SpecialEffect DevKit

The SpecialEffect DevKit

The 'SpecialEffect DevKit' is a new resource, created by SpecialEffect, for game developers who are looking to improve the motor accessibility of their game for players.

The DevKit is informed by years of our team's experience working directly with physically disabled players to create customised adapted controllers. However, even when using an adapted controller, players may still face barriers within games.

Through a series of videos, we aim to highlight how providing options to allow players to customise their experience, can help them to overcome these barriers.

Over seven main topics, the DevKit covers many of the motor accessibility options we look for when assessing how accessible a game might be to some players. The topics fall into one of two categories - Input, which focuses on how players interact with a game through the input devices that they use, and Gameplay, which looks at ways of altering the gameplay to allow players to play at a level of challenge that suits them with their current setup.

Topics are made up of several modules that each focus on a different aspect of the topic. You can view the full topic in a single video, or as individual modules in multiple, shorter videos, if you prefer.

The options covered in the DevKit won't all be suitable for every game. So developers should decide which features might be relevant to their game, and how best to implement and test them on each of the platforms the game supports.

This includes considering any implications these settings could have in competitive and multiplayer environments. And if you do add options in your game that might help players, let people know what's available, perhaps on a store page, or in any update notes. So they can easily find out before purchase, how your game might work for them.

SpecialEffect is a charity that helps physically disabled players find ways to play and enjoy video games, when using a standard input device is difficult or impossible.

As well as creating a custom hardware setup for players, we often make use of the motor accessibility options and features available to aid a player's access in the particular game they want to play. These settings can sometimes make the difference as to whether someone is able to play a particular game or not.

We created the DevKit to share with developers the specialised knowledge and experience the SpecialEffect team has gained from working directly with players, building an understanding of the barriers they face and options that can help, and to showcase the work developers have done to create innovative and accessible ways of interacting with a game using options they've provided.
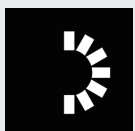
We hope that by breaking things down in detail we can show developers throughout the industry how they might create and implement some of these options into their own games, and why they might be useful for players. We hope in turn that this resource will help developers to continue improving motor accessibility for their players globally.
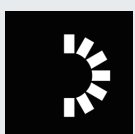
The SpecialEffect DevKit (Continued)

And If an existing project is beyond the point in development where certain changes can be made, we hope the information in the DevKit will still be useful when planning future projects.

If you are interested in adding motor accessibility options to your game or a future project, please visit the SpecialEffect DevKit website to get started at specialeffectdevkit.info.

Overview

	1 Input Devices	2 Action Mapping	3 Input Interactions	4 Analog Sensitivity	5 Information	6 Assistance	7 Simplification
1	Introduction to Input Devices	Introduction to Action Mapping	Introduction to Input Interactions	Introduction to Analog Sensitivity	Introduction to Information	Introduction to Assistance	Introduction to Simplification
2	Supporting Multiple Input Devices	Remapping	Configuring Interactions	Inner Deadzone	Action Information	Player Strength	Alternative Actions
3	Simultaneous Input	Input Stacking	Continuous Holds	Outer Threshold	Game Information	Game Difficulty	Automatic Digital Actions
4	Blocking Input Devices	Simultaneous Inputs	Set Duration Holds	Response Curves	Feedback	Timing Elements	Automatic Analog Actions
5	Input Methods	Interchanging Analog with Digital	Repeated Presses	Action Values	Settings Information	Analog Action Assists	Action Predictions
6		Input Methods	Input Methods	Individual Axes and Directions	Testing Configurations		
7		Contextual Mapping	Contextual Interactions	Input Methods			
8		Reducing the Total Number of Inputs	Reducing the Total Number of Inputs	Contextual Analog Settings			

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1 Input Devices

Input devices are the hardware or software through which players interact with a game. They are often the first thing to consider when building the input for your game. Which devices you decide to support, and how they are handled, will greatly affect which players are able to play.

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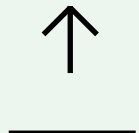
1.1 Introduction to Input Devices

The input devices a game supports can determine whether or not someone is able to play that game. Devices like Gamepads, keyboards, mice, and touch screens are some of the more popular options, but less common devices like flight sticks might also be used to play a game if supported.

Players may find different input devices more accessible or more comfortable to use than others. And those different devices may offer additional input methods that players may prefer to use, from analog sticks and buttons, to touch or motion.

Having the choice to access a game using various compatible devices available on a particular platform, as well as options for how those devices are handled by the game, can be helpful and necessary for some players.

→ Learn more here
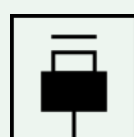
1.2 Supporting Multiple Input Devices

Give players a choice of different input devices to play your game.

Mario Kart 8 on the Nintendo Switch allows you to play with many of the input devices that are available to the platform, such as the Joy-cons and the Pro controller, as well as allowing you to use any of the various configurations those devices support.

GNOG on Windows allows you to use various different input devices to play, including using a gamepad, or just a mouse if playing the mouse accessibility version of the game. Whichever device the player uses they will have access to all of the actions within the game, including the ability to navigate menus.

FIFA on Windows allows you to choose between a few different input setups, including using a gamepad, or a mouse. You can select which you'd prefer to use from the settings menu and it will apply to various different areas of the game.

Oceanhorn 2 on iOS offers the ability to play with either a gamepad or touch controls, and will interchange between the two depending on which device is currently being used. So if an input from the touch screen is used the game will use touch as its input source as shown by the touch controls on the screen, if a gamepad is then used the game will instantly switch to using gamepad input instead.

Platforms are increasingly including support for additional input devices, such as both mouse and keyboard now being available to developers as an alternative input to the gamepad on some consoles. Both GEARS 5 and Sea of Thieves support mouse and keyboard on Xbox for example.

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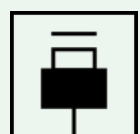
1.3 Simultaneous Input

Let players use more than one input device at the same time.

The more input devices your game supports, the greater the chance the player will be able to use the input device they prefer. However, some players may find certain parts of different devices more accessible than others, so might benefit from being able to play with more than one of the same or different devices at the same time, using inputs from each device for different actions.

This method of play can be supported by allowing multiple devices to be used concurrently, acting as if only one device were being used. You will need to consider how these devices interact together for both analog and digital inputs.

Ori and the Will of the Wisps on Windows 10 offers three different ways to play - gamepad, mouse and keyboard, or just keyboard. And you're able to use all supported input devices simultaneously by default. So a player might use the keyboard keys for actions like Jump and the various abilities, but then might prefer to use an analog stick on a gamepad for movement alongside that. In this case you can see the input prompts are changing dynamically depending on what input device was last used.

If possible allow simultaneous input to be optional as Ghost Recon Breakpoint does, by having the option to enable or disable simultaneous input for controllers.

The Copilot feature on Xbox and Windows 10 allows you to combine two devices and to make them act as one. But generally it is best to support this functionality within the game, because this could allow the player to configure input and gameplay settings for each device separately if supported, and because not all platforms systems support this feature.

Allowing simultaneous input can also be useful for players who might share the controls with other people, to cooperatively control a single player in the game.

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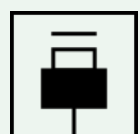
1.4 Blocking Input Devices

Let players disable individual devices when multiple devices are supported.

If multiple devices are supported it can be useful to allow players to stop the game from receiving input from particular devices, especially on platforms where players might configure their input devices outside of the game itself.

For instance, Ghost Recon Breakpoint allows you to choose to enable or disable gamepad or other input devices entirely, so that the game will no longer detect any input from those devices at all.

Likewise Eagle Island allows you to enable or disable gamepad input, and also allows mouse input to be enabled or disabled during gameplay.

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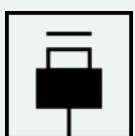
1.5 Input Methods

Choose input devices that offer various input methods, or provide alternatives.

When thinking about which input devices to support in your game, consider the input methods available to each device, such as buttons and analog sticks, keys, a pointing device like a mouse, motion, touch, speech recognition, or even eye tracking.

Some players may have input methods they prefer to use over others, so the greater the range you're able to support, the greater the chance that someone could play your game.

When playing Skyrim VR on PlayStation for instance, you can use either the PlayStation Move controllers for a largely motion controlled style of play, or the Dualshock controller, that allows for a more traditional button and analog stick method.

Some players may find touch input difficult or prefer not to use it, so try to add alternative options on platforms that support them. Sayonara Wild Hearts and Grindstone both allow you to use either touch input or a gamepad to play on iOS.

