** to as many children as possible

# Commercial switches - Buttons



Orby Button Switch  
*Origin Instruments*  
**\$49.95**



Big Mack Switch  
*AbleNet*  
**\$155.00**



Blue2 FT  
*AbleNet*  
**\$260.00**

# Sip & Puff Switch



Sip and Puff Switch  
*Origin Instruments*  
**\$324.50**

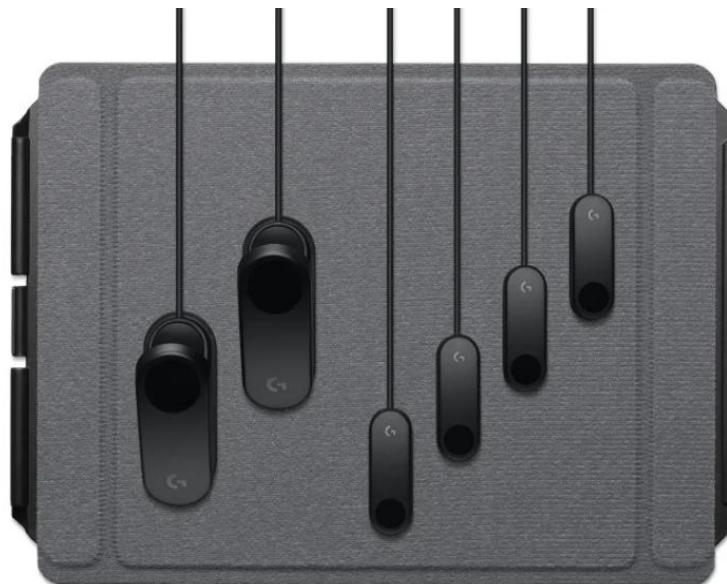
Sip/Puff Switch with Headset



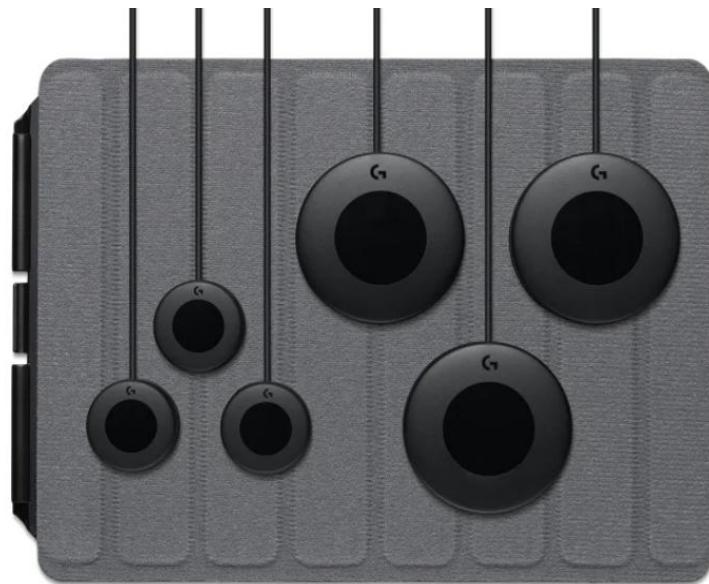
Sip/Puff Switch with Gooseneck



# A plethora of commercial switches



Adaptive Gaming Kit  
*Logitech*  
**\$99.99**



## 4 LIGHT TOUCH BUTTONS

Sensitive, light-pressure buttons with a 12 mm height can activate with low force.



## 2 VARIABLE TRIGGERS

Pressure-sensitive triggers can function like gas pedals, ideal for racing games or other applications. Force tune them for optimum control and comfort.



## 3 SMALL BUTTONS

Approximately 1.4" buttons, built with mechanical switches, offer durable and consistent actuation. Low height allows for easy and quick presses.

## 3 LARGE BUTTONS

Approximately 2.5" buttons built with mechanical switches are reinforced with stabilizer bars for consistent actuation across the full surface.

