

Smart Scene Changer Document

Document version

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v4.1.0	September/26/2018	<ul style="list-style-type: none">• A feature to save AssetBundle manifest to PlayerPrefs and load it.• A sample scene to load additive scenes by touching colliders.• A sample scene to create a bezier curve to move and place objects along it.
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1 What is [Smart Scene Changer (SSC)] ?

SSC lets you change scenes with the following features.

- Show now loading UI
- Download AssetBundles
- Download WWW contents
- Start any coroutines
- Show a dialog to notify a user to retry or back to the title scene If an error occurred

2 Simple how to use

2.1 How to load next scene

```
SceneManager.Instance.loadNextScene("Scene Name");
```

2.2 How to show UI

```
UiManager.Instance.showUi("Ui Identifier");
```

3 Demo scenes

3.1 How to play demo scenes

Add the following scenes to [Build Settings]

- Assets/SmartSceneChanger/Demo Samples/Scenes/SSC Demo Init Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/SSC Sample Title.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample AB Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Dialog Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Error Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample IE Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Simple Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample WWW Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Ordered Coroutine Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Language Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Popup Scene.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Main.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Cube.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Sphere.unity
- Assets/SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Bezier Scene.unity

Scenes In Build		
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/SSC Demo Init Scene	0
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/SSC Sample Title	1
<input type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Additive Scene 01	
<input type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Additive Scene 02	
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample AB Scene	2
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Error Scene	3
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample IE Scene	4
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Simple Scene	5
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample WWW Scene	6
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Dialog Scene	7
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Ordered Coroutine Scene	8
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Language Scene	9
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Popup Scene	10
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Mair	11
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Cub	12
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Additive Collider Scene Sph	13
<input checked="" type="checkbox"/>	SmartSceneChanger/Demo Samples/Scenes/Sample Scenes/Sample Bezier Scene	14

3.2 Play

Play [SSC Demo Init Scene].

3.3 About sample demo scenes

3.3.1 [SSC Demo Init Scene]

The scene contains a main SSC GameObject with DontDestroyOnLoad.

3.3.2 [SSC Sample Title]

The scene has UI buttons to load sample scenes.

3.3.3 [Sample AB Scene]

The scene shows you how to load AssetBundles while changing scenes. You have to follow the directions below before you play.

- Prepare a server
- Build AssetBundles and put them into the server. (There is a sample tool in [Tools -> SSC -> Sample Build AssetBundlse Window])
- Check [SampleAssetBundleStartupManager.cs] attached to [SmartSceneChangerSample2] in [SSC Demo Init Scene] and change a manifest url as you want. (or override [AssetBundleStartupManager.cs])
- Open the scene and follow the directions on UI texts.

3.3.4 [Sample Error Scene]

The scene shows you an error dialog.

3.3.5 [Sample IE Scene]

The scene shows you how to start coroutines while changing scenes.

3.3.6 [Sample Simple Scene]

The scene is just a simple scene. (How to control UIs would be explained on another topic)

3.3.7 [Sample WWW Scene]

The scene shows you how to load WWW while changing scenes. Open the scene and follow the directions on UI texts before you play.

3.3.8 [Sample Dialog Scene]

The scene shows you how to show a dialog.

3.3.9 [Ordered Coroutine Scene]

The scene shows you how to start ordered coroutines.

3.3.10 [Sample Language Scene]

The scene shows you how to support multiple languages. Follow the directions if you want to customize language settings.

- Check a csv file attached to [LanguageManager.cs] in [SSC Sample Init Scene].
- Add any languages and texts to the csv
- Use [LanguageManager.Instance.getFormattedString] in your scripts

3.3.11 [Sample Popup Scene]

The scene shows you how to show a popup dialog.

3.3.12 [Sample Additive Collider Scene Main]

The scene shows you how to load additive scenes by touching a collider.

3.3.13 [Sample Bezier Scene]

The scene shows you how to create a bezier curve to move and place objects along it.