The buttons and analog sticks on a gamepad, as well as mouse and keyboard on platforms that support them offer physical access to a wide range of players, so aim to support those as a minimum.

You may have to consider altering the gameplay to accommodate players using different input methods with your game.
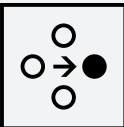
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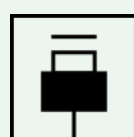
2   Action Mapping

For each input device your game supports, some or all of the inputs will each perform different actions. Allowing players to configure the specific input that's mapped to each action, lets them use the inputs that are the most accessible to them.

→ Learn more here

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2.1 Introduction to Action Mapping

Every game contains actions such as jump or shoot that the player can perform using various inputs, such as the buttons on a controller. In most cases the developers will decide which input the player will use for each action, when making a game.

Some players may struggle to physically reach or have accurate control over certain inputs so may prefer to use other inputs instead. By allowing players to change which inputs control which actions, you allow them to create a layout that suits them. And while providing the option to choose from pre-made layouts can be good, it's best to also let players map actions individually to inputs of their choice, for each platform and input device your game supports.

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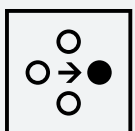
2.2 Remapping

Ideally, let players remap any action to any input, at any point in the game.

In Super Smash Bros. Ultimate pressing the X button would typically make your character jump. But remapping the X input to the Grab action instead means pressing X will make your character grab instead of jump.

Players may want to map the actions they consider most important to the inputs they find most easily accessible.

In Gran Turismo Sport you could remap the Square button from Handbrake to Reverse if you thought you would need to reverse more than handbrake, and Square was a more comfortable input. And to ensure you still have access to all of the actions in the game you could then map the Triangle button to Handbrake.

In some cases developers may decide to automate the process of mapping missing actions for the player, but often it is best to just advise the player that they are missing access to an action so they are fully aware of what has been changed, and in some cases the player may decide that action is not essential for them to play a game.

You can present remapping as changing the action that an input performs. For example, letting the player decide what the X button does. Or you can present remapping as changing the input that performs an action. For example, letting the player decide how to attack. This method of remapping might be easier for the player to understand.

This typically works by the player selecting an action and the game then prompting the player for an input. The player presses a button, or activates any valid input, and this is recorded and mapped to the selected action.

Remapping in Hollow Knight works in this way, so if you select an action such as Dash and then press A, Dash will now be mapped to the A button.

In Forza Horizon 4 you're able to choose from a number of developer made layouts, but from those you're then able to create your own configurations, using them as a starting point. So if you create your own layout and select the Accelerate action you will then be prompted for an input. The next input pressed will be mapped to Accelerate.

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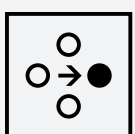
2.3 Input Stacking

Allowing players to map multiple inputs to the same action can be useful.

Often a game will overwrite the default input when remapping in order to conserve inputs, but in games where spare inputs are available, players may want to use multiple different inputs to perform the same action.

The reason for this could be that while the player will usually prefer to use a particular input to perform an action, there may be instances where a game requires multiple actions to be performed at the same time or in quick succession, and in these situations only the player may want to use a different input instead.

For example In Celeste someone might typically jump using the A button in the majority of situations, but when they're climbing a wall, they will already be holding down right trigger, so a different input for Jump may be easier for them, perhaps one that is closer to the right trigger, such as the right bumper.

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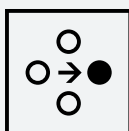
2.4 Simultaneous Inputs

If players are required to access multiple inputs at the same time, let them remap each of those inputs.

In God of War it's possible to enter Rage mode by pressing L3 and R3 simultaneously. This can be remapped to Cross and Circle, two inputs which could be more accessible to some people.

Pressing any two inputs simultaneously can still be difficult for some, so ideally allow players to map each action to a single input. Entering Camera Mode in Ghost Recon Breakpoint also requires pressing L3 and R3 at the same time, but can be mapped to a single input instead. Here it is set to Up on the D-Pad.

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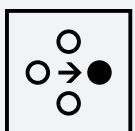
2.5 Interchanging Analog with Digital

Let players remap digital and analog inputs, and swap between the two.

As well as remapping digital inputs, such as the A and the Y button, allow players to remap analog inputs such as triggers and analog sticks.

Southpaw mode is an option found in some first-person games, that allows you to swap the functions of the left and right sticks. So the camera would now be controlled by the left stick instead, which some players may prefer.

Often it is best to include interchangeability between analog and digital inputs where appropriate. This might be useful for players who prefer pressing a button to moving a stick in certain directions, or vice versa.

A button might act as a direction on an analog stick, for example. As is the case in Dirt Rally 2, which lets you remap steering left and right from the horizontal axis of the left stick to two different digital inputs. Here Square will now steer the car left, and Cross is steering right.

Equally, an analog input, like a trigger or a direction on an analog stick, might act as a button. Untitled Goose Game allows mapping digital actions like Crouch and Grab to analog inputs instead. Here we're changing Grab from A to Right on the right stick.

Multiple actions controlled by a single analog input may need to be separated to allow mapping to individual axes and directions. For example, separating out movement into each individual direction.

In Cuphead each direction of movement would normally be mapped to a direction of the left stick, but it is possible to map one or more of these directions to digital inputs instead. So here instead of pressing down on the left stick, we now press Y.

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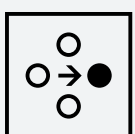
2.6 Input Methods

Allow players to use alternative input methods for each action where possible.

Some games may offer players additional input methods for certain actions, like using motion control to steer in a driving game. Some input methods may be inaccessible to some players so it's important to allow these actions to be mapped to inputs that use a different input method.

Mario Kart 8 Deluxe gives each player the choice to map steering to either motion or the left stick or D-Pad before starting a race. The game has made adjustments to the steering so that it functions in a similar way regardless of which input method is used.

A common use for motion is to aim the camera in a game, so Gravity Rush 2 on PlayStation 4 gives you the option to control the camera using either the motion and rotation of the Dualshock 4 controller, or the analog stick instead.

Both Splatoon 2 and Superhot on Nintendo Switch let players choose whether they use motion controls, or the right stick to aim and look.

And the same should apply to touch. Days Gone uses the touchpad on the DualShock 4 to navigate menus, but also allows you to use the left and right bumper as an alternative.

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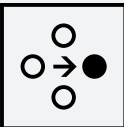
2.7 Contextual Mapping

Allow players to remap for each context in a game where possible.

During a game, the set of actions available to a player may change depending on the context the player is in. These contexts can be anything like driving a vehicle, attacking or defending in a sports game, or even being in a menu.

So for example in Overwatch, while playing as Reinhardt you're able to hold up a shield with one input, or charge forward with another. But if you then switch to a different character, although some actions like Jump will still be available, the overall set of available actions, and therefore the context, has changed.

You could have global mappings for actions that are shared between contexts, but then allow players to remap for each context as well. So in Overwatch it's possible to assign actions globally, but then also override these by changing the action mappings for each character individually.

Ghost Recon Breakpoint allows players to remap based on the contexts they find themselves in, such as being on foot or in a vehicle.

Menus should also be considered a context. Dark Souls Remastered allows you to remap many of the actions available while navigating the menu.

Slay the Spire does the same while also allowing you to remap Confirm and Cancel to any input.

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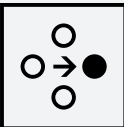
2.8 Reducing the Total Number of Inputs

Help players by reducing the number of inputs required to play your game.

Remapping allows players to use the inputs they prefer and have greater access to. Remapping can also help players by reducing the total number of inputs needed to play a game.

Simply adding the ability to remap controls could help players reduce the number of inputs they use, as some players might remap inputs mid-game to perform some of the less commonly required actions, though this may not be ideal.

A better way to let players do this is through contextual remapping. Allow players to use the same input for different actions, if the actions they are bound to are mutually exclusive and you could never perform them at the same time.

When rowing a boat in Sea of Thieves you aren't able to jump or reload, so you could remap A and X to the left and right oar stroke, so that you no longer need to use the triggers.

In general, the more contexts there are the greater the chance that the player can reduce the total number of controls.

Any instance where the set of actions available to the player changes should be considered a different context, even if the contexts only differ by a single action. Even something like looking at or being near an interactable object, such as a door, or your character being in mid-air could be considered a different context.