*12 Switches*

# Proximity switches

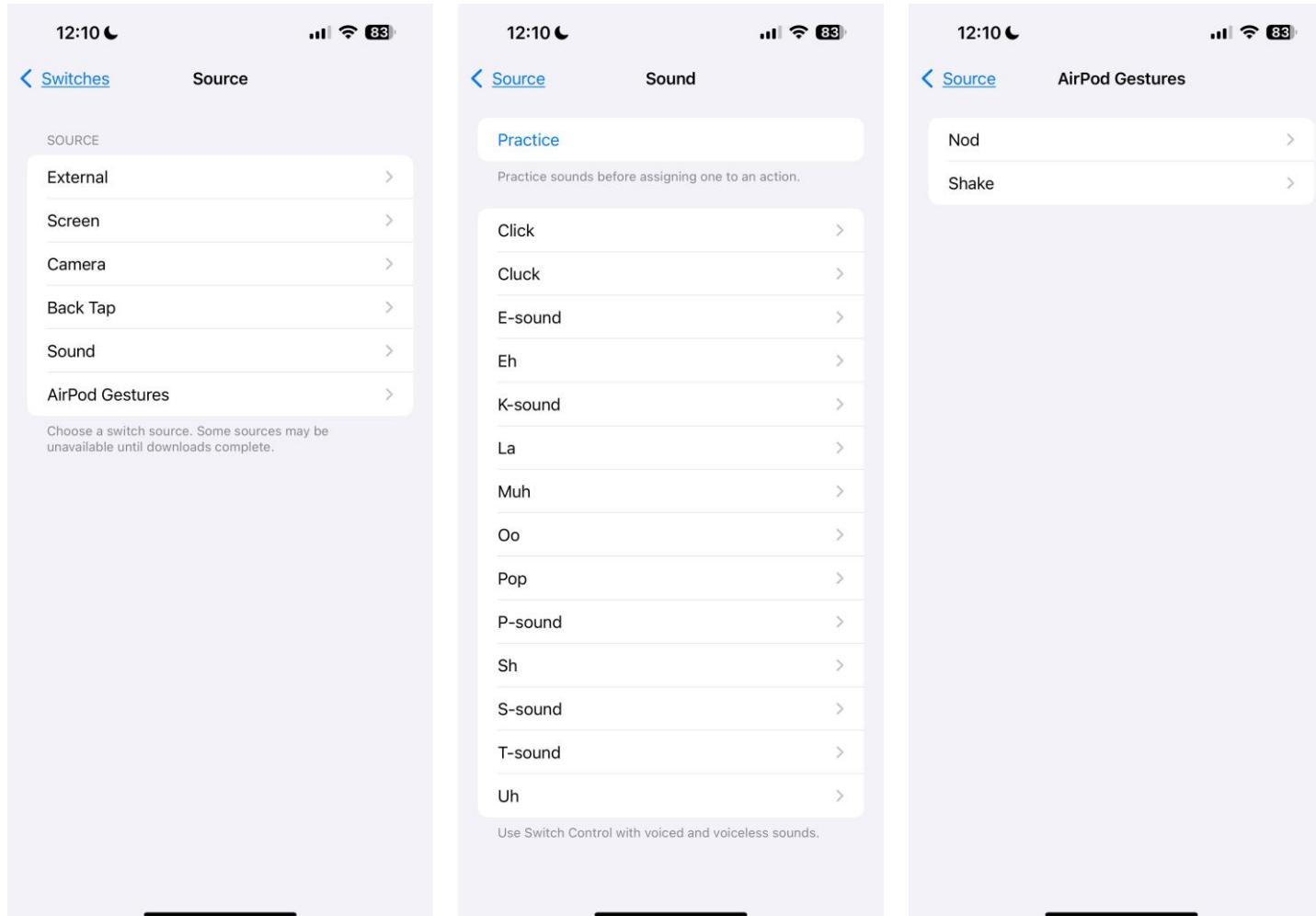


Hover Switch  
*Little Lake Tech*  
**\$49.95**



Candy Corn Switch  
*Ablenet*  
**\$255.00**

# Native Switch Options: iOS



# Low-cost switches



3D printed switches

[switchedtoys.org](http://switchedtoys.org)



Conductive tape switches

[miahoffmannd.github.io/switchkit](https://miahoffmannd.github.io/switchkit)



Adapted buzzers

Etsy shops

# Other ways to access switches?

	<b>Big Candy Corn Switch</b>	Environmental Adaptations
	<b>Big Key Keyboard (Black Key/White Print)</b>	Computers and Related
	<b>Big Red Switch</b>	Environmental Adaptations
	<b>Big Step by Step Communicator</b>	Speech Communication
	<b>BIGmack Communicator</b>	Speech Communication

Your State's Assistive  
Technology Act Program



Makers Making Change

About Us Toy Adaptation Design



**HuskyADAPT is designing  
a more accessible future.**

At HuskyADAPT, we foster an inclusive, sustainable, and multidisciplinary community at the University of Washington to support the development of accessible design and play technology.

[Get Involved](#)

[Donate to HuskyADAPT](#)

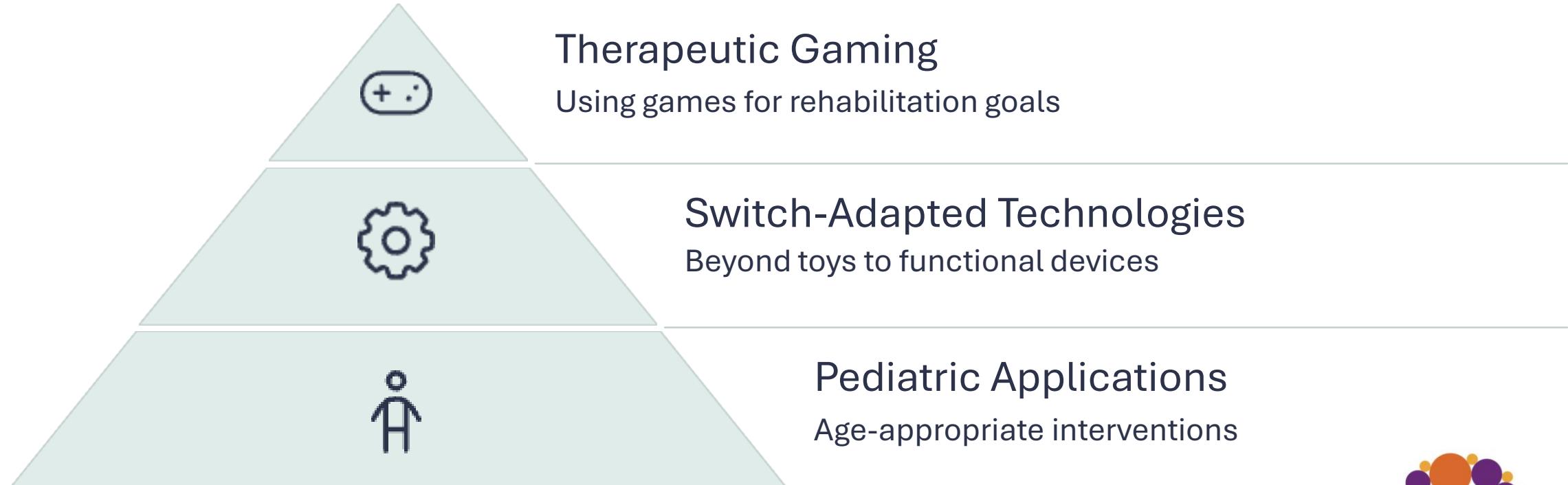
Local university



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# Moving beyond switch-adapted toys, other switch-adapted technologies + what therapeutic gaming is in pediatrics