4 SSC Managers

You have to put the following SSC managers into your first scene. You can also use a prefab named SmartSceneChangerSample2 in [SSC Demo Init Scene] but you are recommended to override the original managers. (The prefab contains EventSystem GameObject, so be careful not to add EventSystem to other scenes)

4.1 [DontDestroyScript.cs]

The script does DontDestroyOnLoad.

4.1.1 Variables

- No variables

4.1.2 Sample scenes and scripts

- No samples

4.2 [SimpleReduxManager.cs]

The script sends SSC events for scene change, pause, and language.

4.2.1 Variables

- No variables

4.2.2 Sample scenes and scripts

- [Sample Simple Scene] : [TestSReduxScript.cs]
- [Sample IE Scene] : [SampleSceneCommonScript.cs]
- [Sample Language Scene] : [SampleLanguageScript.cs]

4.3 [IEnumeratorStartupManager.cs]

The script adds and starts coroutines while changing scenes.

4.3.1 Variables

- [Number Of Co] : The number of coroutines to start at the same time
- [Ignore Error] : Ignore errors and continue

4.3.2 Sample scenes and scripts

- [Sample IE Scene] : [SampleIEnumeratorStartupScript.cs]

4.4 [WwwStartupManager.cs]

The script adds and starts WWW loading while changing scenes.

4.4.1 Variables

- [Number Of Co] : The number of coroutines to start at the same time
- [Ignore Error] : Ignore errors and continue
- [Thread Priority] : ThreadPriority
- [No Progress Time Out Seconds] : Shows timeout error if a download has no progress in N seconds (N > 0)

4.4.2 Sample scenes and scripts

- [Sample WWW Scene] : [SampleWwwStartupScript.cs]

4.5 [AssetBundleStartupManager.cs]

The script adds and starts AssetBundle loading while changing scenes.

4.5.1 Variables

- [Number Of Co] : The number of coroutines to start at the same time
- [Ignore Error Except Manifest] : Ignore errors and continue (except for manifest file)
- [Check Manifest After Loading] : Redownload a manifest at the end of changing scenes and reload the scene if some changes in a new manifest detected
- [Use Decryption] : Decrypt AssetBundles. Override the script if you want to decrypt AssetBundles
- [Thread Priority] : ThreadPriority
- [No Progress Time Out Seconds] : Shows timeout error if a download has no progress in N seconds (N > 0)
- [Manifest Info - Use Player Prefs To Save And Load Manifest] :

If true, Save the AssetBundle manifest file to PlayerPrefs and load it. Check and override AssetBundleStartupManager.shouldDownloadNewManifest to use the feature.

- [Manifest Info - Manifest Player Prefs Key] : PlayerPrefs key for the manifest file data.
- [Manifest Info - DateTime Player Prefs Key] : PlayerPrefs key for the DateTime when the manifest saved.

4.5.2 Sample scenes and scripts

- [Sample AB Scene] : [SampleAssetBundleStartupAsyncScript.cs]
- [Sample AB Scene] : [SampleAssetBundleStartupScript.cs]
- [Sample AB Scene] : [RuntimeLoadABScript.cs]

4.6 [SceneManager.cs]

The script controls changing scenes.

4.6.1 Variables

- [Title Scene] : Your title scene
- [Current Now Loading Ui Identifier] : Ui identifier for now loading (defined in UiManager.cs)

4.6.2 Sample scenes and scripts

- [SSC Sample Init Scene] : [SampleInitSceneScript.cs]
- [SSC Sample Title Scene] : [LoadSceneButtonScript.cs]

4.7 [DialogManager.cs]

The script shows dialogs for yes and no, ok, and progress.

4.7.1 Variables

- [Ref Input Blocker] : Reference to a UI to block user inputs
- [Ref Ok Dialog] : Reference to a UI for OK dialog
- [Ref Yes No Dialog] : Reference to a UI for Yes No dialog
- [Ref Progress Dialog] : Reference to a UI for progress dialog
- [Ref Ok Button Selectable] : Reference to a UI for OK button
- [Ref Yes Button Selectable] : Reference to a UI for Yes button
- [Ref No Button Selectable] : Reference to a UI for No button
- [Number Of Error Stack] : The number of error stack

4.7.2 Sample scenes and scripts

- [Sample Dialog Scene] : [SampleDialogScript.cs]
- [SSC Sample Title Scene] : [SamplePrintErrorsScript.cs]

4.8 [UiManager.cs]

The script shows UIs distinguished by an identifier. You can add a UI to the script by using [UiControllerScript.cs] and show the UIs by an identifier. Some variables could be changed by using [SceneUiInfoScript.cs] in any scenes.