Let the player remap the same input to more than one action, if those actions could be performed at the same time without affecting the core of the game. And if the core of the game might be affected, let players decide for themselves where to make compromises.

Battlefield V allows you to do this, so you might map both move forward and Vault, to Up on the left stick, so both actions will be performed at the same time when pushing up on the left stick, meaning you no longer need an additional button to vault.

While allowing players to configure this themselves can be useful, options or defaults that reduce the total number of inputs required can show players different ways they could play.

Super Smash Bros. Ultimate has the option to jump using Up on the left stick so you no longer need a button to jump.

NHL offers an NHL '94 scheme which uses a reduced number of inputs to play.

Some games have added options that make it possible to play with a single stick where normally two would be required. Often one for movement and one for the camera or aiming.

Shadow of the Tomb Raider has a single stick mode, which is made possible by considering aiming as a different context. While aiming, control of the analog stick will change from movement to controlling the camera, so a second stick is no longer required for this.

GEARS 5 also has the option of single stick aiming, but extends this by having a single stick mode as a separate choice that allows you to move around and control the camera with a single stick even when not aiming.

When evaluating the controls that players will use, consider how your game could include a way to play with access to fewer inputs. You might have options that go beyond changing the way input is handled and actually alter the gameplay as well, assisting the player and reducing the total number of inputs.

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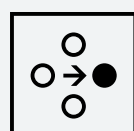
3   Input Interactions

Once an input is mapped to an action, the player will need to interact with that input in a specific way to perform that action. It is important to allow players to configure these interactions where possible, and to provide alternatives to more complicated interactions that some players may find difficult.
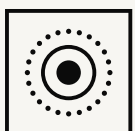
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3.1 Introduction to Input Interactions

To perform an action in a game the player will need to interact with an input or multiple inputs in a specific way. The most common example would be pressing down a button, or other digital input to make something happen.

Each interaction is made up of any number of input events and may also have a time between those events. Where complex interactions might be made up of many input events with a time between each, simpler interactions could involve just one input event.

Some players may struggle with certain interactions, so it is important to allow players to modify them for each action where possible, regardless of which platform the player is on, or which input device or method they are using. This can often be done without changing the way the actions themselves behave.

→ Learn more here

3.2 Configuring Interactions

Let players decide which input event performs an action, and the timing of that event.

Every input interaction in a game contains one or more input events. In the case of a digital input this could either be a press, or a release of that input.

You could allow players to adjust which events perform each action. You might let players choose to have an action be performed when an input is released, or perhaps on the second press down of an input in a sequence.

While it is useful to let players customise input interactions in this way generally, it is also important to ensure players can choose to perform an action on the first press of an input where possible.

Input interactions often also contain timing elements alongside these input events, which you might also let the player configure. If an input needs to be released before or after being held for a specific amount of time for an action to be performed, you might allow players to adjust this time to customise the interaction further.

Read Dead Redemption 2 lets you globally set the time that a button must be held before it performs a different action, which might be useful for those who are unable to release a button quickly.

While these input interactions can take any form, there are some in particular that recur between games, and which can be difficult for some players. We will try to cover what the most common examples of these are, and what developers have provided as an alternative to them in each case.

→ Learn more here

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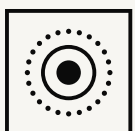
3.3 Continuous Holds

Provide alternative options for actions that require an input to be continuously held.

Some games will require you to hold an input down to continuously perform an action. For example dragging an item in a point and click game. An alternative to this interaction might be to press the input once to pick up the item, and then again to let go.

Some first and third person shooters provide a similar option for aiming, such as The Last of Us Part II which lets you set the Aim action from Hold to Toggle, which will mean Aim is toggled on and off when the button is pressed.

The Last of Us also allows you to set many other actions that require holds to a toggle instead. For instance firing the bow can be set from Hold to Taps, which will mean a single press of the button will draw the bow, and a subsequent press will fire.

And again here in Hob on Nintendo Switch you can change the interaction type for grabbing objects. With the Hold to Grab option set to Off, you just have to press the button once to grab an object, and then again to let go, rather than holding the button down.

Allowing an input to be pressed instead of being held could also extend to the movement within your game. In Ghost Recon Breakpoint there is an action called Auto-Move that effectively allows you to toggle moving forwards instead of holding the stick in a certain direction. The player might decide to map this action to Up on the analog stick so that they only need to push the stick up once to toggle moving, and then again to stop moving. Alternatively they could map it to a button press, which might allow them to play with a single stick depending on the game.

Radial menus can be challenging for some players as you often have to hold a button down to keep the menu open. So you might have a setting that allows a single press of the button to open the menu, and then a subsequent press to close it. As can be found in Sea of Thieves.

To make a selection you often need to hold the stick in a direction whilst pressing a button. This can be difficult for players who aren't able to use multiple inputs at the same time, so having an option to work around this can be useful.

Sea of Thieves has a setting that will remember the direction the stick was last positioned in, so you can let go of the stick once it's over the item or weapon you want to select, and then press a button to confirm the selection.

→ Learn more here

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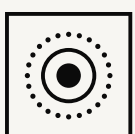
3.4 Set Duration Holds

Let players modify interactions that require holding an input for a specific amount of time.

Sometimes an input will only need to be held down for a certain amount of time in order to perform an action. This could be a significant amount of time or a very brief hold. For some players even a short hold can be difficult, so provide alternatives where possible.

In Fortnite, for example, you need to hold a button down for a specific amount of time to open a loot chest. Letting go of the button before the set time will mean the action does not activate and the timer is reset.

A useful alternative to this might be to let players press the input once, and for the action to activate automatically once the set duration has passed.

This is what happens if we turn on Tap to Search. As soon as the button is pressed the timer starts, and letting go of the button will not reset the timer or stop the chest from opening.

Sea of Thieves allows you to enable a similar setting for all of these interactions found in the game. Actions like loading the cannon and patching the hull can now be performed with a single button press.

These interactions could also be designed so that if a player presses the input again before the action has activated, the timer will stop and the action will not be performed. As this is what typically happens when letting go of a button in hold interactions.

If you set Crafting in The Last of Us Part II to a toggle instead of a hold, crafting can now be performed with a single button press, but it can also be cancelled at any point before the action is completed by pressing the button again.

→ Learn more here
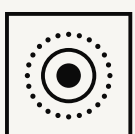
3.5 Repeated Presses

Let players avoid repeated button presses in quick succession.

If players are required to press an input repeatedly and in quick succession for a certain amount of time, an option to avoid this can be worthwhile.

Here in God of War you need to press a button repeatedly and at a certain rate to progress past this event. An alternative to this might be to let the player hold the button down instead.

So if we set Repeated Button Presses to Hold, now we can simply hold the button to progress, in this case setting the axle of the bridge in place.

The same setting is available in Uncharted 4, so if Repeated Button Presses is set to Hold, any events that would usually require you to repeatedly tap a button can now be performed with a hold instead.

As holding a button can still be difficult for some, providing other options can also be useful, such as reducing the number and rate of presses needed. In Red Dead Redemption 2 adjusting the Tap Assist option will reduce the rate at which you need to press a button to complete the action.

And you may consider reducing the interaction down to a single button press if possible.

In Metro Exodus you can choose to use a hold or even a single press from the accessibility options. With the press setting on, actions that would normally require many repeated presses can now be carried out with a single button press instead.

There may also be points in your game where an action would ideally be performed in quick succession for an indefinite amount of time. For these actions, like firing a single fire gun, or performing an attack, alternative input interactions could be useful for some players.

The Melee Combo setting in The Last of Us Part II affects the interaction for melee attacks while in close combat. Setting this to Hold makes it possible to hold an input down to continue attacking, rather than having to press the input repeatedly for each melee attack.

→ Learn more here
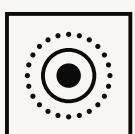
3.6 Input Methods

Allow players to modify input interactions for all input methods.

The ability to modify input interactions should also apply to all the input methods that your game supports such as touch and motion.

Broken Age for instance allows you to change the interaction of picking up and placing items, from select and drag, to just select instead. This option is available for each of the platforms the game supports. So whether you're playing with a mouse, gamepad, or a touch device, you can still benefit from the option of not having to hold an input down.
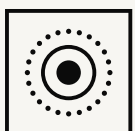
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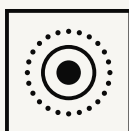
3.7 Contextual Interactions

Consider context as a means of letting players avoid complex interactions.