# Consoles & Controllers



Hori Flex Controller  
*Nintendo Switch*  
**\$249.99**



Xbox Adaptive Controller  
*Xbox*  
**\$99.99**



Sony Access Controller  
*Playstation*  
**\$89.99**

# Connecting to Computers



Microsoft Adaptive Hub  
*Microsoft*  
**Bluetooth**



Tapio  
*Origin Instruments*  
**Wired Connection**



Blue2 Switch  
*AbleNet*  
**Bluetooth**

# Simple positioning ideas



Jaws Flex Clamp  
Smartphone  
Mount



**ModularHose™**

**Gooseneck Mounts**



**Pegboard + Zipties**





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# Matching games for pediatric clients



## Identify Available Games

What games are out there?



## Assess Accessibility

Evaluate control options



## Match to Client

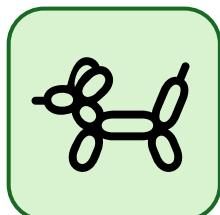
Consider abilities and interests

# Guidelines for identifying games



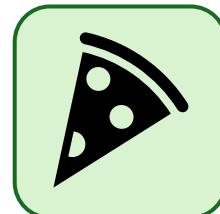
## Little ones (0-4 yrs)

Simple cause and effect  
games with bright visuals



## Elementary school aged

Games with clear goals and  
moderate complexity



## Middle school aged + pre-teen

Age-appropriate content  
matching interests

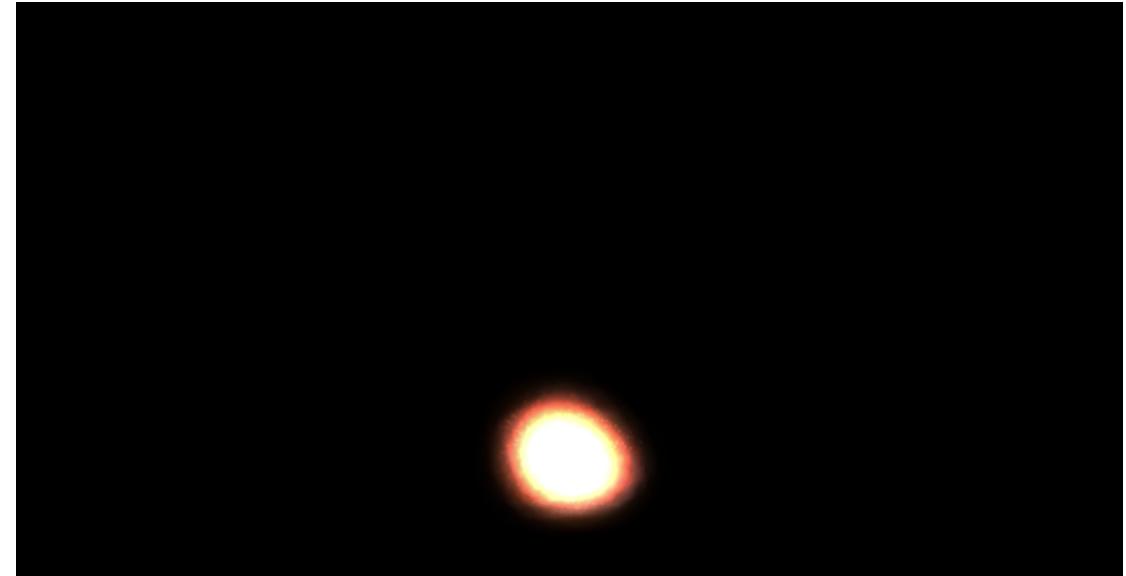


# Age-appropriate vs cognitively appropriate

Which would you select for a 13-year-old boy?

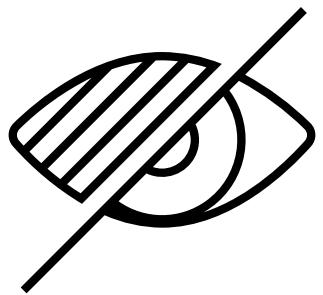


*Bluey Dancing*



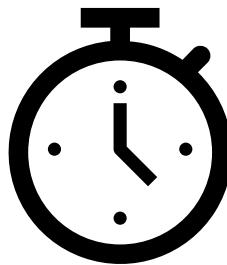
*Explosions*

# Sensory Modalities



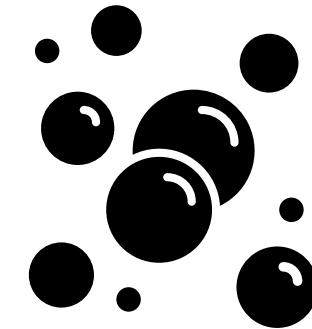
## Vision challenges

- Multimodal feedback
  - visual and audio
  - visual and haptic



## Timing

Reaction time of child



## Stimulation

- Overstimulation
- Sound sensitivities
- Light sensitivities

# Game example: Plants vs. Zombies

- Moderate timing
- Visual scanning
- Executive function



# Game example: Minecraft Dungeons

- Short mission-based games
- Joystick + 1 button minimum
- Co-pilot play option
- Great options for preteen to teenager



# Game example: Mario Kart

- Wide age range (fun for kids and adults)
- Up to 4 players co-play
- Joystick only minimum
- Joystick + 1 button option