4.8.1 Variables

- [Current Showing Ui] : Current showing Ui (read only)
- [Previous Showing Ui] : Previous showing Ui (read only)
- [Update Ui Group For Debug] : Update [Ui Group] variable for debug purpose
- [Ui Groups] : Ui Groups for each identifier
- [Ui Groups - Identifier] : UI identifier to belong
- [Ui Groups - Ui List] : UI list
- [Ui Groups - Default Selectable] : First selected Selectable when the identifier UI group shown. This variable is not available in mobile platforms
- [Ui Groups - Send Pause Signal] : Send pause signal when the identifier UI group shown
- [Popup Ui Info] : Show popup UI

4.8.2 Sample scenes and scripts

- [Sample Simple Scene] : [SceneUiInfoScript.cs]
- [Sample Simple Scene] : [SampleSimpleSceneScript.cs]
- [Sample Popup Scene] : [SamplePopupUiScript.cs]

4.9 [CoroutineManager.cs]

The script provides a support for non-MonoBehaviour class to start coroutines. Also provides ordered coroutines.

4.9.1 Variables

- No variables

4.9.2 Sample scenes and scripts

- [Sample Ordered Coroutine Scene] : [TestOrderedCoroutineScript.cs]

4.10 [LanguageManager.cs]

The script provides multiple language supports.

4.10.1 Variables

- [Current System Language] : Current SystemLanguage
- [Language Csv For System Text] : Multiple language definition CSV file
- [Language And Font List] : Language and font list
- [Supported Languages Editor Only] : You would see a warning message if a non-supported language would be used

4.10.2 Sample scenes and scripts

- [Sample Language Scene] : [ChangeSystemTextByLanguageScript.cs]
- [Sample Language Scene] : [ChangeSpriteByLanguageScript.cs]
- [Sample Language Scene] : [SampleLanguageScript.cs]

5 Other Important Scripts

5.1 [SimpleUiControllerScript.cs]

The script is used to show and hide UI GameObject.

5.1.1 Variables

- [Ui Identifier List] : Identifier list that the UI GameObject belongs. You can show the UI GameObject to call [UiManager.Instance.showUi] function with the identifiers.
- [Delay Seconds For Showing] : Delay seconds when it shows the UI.
- [Delay Seconds For Hiding] : Delay seconds when it hides the UI.
- [Hide At Awake] : If true, the UI will be hidden at Awake function.
- [Disable Interactable After Hiding] : Disable [CanvasGroup.interactable] after hiding.
- [Disable Blocks Raycasts After Hiding] : Disable [CanvasGroup.blocksRaycasts] after hiding.
- [Set Alpha Zero After Hiding] : Set [CanvasGroup.alpha] to zero after hiding.
- [Transition Seconds] : Seconds to show and hide the UI.
- [Target Alpha] : [CanvasGroup.alpha] when the UI shown.
- [From And To Alpha] : [CanvasGroup.alpha] when the UI hidden.
- [Target Pos] : A position when the UI shown.
- [Transition Relative From] : A target position when it starts showing .
- [Transition Relative To] : A target position when it finishes hiding.
- [Event At Showing Start] : Events called when it starts showing.
- [Event At Showing Finished] : Events called when it finished showing.
- [Event At Hiding Start] : Events called when it starts hiding.
- [Event At Hiding Finished] : Events called when it finished hiding.

6 Tools

6.1 Tools -> SSC -> Editor Scene Loader Window

Quick scene access tool in editor.

6.2 Tools -> SSC -> Sample Build AssetBundles Window

A tool to build AssetBundles with encryption.

6.3 Tools -> SSC -> Set AssetBundle Name Window

A tool to label AssetBundles.