Complex interactions are sometimes included in games as a way of having more than one action mapped to the same input, with each action being triggered by a different type of interaction. In these cases it might still be possible to allow players to change the interactions to something more accessible for them, if you consider the context that the player is in when performing these actions.

In Call of Duty Blackout, holding a button down for a certain amount of time will pick up an item, releasing the same button before this time will cause you to reload. However if you set the Item Pickup Option to Press, pressing the button in the context of pointing your camera at the item will only ever pick up the item however long you hold it, and outside of this context, pressing the button will reload.

→ Learn more here

3.8 Reducing the Total Number of Inputs

Let players configure inputs to perform multiple actions and so reduce the total number of inputs.

There may be a secondary benefit to letting players configure input interactions, and that is the possibility of reducing the total number of inputs required to play a game.

This can be done by having one input perform multiple different actions, according to how it is used. So pressing an input might perform one action, whereas a different interaction might perform another. And though this might result in more complex interactions being used, for players who are able to carry them out it will mean fewer inputs are needed overall.

In God of War you need to press R3 to grab stunned enemies by default. But it is possible to set Grab to be performed when holding Circle instead, meaning the R3 button is no longer required. So with this setting enabled, the Circle button can now perform two actions- Interact with a press, and Grab with a short hold. And there is a similar setting that moves sprinting from a press of L3 to a hold of cross instead, reducing the total number of inputs in the game.

In Ghost Recon Breakpoint it's possible to choose which interaction you want for many actions, between Press, Hold, or Double Tap. So you could configure the game so that pressing one button causes you to crouch, but holding the same button will make the character sprint, and a double tap of that button may perform an entirely different action.

→ Learn more here

4 Analog Sensitivity

In a similar way to input interactions, but in this case for actions that are controlled by analog inputs, an action will respond to an analog input in a specific way. Letting players configure the relationship between the value the game receives from the input, and the value the corresponding action takes, lets them customise the game's controls in a way that works for them.

→ Learn more here

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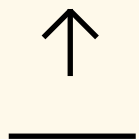
4.1 Introduction to Analog Sensitivity

For actions that are controlled by analog inputs, such as moving a character in a certain direction, or accelerating or steering in a driving game, developers will decide how the action responds to the analog input. The way a character's speed increases the more an analog stick is pushed for instance.

How an action responds to an analog input influences the level of control a player may have over a particular action. Players who are not able to push an analog stick all the way might not be able to move a character at maximum speed, for example.

Letting players modify the relationship between the value the game receives from the input, and the value the corresponding action takes, enables them to customise a setup to suit their control and the type of input they use.

The source of an analog input's value will vary depending on the device. An analog stick for example might use the position of the stick along its axis to determine the value, whereas a mouse might use the speed it is travelling along an axis instead.

Here we will show ways developers have enabled players to alter their analog input settings to allow for more personalised control. Whilst these will affect what could come under a general umbrella term of 'Sensitivity'. It's important to also give players a finer grained control over how an analog action handles, for each input device and platform your game supports.

→ Learn more here
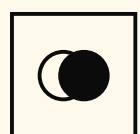
4.2 Inner Deadzone

Let players adjust the inner deadzones of each input to suit their movement.

The inner deadzone is an area between two distinct values of an analog input, in which the bound action will not activate. By allowing players to adjust this area, players can choose the amount of input required to initiate an action.

Having the ability to increase the inner deadzone can be useful for players with involuntary movement trying to avoid unintentionally performing an action. Decreasing the inner deadzone can be useful for players who would prefer to initiate an action with less input from the device, and therefore less physical movement overall.

Fortnite allows you to adjust the deadzone of each stick when using a gamepad, as shown by the blue area. If the deadzone is adjusted to 0.50 on the right stick this means that when the stick is in the area between centre and halfway along an axis, it will have no effect and the action of moving the camera will not activate. Outside this area the action will activate as normal.

DiRT Rally 2.0 and Rocket League both have similar settings, which allow you to adjust the inner deadzone of the left stick. This will determine how far the stick needs to be pushed before the car will start steering.

As well as allowing you to edit how the sticks behave, Battlefield V also has settings to alter the trigger inputs as well. By altering the inner deadzone on the right trigger you can decide how far the trigger will need to be pushed before a vehicle will start accelerating.

It's worth noting that inner deadzones can also be applied to digital actions, when mapped to analog inputs. In Battlefield V the digital action of firing a weapon is also affected by adjusting these trigger deadzone settings. In this case the weapon will not fire until the trigger reaches the set distance.

Some platforms will allow you to adjust deadzones on a global scale. The Xbox Accessories App features deadzone settings for the Xbox Elite controller for example. However, it's also important to be able to adjust these settings within a game, to ensure, where possible, they can be altered individually for different actions and within different contexts.

→ Learn more here
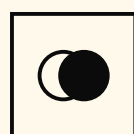
4.3 Outer Threshhold

Adjusting the outer threshold can help players to perform an action fully.

The outer threshold is the opposite of the inner deadzone, in that it's an area between two values of an analog input where an action will activate at its maximum value. The point at which a character will move at their maximum speed for instance.
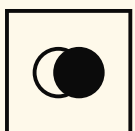
Letting players adjust this area can allow some players to reach the maximum value of the action with less physical movement.

In Apex Legends you can adjust the outer threshold for aiming. So if we increase the value so it covers more of the graph, now when aiming in-game, the stick needs to be pushed less far before the camera will turn at its maximum speed.

Battlefield V has settings to alter the outer threshold both for the sticks and also the triggers. Here for the triggers it's referred to as the Max Input Threshold. Lowering the required value reduces the distance the trigger will need to be pushed before a vehicle will reach maximum acceleration, for example.

Forza Horizon 4 includes the option to alter the outer threshold for various different actions like steering, accelerating, braking and using the clutch.

→ Learn more here

4.4 Response Curves

Let players adjust response curves to personalise their control of an action.

Actions that are analog and can take many different values between the inner deadzone and outer threshold, will respond to the player's input in a specific way, depending on how the developer has chosen it to feel.

The response curve, which describes this relationship, can be adjusted to make the action more or less sensitive at different input values. Letting players adjust the curve, to suit the way they use their input, can give them more control over the action.

Steam input controller settings for example will allow you to choose from several presets when using a gamepad. Choosing the Aggressive option will result in the action responding very quickly as you initially move the stick, with the action becoming less sensitive after you pass a certain point on the curve. Setting it to Relaxed will produce the opposite effect where it will respond more slowly initially, but the action will increase in value very quickly after the stick reaches a certain point. As with other aspects of accessibility it can be best to include these settings in-game.

Apex Legends gives you a fine level of control for configuring the response curve for aiming. Note on the graph how adjusting the response curve only affects the area between the inner deadzone and the outer threshold, where the action is neither at its minimum or maximum value.

→ Learn more here
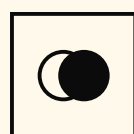
4.5 Action Values

Let players modify the maximum and minimum value of an action if possible.

So far, with the settings mentioned, it has not been possible to modify the minimum and maximum values the action can take, only how an input responds at, and between those two values.

This is because some actions need to have a set maximum or a minimum value. For instance, running in Battlefield V has a set maximum value. Exceeding this could have an adverse effect on the game or might give the player an unfair advantage in a competitive match.

However, for those actions where the maximum or minimum value could be adjusted, like how fast a camera moves for instance, allowing players to modify these can offer improved control.

One way to do this might be to multiply the value of the action by a certain factor at every input value, so the action becomes more or less sensitive overall.

For instance, in Battlefield V you can adjust the aim sensitivity, meaning that while aiming, the camera will rotate faster or slower when moving the analog stick. So if the aim sensitivity is adjusted to 2.5 times what it previously was, the camera will now move at 2.5 times the speed it did before when responding to the same stick movement.

Likewise in DiRT Rally 2.0, changing the steering sensitivity will change the speed at which you turn, up to a maximum limit.

In Gorogoa, you can adjust the cursor speed within the game, which means the speed at which you move the mouse, or how far you move an analog stick, will have more or less effect on the speed the cursor travels.

→ Learn more here
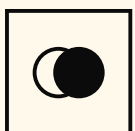
4.6 Individual Axes and Directions

Let players adjust analog settings individually for each axis and direction of an input.

If possible, you should consider allowing the player to adjust all of the analog settings mentioned for each axis, or even for each direction of an input.