# Mario Kart: Practice directional steering

**On:** Game corrects steering

**On:** Kart moves forward without needing to press button



# Mario Kart: Practice sustained switch press

**On:** Game corrects steering

**Off:** Child needs to press button to move



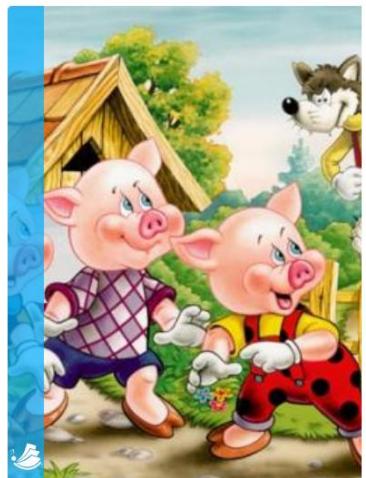
# Mario Kart: Just have fun

**On:** Game corrects steering

**On:** Kart moves forward without needing to press button



# Switch-accessible reading



Monarch Reader™  
by Building Wings

## LOS TRES CERDITOS



Fairy and Folk Tales Fiction

Author: TarHeel (adawilda24)

Rated E/Everybody

Language: Spanish

Pages: 14



## LOS TRES CREDITOS

Page 1

Back

Read



Monarch Reader™  
by Building Wings



# Switch-accessible videos

## Tar Heel Gameplay

Enter text to search All Topics Any rating Cause/effect English Search

choo choo vc shouse333  3	Core Word: Open Love is an Open Door psuwanski  2	(What) Makes You Beautiful lindsay584  3	Donald Where's Your Troosers? charrison  3
A Farmer's Life for Me charrison  3	Polar Bears Amazing Animals Series Lizcastagnera  2	Anzac Day Cathy McLeod  4	Sings Best Songs (video) 15:43 michellesciberras  16



## Tar Heel Gameplay

# Other online switch-accessible resources

Name	Description
<a href="#">Simplebites</a>	Cause-and-effect games designed for switch access
<a href="#">Owlie Boo</a>	Cause-and-effect animal animations that respond to one button
<a href="#">Shiny Learning</a>	Switch-accessible games, mostly behind a paywall
<a href="#">Papunet</a>	Switch-accessible games
<a href="#">Help Kidz Learn</a>	Subscription-based switch-accessible activities and games
<a href="#">Coolmath Games</a>	A collection of one-button games for kids, not explicitly switch-accessible and many require precise timing

# How to identify games?

The screenshot shows the homepage of the Can I Play That? website. At the top is the logo 'CAN I PLAY THAT?' with the subtitle 'AN ABILITYPOINTS INITIATIVE'. Below the logo are navigation links: CIPT, News, Reviews, Codex, Lexicon, Features, Resources, and About. There are also 'Search' and 'Preferences' buttons. The main content area has two sections: 'Accessibility Reviews' and 'Latest from CIPT'. In the 'Accessibility Reviews' section, there are cards for 'Split Fiction accessibility review' and 'Atomfall accessibility review'. In the 'Latest from CIPT' section, there is a card for 'Valve announces accessibility tags for Steam'. At the bottom of the page, there is a footer with the text 'April 18, 2025' and 'Mike Matlock'.

Can I Play That?

The screenshot shows the homepage of the Accessible Games Database. At the top is the logo 'Accessible Games Database' with the subtitle 'a DAGERSystem service powered by Apex Access'. Below the logo are navigation links: Games, Contact, Report an Error, and a 'Donate' button. There are also shopping cart and search icons. The main content area has a 'Filters' sidebar with dropdown menus for Publishers, Genres, Platforms, and ESRB Ratings. The ESRB Ratings menu is expanded, showing options for E, E 10+, T, and M. Below the filters, it says 'Showing 1–12 of 158 results' and lists three game cards: 'Alien Isolation', 'Anthem', and 'ARK: Survival Evolved'. Each card includes a thumbnail image and the game title.

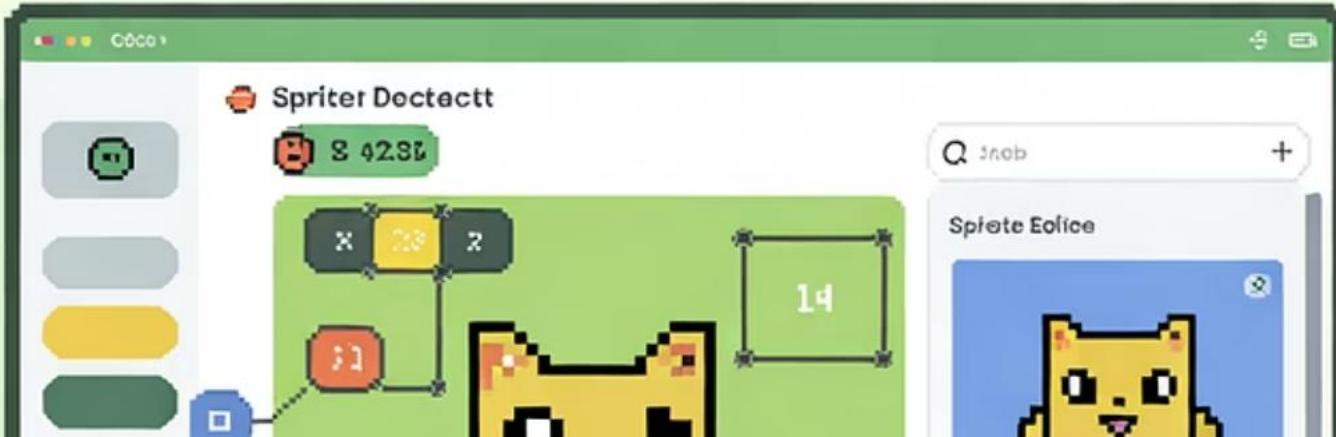
Accessible Games Database





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# Build your own games

## Learn Scratch Basics

Understand block-based  
programming fundamentals

## Design Therapeutic Game

Create games targeting specific  
therapy goal and interest

## Implement Accessibility

Add high contrast features and  
simple controls

## Test with Clients

Refine based on therapeutic  
outcomes

# Creating CVI friendly games

My child has CVI. How can we create a game for her that can work on AAC skill development?