6.4 Tools -> SSC -> Show All AssetBundle Names Window

A tool to show all AssetBundle names.

6.5 Tools -> SSC -> Create Starter Window

A tool to create starter managers.

6.6 Tools -> SSC -> PlayerPrefs.DeleteAll

Call PlayerPrefs.DeleteAll.

6.7 Tools -> SSC -> Create Bezier Curve

Create a new bezier curve GameObject..

6.8 Select an asset -> Right click menu -> SSC -> Create Scriptable Object

A tool to create a ScriptableObject asset from selected.

6.9 Select an asset -> Right click menu -> SSC -> Set AssetBundle Name to File Path

A tool to set AssetBundle name to its file path.

7 How to set up your scenes

You must create a scene that contains the following scripts to initialize SSC and the scene must be the first scene in your app.

- SSC.DontDestroyScript
- SSC.SimpleReduxManager
- SSC.IEnumeratorStartupManager
- SSC.WwwStartupManager
- SSC.AssetBundleStartupManager
- SSC.SceneChangeManager
- SSC.DialogManager
- SSC.UiManager

- SSC.CoroutineManager (Optional)
- SSC.LanguageManager (Optional)

- EventSystem (GameObject -> UI -> Event System)
SSC managers must exist on all scenes and needs an EventSystem to control Unity's UI system. So you should not add an EventSystem except for the scene to initialize SSC.

8 UI System

8.1 UI Control

SSC's UIs are managed by string identifiers. You can create your SSC's UI by the following steps.

1. Create a UI GameObject.
2. Add `SSC.SimpleUiControllerScript(SSC.UiControllerScript)`.
3. Add string identifiers to [`SSC.SimpleUiControllerScript` -> `Ui Identifier List`]

you can show the UI GameObject by calling [`SSC.UiManager.Instance.showUi`]. For example, if you set identifiers like the following,

- `GameObjectA` : ["abc1", "abc2"]
- `GameObjectB` : ["abc1", "abc3"]
- `GameObjectC` : ["abc2"]

the result will be like the following.

- [`SSC.UiManager.Instance.showUi("abc1")`] : `GameObjectA`, `GameObjectB`
- [`SSC.UiManager.Instance.showUi("abc2")`] : `GameObjectA`, `GameObjectC`
- [`SSC.UiManager.Instance.showUi("abc3")`] : `GameObjectB`

If you want to add a UI GameObject that exist on all scenes, you should add it to the first scene that initialize SSC. If you want to add a UI GameObject that exist on a scene, you should add it to the scene.

(Check sample scenes : [`SSC Demo Init Scene`], [`Sample Simple Scene`])

8.2 How to set a scene's first UI

In most cases, you need to show a first UI for a scene when it finished changing scenes. You can set the scene's first UI by doing the following.

1. Add [`SSC.SceneUiInfoScript`] to your scene.
2. Set a value [`Scene First Ui`] to an identifier string you want to show.
3. (If you load the scene, you can see the UI GameObject that has the identifier)

If you are making a game with a joypad, you need a default selectable UI element in each UI group (identifier). So, add a value to [`SSC.SceneUiInfoScript.SceneUiInfoList`] and set an identifier and its default Selectable. (mobile games don't need this feature)

8.3 How to use UI pause

[SSC.UiManager.UiGroups] and [SSC.SceneUiInfoScript.SceneUiInfoList] has a boolean value named [Send Pause Signal]. The value will be sent to scripts that use [SSC.SimpleReduxManager.Instance.addPauseStateReceiver].

(Check sample scenes : [SSC Demo Init Scene], [Sample IE Scene])

9 How to customize

9.1 Now Loading Screen

1. Create a new script that inherits [SSC.UiControllerScript] and attach it to a GameObject.
2. Set an identifier in the script.
3. (Call [SSC.SceneChangeManager.Instance.loadNextScene] with the identifier.)

9.2 Dialogs

1. Create a new script that inherits [SSC.DialogUiControllerScript] and attach it to a GameObject.
2. Set values in [SSC.DialogManager] to reference to the GameObject.
3. (Call [SSC.DialogManager.Instance.showXXXDialog].)