By having options to change the horizontal and vertical sensitivity settings, both The Last of Us Part II and Rainbow Six Siege allow the player to alter analog settings independently on each axis for controlling the camera, so if the player wants moving the camera along the horizontal axis to feel a specific way, it can be altered without affecting movement along the vertical axis, or vice versa.

→ Learn more here

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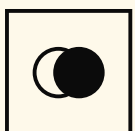
4.7 Input Methods

Give players the option to adjust their analog settings for each input method.

Analog settings should ideally be available for mouse and analog stick movement, but also for any other input methods your game supports, such as touch and motion.

In Dreams you can adjust the sensitivity of the cursor, which determines the speed at which your imp travels both when using the left and right sticks, or motion of the controllers.

And in Splatoon 2 you can adjust the motion control, or the right stick sensitivity separately, depending on which method you choose to aim with.

Asphalt 9 Legends on iOS lets you alter the steering sensitivity whether using touch or tilt controls.

→ Learn more here

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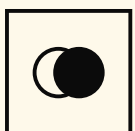
4.8 Contextual Analog Settings

Allow players to adjust analog settings individually by context.

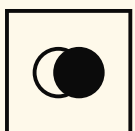Analog settings should also be adjustable on a contextual basis.

For instance, both Battlefield V and Sea of Thieves let you adjust the camera sensitivity for multiple contexts.

In Sea of Thieves, if we increase the Eye of Reach sensitivity, the camera will move more quickly while aiming with this weapon, but outside of this context the speed of the camera will not be affected.

Likewise, The Last of Us Part II allows you to adjust the camera sensitivity separately for aiming and for looking around normally, and along the horizontal and vertical axes in both cases.

More information on analog settings, such as assists, can be found in our gameplay videos.

→ Learn more here

5   Information

One way of altering the gameplay without changing how the game fundamentally behaves, is to simply provide the player with more information about a game as they play. The amount of information you're able to provide and how that information is presented will affect how easy it is for the player to find a way to play that suits them.

→ Learn more here
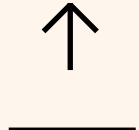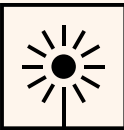
5.1 Introduction to Information

Providing players with information on the various parts of your game, will allow them to make the most of the input setup that they use.

It might be information about how to perform certain actions or how best to progress with your game. Or information on the different ways the player might configure the various options that your game contains, to best support the way they want to play.

The amount of information you're able to provide and how that information is presented will affect how easy it is for the player to find a way to play that suits them.
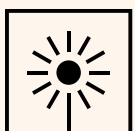
→ Learn more here

5.2 Action Information

Give players information about available actions and required inputs during gameplay.

Informing players on the actions they can perform in the game, both generally and for specific contexts, can be useful for the player if they want to know which inputs are required to play.

While a controls screen that shows which action each input corresponds to can be useful, they can be less flexible when trying to show controls for different contexts and for different input interactions.

Input prompts and reminders that show the required inputs and interactions needed to perform actions while actively playing, can be a more understandable way to present controls.

If possible, have prompts change depending on the input setup the player is currently using. You could for example change prompts depending on which inputs and input interactions the player has bound to each action.

In God of War changing the Grab action from Click L3 to Hold Circle will mean the input prompt that appears when you are able to perform a Grab action will now display Hold Circle to match the current mapping and interaction.

As well as having input prompts for specific actions, it might also be useful to remind the player of the set actions they can perform at any given moment and which inputs they're mapped to.

In Monster Hunter World you have the option to enable a Button Guide that will constantly display a number of actions that you as the player can perform. The list of actions will also change when the context you are in and therefore the available set of actions changes.

If you do use input prompts in your game you should also try to account for different input methods such as touch and motion if an action is controlled in that way.

And try to support prompts for as many of the devices your game supports as you can. So on PC you might have keyboard key prompts, as well as Xbox and PlayStation button prompts, depending on the device the player is using, either by detection, or by letting the player manually decide.

Rain World on PC allows you to choose between keyboard, Xbox, and PlayStation when first launching the game. The game will display different controls for each input device to match the specific inputs available to each device.

It may also be useful to show the player what effect those actions might have. This could be done through any number of ways, such as having images and descriptions that detail those actions, or in-game videos that showcase the actions and inform the player of what to expect when performing them.

Telegraphing analog actions can help the player to position analog inputs, so you might for instance have an option to show where a projectile will land if suitable for your game.

Enabling this setting in The Last of Us Part II will mean that when priming a projectile to be thrown, the expected trajectory of the projectile will be displayed making it easier to position with an analog input as you now know where it will land.

Depending on the nature of your game, you might include tutorials that teach the player how and when to perform each action. Usually by having the player perform those actions in a purpose built environment, so that they can then apply that knowledge throughout the game.

→ Learn more here

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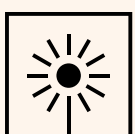
5.3 Game Information

Support players during gameplay with optional status updates, warnings, hints and guides.

Providing players with information about your game, the various systems it contains, and how best to approach certain situations, might help reduce the amount of overall input required to play.

Presenting players with information about their current state can be useful. A common way games do this is through an onscreen interface, or HUD. The HUD might show players any number of things, such as their current health, or perhaps their current location on a map.

For games that do use a HUD in this way, the information it presents can make it easier for the player to make decisions on how they want to play, so allowing players to optionally enable and configure the interface by changing the amount of information that is presented, or the location of that information, can be beneficial.

In Monster Hunter World you're able to configure which pieces of information are included in the HUD by enabling or disabling individual features that each contain information about various parts of the game.

There are of course many other ways of presenting information about the game to the player, so think about what options you could provide to prepare players for any challenges they might face. For instance you might include options that warn players about incoming danger that they may need to react quickly to, or allow them to prepare for, or optionally avoid events that might trigger an involuntary reaction for some players. This may also benefit those with certain heart conditions.

The Last of Us Part II can optionally show you when enemies are about to spot you and from which direction. This information might reduce the chance that the player is spotted, and therefore also the need to react quickly in certain situations.

As well as having tutorials about the actions the player can perform, tutorials that teach players about the various systems in your game can be useful. What format these tutorials take will depend on your game, it could be done through text descriptions, visually showing how those systems work, or any number of ways.

Throughout your game you might also remind players about certain things, perhaps how a system works or features they may have missed. Possibly including a way of viewing any useful information the player has encountered up to their current position.

You may also decide to give the player information that more deliberately guides them on how best to progress in your game. Giving players hints that point them towards solutions might help players avoid optional, perhaps more challenging sections of your game.

It could be something like suggesting different techniques in a boss fight, or perhaps you might go as far as to actually show players the optimal route they can take to get to an objective.

With the Assist Mode enabled in Super Mario Odyssey, a constant path of arrows will now travel from the player's starting location in a level to the next objective. If the player strays from the path an arrow will appear above them that points back to the path.

→ Learn more here
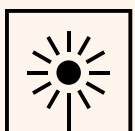
5.4 Feedback

Give players the option to change how feedback is presented.

How this information is presented can be an important factor in whether or not some people can effectively interpret it.

In most games information is presented in a visual form, whether that's through written text that needs to be read, or through graphical elements that convey some aspect of the game. But there are other ways to present this information, such as using game audio, or feedback from a gamepad, possibly to alert the player to something.

If possible you should give players the option to have this information be presented in a way that suits them. For instance some players may find sensing rumble from a gamepad to be difficult or uncomfortable. So if possible allow players to adjust the intensity of the rumble or disable it entirely.

Ensure that when the player disables certain methods of presenting information they can still receive all of the same information through different means.

In God of War you open some doors using rumble as a guide, but the game will also use an increasingly strong visual effect to tell you when you're near chisel points, making it possible to open these doors when rumble has been disabled.

And while here this is aimed at the motor aspects of accessibility, the same principles apply to other areas of accessibility such as audio and visual.

→ Learn more here
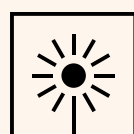
5.5 Settings Information

Ideally, let players preview and adjust settings before starting, and throughout your game.

For the player to make the most of the options and settings that your game supports, you should consider how easy and understandable it will be for them to find and adjust these settings throughout the course of your game, as well as letting players discover these settings outside the game itself.

There are many different ways to present settings in a game so you should decide what works best in your specific case. That said there are a few things in particular that we find help players to discover any settings they might otherwise miss.

Consider allowing players to adjust settings, and particularly accessibility settings, at the very start of your game. This is a great way of making players aware of the settings your game contains, and also means players will have immediate access to options they might require in order to play.