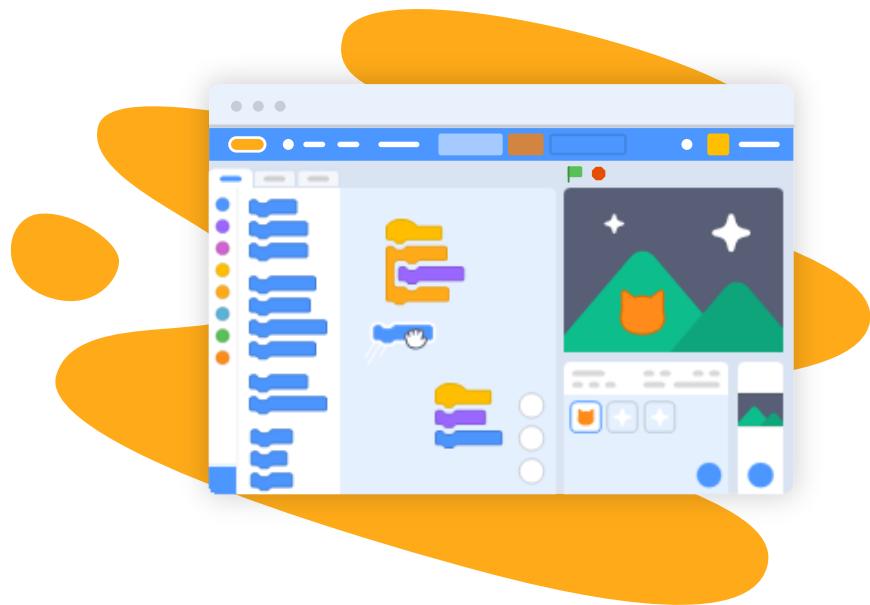


**Left arrow:** Rainbow plays chime sound

**Right arrow:** Heart plays classical piano



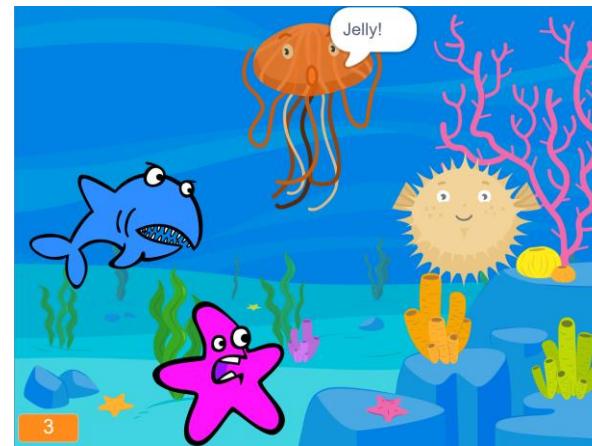
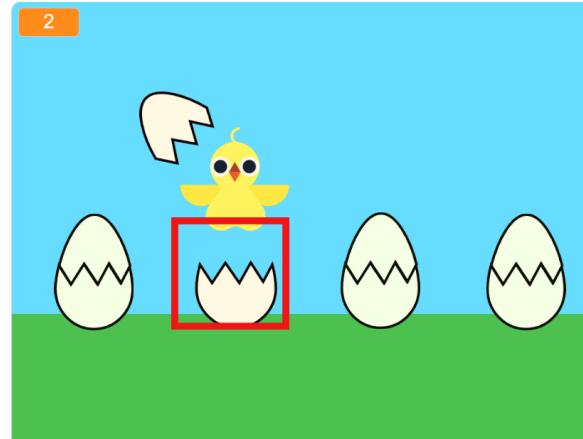
# Using Scratch to create custom games



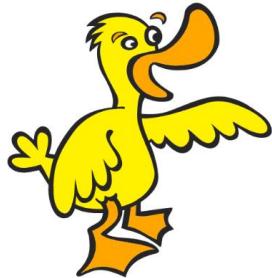
Block-based coding language  
to create interactive games  
and animations



