

Related: [Action Maps](#)

 For information on controller mapping, head over to the documentation here: [Setting Up Controls and Action Maps](#)

## Input System Overview

CryInput's main purpose is to provide an abstraction over obtaining input/status from different input device such as a keyboard, mouse, joysticks, 360/PS3 gamepads, etc.

It also has support for sending feedback events back to the input devices, for example in the form of force feedback events.

The common interfaces for the input system can be found in `IInput.h`, in the CryCommon project.

## IInput

The main interface to the input system is `IInput`. An instance implementing this interface is created during system initialisation automatically in the `InitInput` function (`InitSystem.cpp` in `CrySystem`, see also `CryInput.cpp` in `CryInput`).

Only one instance of this interface will be created. The updating and shutdown of the input system will also be managed by `CrySystem`.

This `IInput` instance will be stored in the `SSystemGlobalEnvironment` structure `gEnv`, and can be accessed through `gEnv->pInput` or alternatively through the system interface by `GetSystem()->GetInput()`. Access through the `gEnv` variable is the most commonly used method.

## IInputListener

One of the most common use cases in relation with the input system is to create listener classes in other modules ( e.g. `CryGame` ) by inheriting from `IInputEventListener` and registering/unregistering the listener class with the input system to receive notifications on input events.

For example, the Action Map System registers itself as an input listener and forwards game events only for the keys defined in the profile configuration files to further abstract the player input from device->game.

## SInputEvent

This is the structure that encapsulates information created by any input device and are received by all input event listeners.

## InputDevice

`InputDevices` normally relate directly to the physical input devices such as a joypads, mouse, keyboard, etc. To create a new input device all that's needed is to implement all functions in the `IInputDevice` interface and registering an instance of it with the Input System via the `AddInputDevice` function.

The `Init` function will be called when registering the `IInputDevice` with the Input System, so there's no need to call it manually when creating the input devices.

The `Update` function will be called at every update of the Input System, and this is generally where the state of the device should be checked/updated and the Input Events generated and forwarded to the InputSystem.

It's common for Input Devices to create and store list of `SInputSymbol` for each symbol the input device is able to generate in the `Init` function, and then in the update function lookup the symbol for the button/axis that have changed and use those ( via their `AssignTo` function ) to fill in most of information needed for the events and forward them to the input system.

**Example:**

```

// function from CInputDevice ( accessible only within CryInput )
MapSymbol( ... )
{
    SInputSymbol* pSymbol = new SInputSymbol( deviceSpecificId, keyId, name, type );
    pSymbol->user = user;
    pSymbol->deviceId = m_deviceId;
    m_idToInfo[ keyId \ ] = pSymbol;
    m_devSpecIdToSymbol[ deviceSpecificId \ ] = pSymbol;
    m_nameToId[ name \ ] = deviceSpecificId;
    m_nameToInfo[ name \ ] = pSymbol;

    return pSymbol;
}
bool CMyKeyboardInputDevice::Init()
{
    ...
    //CreateDeviceEtc();
    ...
    m_symbols[ DIK_1 \ ] = MapSymbol( DIK_1, eKI_1, "1" );
    m_symbols[ DIK_2 \ ] = MapSymbol( DIK_2, eKI_2, "2" );
    ...
}
void CMyKeyboardInputDevice::Update( ... )
{
    // Acquire device if necessary
    ...
    // Will want to check for all keys probably, so the following section might be part of a loop
    SInputSymbol* pSymbol = m_symbols[ deviceKeyId \ ];
    ...
    // check if state changed
    ...
    // This is an example for when pressed, see ChangeEvent function for axis type symbols
    pSymbol->PressEvent( true );

    SInputEvent event;
    pSymbol->AssignTo( event, modifiers );

    gEnv->pInput->PostInputEvent( event );
}

```

To forward events to the input system so that event listeners can receive them, use the PostInputEvent function from IInput.

If adding your input device to CryInput, it may be useful to inherit directly from CInputDevice as it already provides a generic implementation for most functions in IInputDevice.

This file is included with the full source of CryEngine and is not available in the FreeSDK or GameCodeOnly solutions. For these licenses please derive from IInputDevice directly.