In Super Mario Odyssey, for instance, you can enable the Assist Mode when first launching the game, which also helps to make players aware of this mode and what effect it might have.

The Last of Us Part II presents a number of settings the player may want to adjust before playing in a dedicated set-up menu that includes various accessibility settings. This includes accessibility preset options that can configure multiple settings at once. Which can be useful for players who would like to start with as many of the settings enabled that they might benefit from as possible, and then perhaps customise things as they become more familiar with the game.

After completing the set-up menu, players are also then able to adjust all of the available options before starting a new game if they want to customise the experience even further before playing.

You should continue to allow the player to adjust settings throughout the course of the game, ideally at any point as the player may want to alter settings as and when they find they would be useful. For instance you might let the player adjust the preset difficulty level mid-way through a challenging part of your game if they are having difficulty progressing.

You could even suggest enabling certain settings to players at specific points in your game, perhaps detecting when the player might benefit from a setting most.

When designing the ways players will interact with the settings in your game, try and limit the amount of input required to configure the available options. Perhaps you might prioritise having any accessibility settings be the options that require the least amount of input to configure in any menus, so that the players are able to easily alter them as needed.

Another way of reducing the amount of input needed to navigate any settings in your game might be to optionally remember the setting the player last configured and automatically go to that position when they reopen any menus. Which is useful if the player wants to go back and forth between the game and the settings to tweak and test the effect of a particular option.

In Final Fantasy VII Remake you can enable an option that remembers the menu position both inside and out of battles. So if we enable it here and move up to Spells before exiting the menu. When we open the menu again, it will remember its last position.
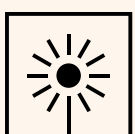
5.5 Settings Information (Continued)

Early on in a game the player may not have any context for what effect the various settings will have. To help players understand what the purpose of each setting is, give clear descriptions for what each setting does and explain what effect adjusting the setting will have. You could even have a visual demonstration to show the effect.

It can be useful for the player to know which settings they've altered from the default values. Particularly in games with many settings where it may be hard for the player to keep track of the changes they've made.

This could be as simple as a dot, or corner marker beside settings that have been changed from the default value.

And if the player does lose track, or decides they would prefer the setting how it was by default, having the option to revert any changes they've made to the settings can be useful. You could have a global reset option that applies to all the settings available, but it might also be useful to allow resetting for a whole group of one type of setting, or perhaps for each individual setting in a more modular way.

→ Learn more here
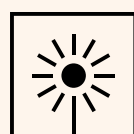
5.6 Testing Configurations

Give players options to test their setups while becoming familiar with your game.

In order for players to get familiar with your game, with the various actions they can perform, and to test how adjusting the various settings will affect their experience, consider adding a consequence-free area or mode for the player to practice in.

How you implement this will depend greatly on the nature of your game, and for some games it might not be suitable, but for those that it would be, it can be a very useful tool for players to get familiar with your game before they make potentially irreversible actions.

At the most basic level you might simply show players what inputs they're pressing and perhaps what action that relates to. This is useful if the player has remapped many actions and would like to know what each input now does.

Going further you might have a contained sandbox area that features simplified elements of what the player will encounter in the main experience, showing them how each action behaves and what effect it will have. And by allowing them to configure settings in these areas they can see the results of changing each first hand, without the potential pressure that the main experience might bring.

So it might be that there are no time elements present in this mode where there would otherwise be. Or you might have AI opponents that are simplified to give the players an idea of what they might encounter later on, but without the other external pressures that might otherwise be present.

→ Learn more here
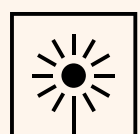
6   Assistance

6.1	Introduction to Assistance
6.2	Player Strength
6.3	Game Difficulty
6.4	Timing Elements
6.5	Analog Action Assists

Though games are often designed to have a certain level of challenge, allowing players to enable optional assists that alter the experience lets them play at a level that suits them. Without these options they might find that the game is too difficult, or requires too much physical movement for them to play successfully.

→ <u>Learn more here</u>
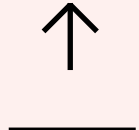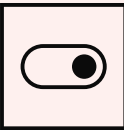
6.1 Introduction to Assistance

Providing options in your game that assist the player might help some people to play your game. Without those options they might find that the game requires too much physical movement, or is too difficult for them to play successfully.

You might have an option that increases the strength of the player's character, so that making a mistake has less of a negative effect during a difficult encounter. Or you might allow altering your game to reduce the need for quick physical responses from the player at certain points.

How you decide which options to provide to assist the player will depend entirely on the nature of your game, in this video we'll cover some of the options developers have provided in their games, that allow the player to alter the gameplay in order to play at a level of challenge that suits them.

→ Learn more here
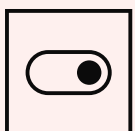
6.2 Player Strength

Give players options to power up their various abilities in the game.

One way of assisting the player is to enhance the elements they have control over.

If your game gives the player a certain amount of health, you could consider adding an option to increase this amount. Which might mean the player is able to make more mistakes before reaching a fail state in the game.

In Super Mario Odyssey using the Assist Mode doubles the amount of health you have, and also causes health to regenerate over time when Mario is not moving.

Going further than this you might decide to have an option to actually make the player invincible.

Enabling this option in Celeste will mean you can never reach a fail state however many mistakes you make, whether that's by landing on spikes, or falling from a ledge.

There are any number of ways of increasing the power of the player depending on your game. You could increase the amount of damage a player deals for example, or the strength of their abilities.

FIFA allows the customisation of various aspects of the player's strength. Such as increasing the shot speed of the user, so that all normal shots will now travel faster and be harder to defend against.

Perhaps your game has a stamina system that determines how long the player can sprint or climb. In a similar way to health you could increase the amount of stamina the player has.

In Celeste enabling Infinite Stamina allows you to climb indefinitely and means there is less pressure to climb in an optimal way.

If your game normally has a certain quantity of an item, you could include the option to increase the amount that's available for the player to obtain. Or if the player has a certain count of an ability, you might allow the player to increase that amount.

Setting Air Dashes to Infinite in Celeste will mean you can dash multiple times where normally you would only be able to dash once per jump.

If your game has local or online functionality with other players, you might decide to make it possible to adjust the power of each player to try and balance out any skill differences between them.

Of course this won't be suitable for all games and will need to be considered carefully on a game by game basis.

→ Learn more here
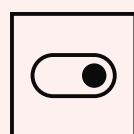
6.3 Game Difficulty

Let players reduce the difficulty of the game generally or in specific contexts.

For elements in your game that are not controlled by the player, allow them to adjust the way they function and what level of challenge they provide.

In a similar way to assisting elements the player does have control over, reducing the difficulty of the elements they don't, puts less pressure on the player to perform actions in an optimal way and might assist the player get the most out of their input setup.

Providing different difficulty levels that can encompass a wide range of changes can be a simple way for the player to alter the game experience to match the level they would like to play at.

The changes these presets encompass could be any number of things and will again depend greatly on the nature of your game. For instance in a game like God of War changing the difficulty level might adjust the amount of damage enemies deal with each attack, or how aggressive they are.

It's important to explain to the player the difference between each difficulty level in terms of how it affects the game, and why they might want to choose one over the other.

While global difficulty presets can be useful, it can also be useful to provide individual options for each area of your game that a player might find difficult.

Shadow of the Tomb Raider for instance has sections that contain combat, some that contain puzzles, and some that are more focused on exploration. You're able to configure the difficulty independently for each section, which will affect the difficulty in various ways specific to that area of the game. This is useful if there's a particular mode or area that you are struggling with, but are otherwise having no difficulty progressing in other areas of the game.

And further than that, you might consider giving the player a fine-grained control over each aspect of your game if suitable. For instance you might let the player configure how aggressive the AI is during combat, or how much damage they should deal. Tailoring the game to suit their ability and to play the way they want to.

Lowering the enemy difficulty in The Last of Us Part II will mean that enemies become less accurate and less aggressive.

As with any other settings your game contains, allow players to adjust the difficulty throughout the course of your game, particularly during encounters they might find challenging.

In Ghost of Tsushima you can adjust the difficulty at any point, even while in combat.

It's possible that even with options available to alter the difficulty in a game, some players may struggle to progress past a certain point and so would benefit from the option to skip certain areas or challenges. With the game ideally acting as if the player had completed them where possible.