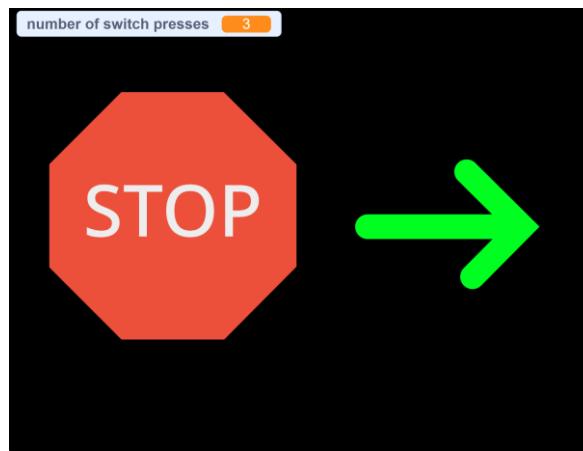
# Scratch game library



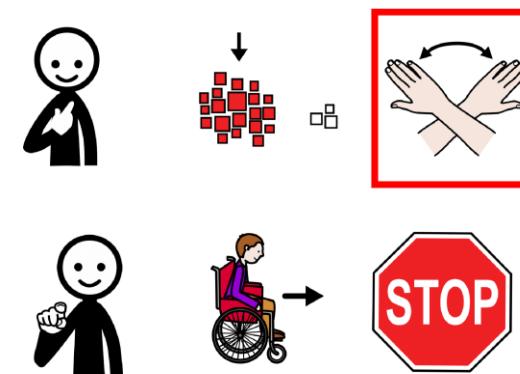
Scan here to  
access



[left] Duck grows



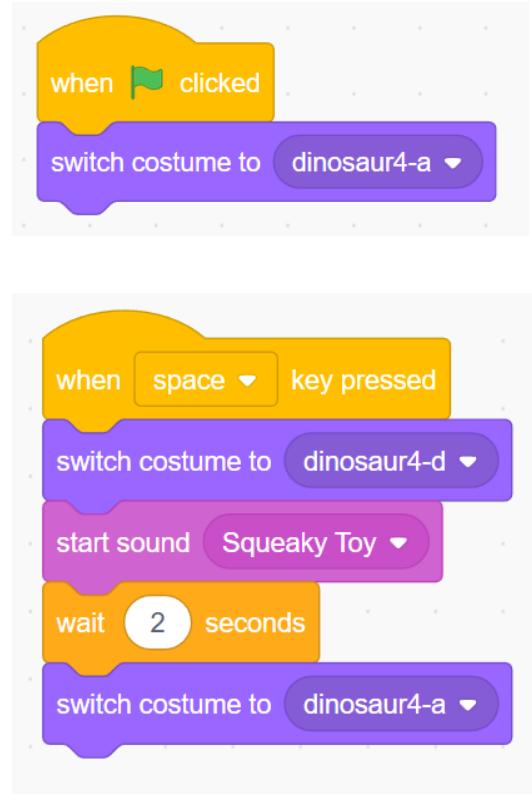
[right] Duck reset



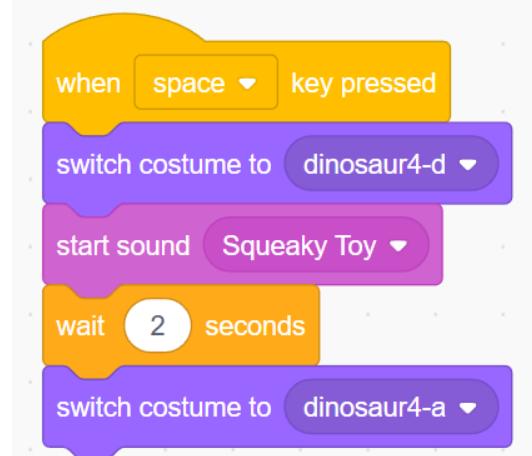
# Working on cause-and-effect



Evie likes  
dinosaurs.



When game starts, set initial costume.



When spacebar pressed, switch costumes and make a squeaky toy sound.



Scan here  
to access  
library

# Working on two choices



Alfonso likes music.

when left arrow key pressed  
switch costume to Drums Conga-b  
stop all sounds  
play sound Drum until done  
switch costume to Drums Conga-a

when right arrow key pressed  
stop all sounds  
switch costume to keyboard-b  
play sound Classical Piano until done  
switch costume to keyboard-a

A Scratch script consisting of two parts. The top part, triggered by a left arrow key press, changes the costume to "Drums Conga-b", stops all sounds, plays a "Drum" sound until it's done, and then changes the costume back to "Drums Conga-a". The bottom part, triggered by a right arrow key press, stops all sounds, changes the costume to "keyboard-b", plays a "Classical Piano" sound until it's done, and then changes the costume back to "keyboard-a". A pink line connects the end of the first script to the start of the second.

When left arrow key pressed, play Drum sound.

When right arrow key pressed, play piano sound.