In The Last of Us Part II with the Skip Puzzle option enabled, you can choose to skip the current puzzle from the options menu, instantly progressing you past that challenge.

And depending on your game it might benefit the player if they are able to easily save any progress they've made, either automatically or through input from the player. This might mean they won't need to repeat sections that may have been challenging for them.

→ Learn more here
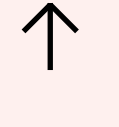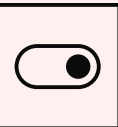
6.4 Timing Elements

Let players reduce or remove the need for quick or precisely timed movements.

At certain points in your game you may require the player to respond quickly to something, or to precisely time when an input is used. Some players may struggle to do this, so it can be useful to provide options that affect the level of precision, or speed of response needed to access those parts of your game.

Games that feature events that require a quick response from the player, such as Quick Time Events, can often be difficult for players who struggle to quickly use the required input when prompted. Providing options to increase the amount of time players have to respond to these events will increase the chance they'll be able to successfully perform the event as they intended.

In Ghost of Tsushima you can remove the need for quick responses in minigames by enabling the Simplified Controls option. Which will mean that sequences that normally require rapid button presses will no longer have a time constraint, so the buttons can be pressed at any speed.

There may also be points in your game that require the player to precisely time the use of an input, in order to successfully complete an event, or to progress. Again this may be difficult for some players who might not be able to quickly interact with certain inputs, so allowing players to reduce or remove the need for precise timing may help them to play.

In Cadence of Hyrule actions are optimally carried out in time with each beat of the music. However, with the Fixed-Beat Mode enabled, actions can be performed at any time, so precise timing of an input is no longer required.

One way of reducing the need for both quick responses and precise timing simultaneously, would be to allow changing the speed of multiple elements or possibly the entire game. Letting players slow things down will give them more time to respond to events, and could also increase the window players might have to precisely time an input interaction.

In Celeste you can adjust the Game Speed down to a maximum of 50 percent of the default speed. Doing so will slow all areas of the game outside of menus, and as a result you'll have more time to react to any fast moving elements you might otherwise struggle to respond to.

For games that have time limits, that perhaps need a certain number of things to be achieved within a certain time frame, consider allowing players to adjust or remove those time limits. Increasing the amount of time the player has gives them more time to perform certain actions, and allows them to play at a pace that suits them.

You should also consider giving the player the option to pause the game at any point, if suitable for your game. The player may want to pause for any number of reasons, such as fatigue from using an input device, or simply to plan their next course of action and consider which inputs will be required.

→ Learn more here
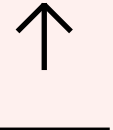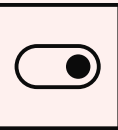
6.5 Analog Action Assists

Give players options to assist their control of analog actions.

For actions in your game that are controlled by analog inputs, consider providing options that make it easier for the player to have a good level of control over those actions.

There may be players who don't quite have the required dexterity with an analog input to optimally perform an action, and so would benefit from options to have these actions assisted in some way.

There are many ways that you could assist an analog action, and these will depend on the nature of your game and the actions it contains.

For instance if the interaction in your game is cursor-based at any point, you might be able to increase the size of the area in which the cursor needs to be in order to select an object, or to increase the size of the cursor for a similar effect.

Allowing the player to adjust the size of elements within an interface or menu might reduce the level of dexterity needed when using an analog input. This includes interfaces designed for touch screens.

In Brawlhalla on iOS for instance, you can adjust the size and position of many of the on-screen inputs, making it easier for the player to create a setup that's suitable for their range of movements.

Another common area some players might struggle with is moving something in a specific direction or along a certain path. Steering a vehicle round a track for instance might need to be performed with a high degree of precision in order to progress.

One method developers have used to reduce the level of precision needed, is to give players the option of enabling steering assists. How these assists work will depend on your game, but often it involves detecting where the player is trying to steer and then adjusting exactly how much the vehicle steers to closer match an optimal route.

And you could also apply the same idea to other actions that your game contains, such as assisting the player when accelerating or braking.

With Braking set to Assisted in Forza Motorsport 7, the game will detect when the player is nearing a corner, and will apply an appropriate amount of breaks to get round successfully, based on the current speed, and in relation to any braking the player is applying themselves.

Games that give the player control over the camera often do so with an analog input, which again some players may find difficult to control. There are many ways that might make the camera easier to control that you could provide options for.

For example in a third-person game you might allow the player to adjust the distance of the camera from the player's character if suitable. Which might give the player a greater level of control.

Or you might be able to give the player a choice of viewpoints. If your game is typically played from a third-person perspective, you might consider whether it's possible to allow playing the game from a first-person perspective, or vice versa, as some players may prefer one over the other.

Battlefront II features a dedicated action that makes it possible to change the camera position and perspective mid-game.

While in a first-person view some players might also prefer to have a reticle at the centre of the screen to help position the camera.
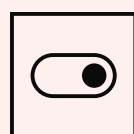
6.5 Analog Action Assists (Continued)

A common way of making the camera easier to control is to provide aim assist options. These options will vary from game to game, but in a similar way to steering assists they usually work by detecting where the player is trying to aim and adjusting the camera to make that easier.

So for example many shooters feature some form of aim assist that usually involves making it easier to aim at a target instead of the environment. When a target is within a certain range of where the players' camera is pointing, the aim assist activates and either lowers the speed of the camera, or perhaps moves it closer to the target in some cases.

So in Call of Duty Modern Warfare with the Aim Assist enabled, the camera will slow down or become less sensitive as the reticle reaches a certain distance from an enemy.

You might let players configure exactly how and when this aim assist activates, such as letting the player decide how close the camera needs to be to the target, or how much the camera slows down once activated.

Call of Duty's Precision and Focusing options both change when exactly the aim assist kicks in.

To further help the player aim, some games provide lock-on features that will assist the movement of the camera to point towards a target. This is often triggered when the player starts aiming, and will then move the camera towards the nearest target in range.

Red Dead Redemption 2 features target lock-on, and lets you adjust how far the target can be from the direction the camera is pointing before the lock-on will have an effect.

The Last of Us Part II features Lock-On Aim, which will move the reticle to the indicated target when aiming, and will also track the target as it moves. It also allows you to change which part of the target to aim at with the right stick.

Aim assist options don't necessarily need to apply only to shooters and could apply to any game that requires the player to aim an analog action at a certain object or in a certain direction.

For example setting the Pass Assistance to Assisted in FIFA will mean both the power and direction of passes will be assisted to help players pass into the receiver's path.

And in Pyre enabling the Aim Assist option will mean that casting now locks on to the nearest target in relation to where the player is currently aiming.

As with any setting that affects the gameplay you'll need to consider how allowing the player to use and adjust these settings affects the balance of the game, particularly in multiplayer environments.
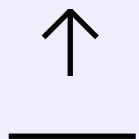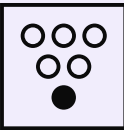
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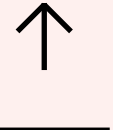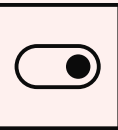
7 Simplification

Beyond assisting the player in various ways, you might also provide options that simplify the game experience. By automating certain actions you might reduce the amount of inputs required to play, which can be useful for players who find it difficult to interact with multiple inputs.

→ Learn more here

7.1 Introduction to Simplification

Beyond assisting the player in various ways, you might also provide options that simplify the game experience, and possibly reduce the amount of inputs required to play your game.

You might let the player simplify certain parts of your game so they require fewer inputs overall, or perhaps you might let them automate certain actions so they're performed automatically without any input from the player.

Much like when deciding how you might assist the player, how you choose to simplify your game will depend greatly on the nature of your game. Here we will look at some options developers have provided that can simplify the overall experience.

→ Learn more here
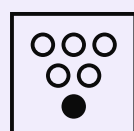
7.2 Alternative Actions

Offer players alternative ways to perform actions.

There may be actions in your game that require the use of certain inputs or input interactions that some players may find challenging. Providing alternative ways to perform these actions might simplify your game and allow more people to access it.

Games that use cursor interactions, like point and click style games, sometimes require other inputs to perform certain actions, such as requiring buttons or keys to open a menu or inventory. Consider whether some of those actions could potentially be performed when the user selects a graphical element on screen with their cursor instead. This way they might no longer need to have access to some inputs.

When playing GNOG on PC with the Mouse Accessibility mode enabled, actions like rotating the puzzles and opening the menu can now be performed by selecting different elements of the interface, instead of having to use the escape key or right mouse button.