Scan here to access library



Scan here  
to access  
library



# Learning to use a joystick

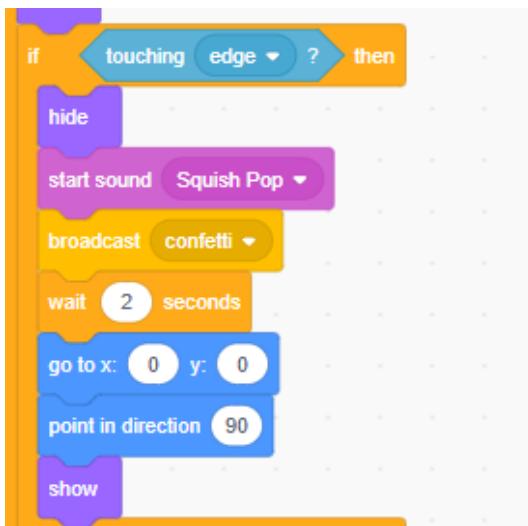
**Goal:** Learning to use a joystick



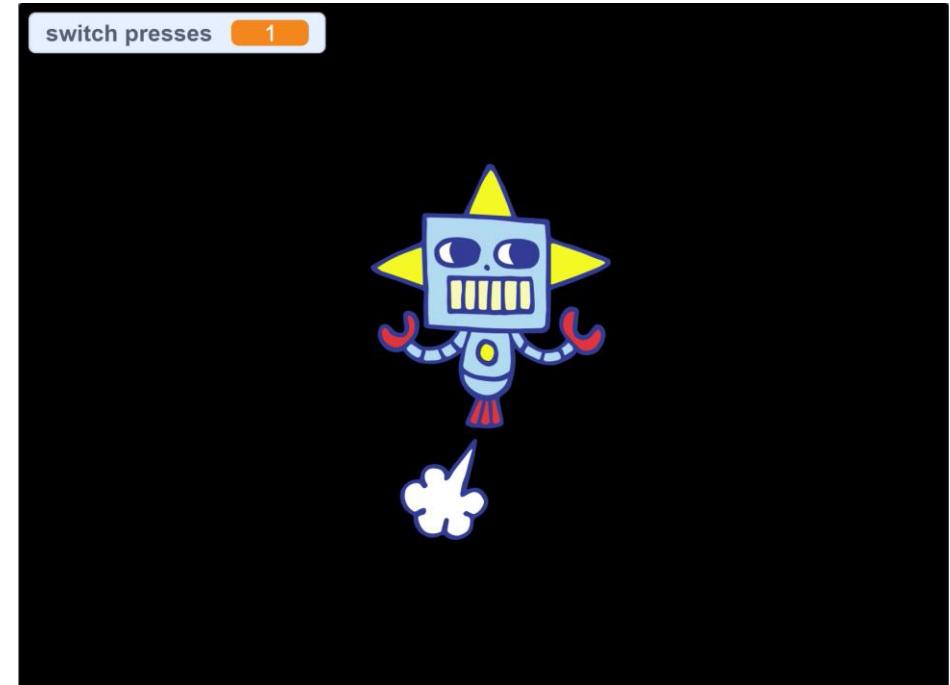
Julio loves  
fantasy.



When down arrow  
pressed, robots  
moves down.



When robot is  
touching edge of  
screen, confetti  
appears.





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# Building your own toolkit: plug and play



USB-C or Lightning  
Adapter  
*Amazon*  
**\$5-10**



Tapio  
*Orion*  
**\$119.95**



Scallop Switch  
*American Printing House*  
**\$35**

**Total Cost: \$165**

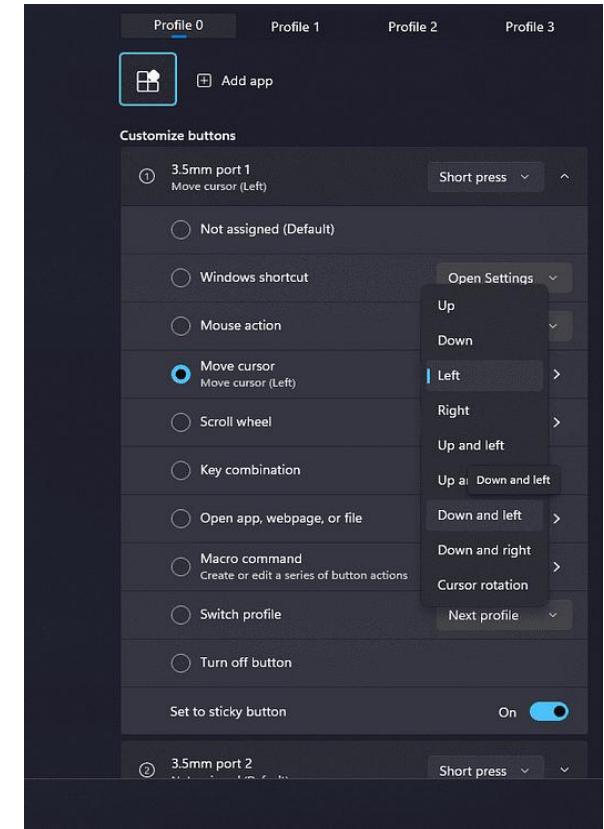
# Building your own toolkit: more options



Microsoft Adaptive Hub  
*Microsoft*  
**\$99.99**



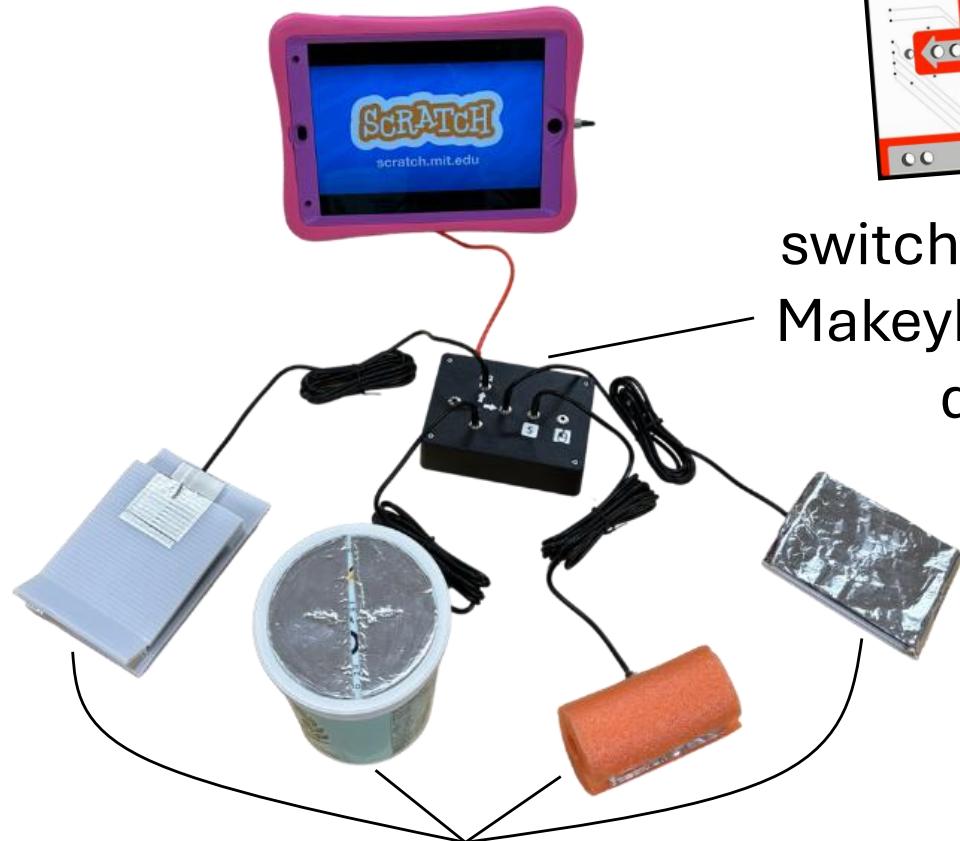
Microsoft Adaptive Joystick  
Button  
*Microsoft*  
**\$59.99**