Even in games that don't use a cursor by default, it might be possible to allow actions to be performed in this way.

When using a gamepad in Nowhere Prophet, it's possible to switch from a style of play that requires a number of different inputs, to an entirely cursor-based interaction method where all the actions can be performed by moving the cursor and selecting different graphical elements.

Menus can sometimes be difficult for some players to interact with, especially menus that require several inputs in order to fully access them.

If the other inputs required in your menu are used to provide quick access to certain pages, consider providing alternative ways to navigate to those areas with fewer inputs. Perhaps again with selectable targets that take the player to those pages. Though a manual approach may take longer for the player, it reduces the overall number of inputs needed to play.

An option in FIFA makes it possible to navigate certain menus without the need for the bumpers and triggers if using a gamepad. Navigation within these menus can now be performed with just the left stick instead.

You may have an event in your game that requires an analog input to be moved in a series of precise ways. Consider whether it's possible to simplify the action so that it can perhaps be performed with a digital input instead.

Fishing in Red Dead Redemption 2 would normally require you to spin the right stick to reel a fish in, but turning on Hold to Reel, will let you reel the fish in by holding a digital input instead.

And in a similar way, opening chisel doors in God of War would normally require precise analog movement, but setting Chisel Doors to Single Button, means they can be opened with a single button press instead.

Another way of providing alternative inputs for certain actions is to give control of those actions to one or more other people, either locally or online.

Games like Super Mario Odyssey and Brothers: A Tale of Two Sons on Nintendo Switch both allow you to play what would typically be single player experiences with two players, each using a different controller when that mode is enabled.

And in Arise: A Simple Story, while two player mode is on, player one has access to all of the actions that control the character, whereas the second player is able to control the environment. These actions would normally all be performed by a single player.
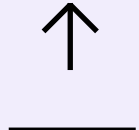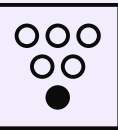
7.2 Alternative Actions (Continued)

This means the player has fewer actions they need to perform themselves. This method of play will only be suitable for some games however.

→ Learn more here
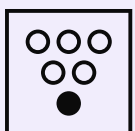
7.3 Automatic Digital Actions

Allow players to automate certain digital actions.

Even when alternative ways to perform certain actions are available, some players may find there are still too many actions overall for them to play successfully. In these cases it might be possible to reduce the number of actions the player needs to perform by partially, or fully automating them. Which could in turn reduce the total number of inputs required to play your game.

There are a number of ways you might automate digital actions, and how this is implemented will depend on the nature of each action and each game.

In Mario Kart 8 Deluxe each player can enable Auto Accelerate, so they no longer need to use an input to accelerate at the same time as using an input for other actions, such as steering or using an item.

You might decide to automate a digital action by having it be performed in response to another action. So that if the player performs one action, then another is automatically performed following that.

In Outer Wilds you can set Jetpack Boost Mode to Auto so that you will automatically boost whenever you use upward thrust. This removes the need to use two inputs simultaneously, as if it were set to manual you would need to use one input for boost and another for upward thrust.

Another way of having a digital action be performed automatically is to let the player set it to happen only when in certain contexts within the game. These contexts could take any form and so will be different for each game.

Enabling Auto Jump in Minecraft will mean the player automatically jumps when approaching a block, allowing them to climb without needing to manually jump. This setting is available for all of the supported input methods, including touch.

Likewise with Auto Switching set to Auto in FIFA, players no longer need to manually switch players, as the game will automatically switch to the nearest player to the ball at any given moment while defending.

The Last of Us Part II provides a way to automate a number of digital actions in specific contexts. Turning on Traversal Assistance will mean the player will now automatically perform certain actions in specific contexts. Like automatically climbing up when near a ledge, or jumping from a rope at the right time, or even automatically vaulting obstacles while riding a horse.

If your game has actions that require particularly complex input interactions to be performed successfully, automating these actions might be a way to allow some players to access your game who otherwise couldn't.

In Spider-Man enabling QTE Auto Complete will mean quick time events are automatically carried out, allowing players to avoid input interactions which they might otherwise find too difficult. This setting includes repeated button press events that need to be performed quickly.

→ Learn more here
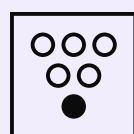
7.4 Automatic Analog Actions

Allow players to automate certain analog actions in a specific or optimal way.

In a similar way to automating digital actions, analog actions can also be automated.

Analog actions however can take any number of values, so you will need to decide how best to automate them given the current actions available in your game. You might decide to let players configure how analog actions are performed in a specific way, or you might have them be performed in an optimal way instead.

For example you might let the player move on a set or predetermined path to reach a particular destination. Once activated the game will adjust the player's movements to keep them on the path.

In Red Dead Redemption 2 you can set a waypoint on the map and hold a button to have the character automatically follow roads and paths to get there, while in Cinematic Camera mode.

In Forza Motorsport 7 the highest level of steering assist will guide the driver's steering to keep them near the optimal driving line. Though it won't alter the path in response to other vehicles, it can allow for races to be completed without the player having to manually steer.

In a similar way to this you could also have an option to alter the path of the player to avoid obstacles or areas that might slow them down. If the player is going to collide with something, and might not be able to move an analog input quickly enough to avoid it, have the player automatically steer around it.

In Mario Kart 8 Deluxe enabling Smart Steering will mean that when the player nears the edge of the track or an area that will slow them down, the Smart Steering will activate and alter the path of the player to keep them on the track.

Some games, third-person games in particular, have an action that automatically recentres the camera with the press of a button, which usually adjusts it to face the direction the player's character is facing. This might make handling the camera easier in some situations as the camera can now be partially controlled without the need for an analog input.

But as with digital actions, you could also automate analog actions in response to other actions. So as an alternative to resetting the camera manually, you could include the option to have the camera automatically adjust itself when the character attacks for example, like God of War allows you to do.

Or perhaps you might continuously update the direction of the camera to point in the direction that the character is moving.

Spyro Reignited Trilogy has the option to change the camera from Passive, to Active, which means the camera will continually readjust itself to face the direction Spyro is moving.

Including this option in third-person games can be especially beneficial for players who have difficulty using two analog sticks at the same time.

The Last of Us Part II's Camera Assist option will reorient the camera in the direction of the player's movement, and also allows you to limit the assistance to a single axis if preferred.

Though less common, you could also automatically move the camera in a first-person game. Sea of Thieves for instance has an Auto Center Camera option that automatically returns the camera to the horizon after a specified delay, minimising the amount that the player needs to manually move the camera.

As with automating digital actions, another benefit of automating analog actions might be to prevent the player from having to perform otherwise complex input interactions.
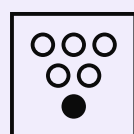
7.4 Automatic Analog Actions (Continued)

In Outer Wilds if you enable the Autopilot feature, it can then be used to travel to a planet in an optimal direction and at an optimal speed throughout the journey. The player locks onto the planet they want to travel to, activates the autopilot, and the ship then automatically adjusts various aspects of its motion to arrive at the planet. This replaces what might be a set of complex analog movements with a single press of an input.

→ Learn more here
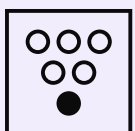
7.5 Action Predictions

If possible, predict and then automate actions the player would like to perform.

Another way of potentially simplifying your game for the player, would be to try and predict what action the player would like to perform at certain moments.

Obviously this might be a complex feature to implement as you would need to ensure actions were not performed when unwanted by the player, so predictions might be based on a number of factors.

When making these predictions you could consider the current context of the player, or other actions they've just performed.

For instance in FIFA's Two Button mode, when an input is pressed, the game will decide whether the player would like to play a ground pass, a through pass, or a lob pass. How it decides is based on a number of factors. The direction the analog stick is pointing at the time, and how long the input is held for, both have an effect, but the current position of other players will also be considered. And the One Button mode will do the same but will also consider if the player would like to shoot as well when pressing the Action button.

In Devil May Cry using the Auto Assist mode will let you perform intricate combos with only a single input, where normally multiple different inputs would be required. When the input is pressed in combat situations, the game will try to determine what the best action is at any moment, and automatically perform it for you.

As with many of the ways of simplifying your game, the main benefit of this is that now fewer inputs will be needed to play, as a single input can perform multiple actions, with the game deciding which action the player would like to perform each time.

If you do implement predictions into your game, how you handle them, and what effect they have, will depend on the nature of your game.

→ Learn more here