*Set up required using Microsoft Accessory Center*

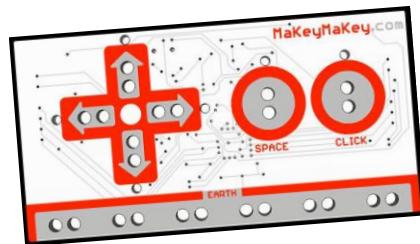
**Total Cost: \$160**

# Building your own toolkit: from scratch



do-it-yourself  
switches

Aluminum foil tape  
**\$6-8**



switch-accessible  
MakeyMakey input  
device



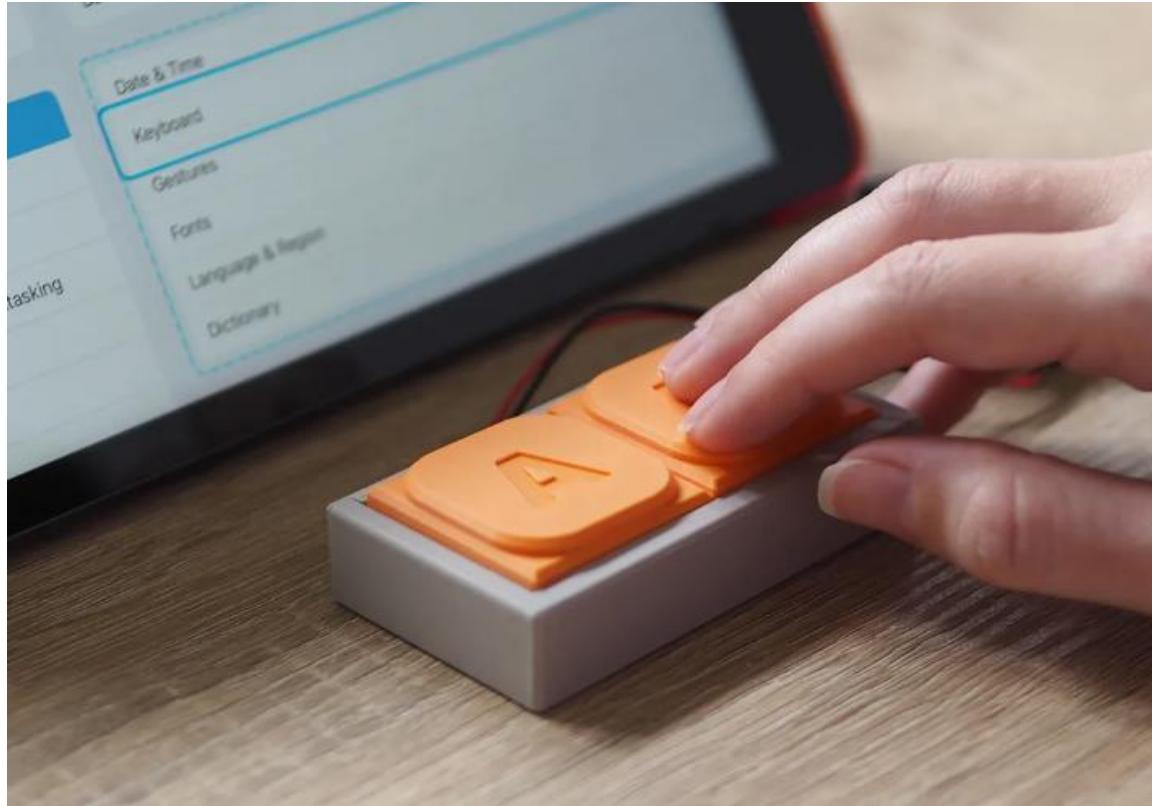
MakeyMakey  
**\$49.99**

Other components for  
input device  
**\$15**

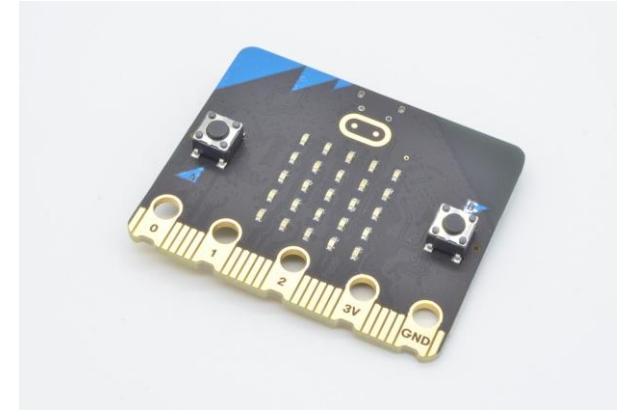
*Learn more at  
Switch Kit  
website*



# Building your own toolkit: 3D printing



**Microbit Tap**



**Micro:bit Bluetooth v2**  
**\$20.00**



*Learn how to  
3D print this  
here*



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- Build your own toolkit

# Looking towards the future



**Mobility**



**Independence at  
Home**



**Community  
Participation**

# Questions?



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