SPLINE EDITOR

Ver.2 13.03.2016

Introduction

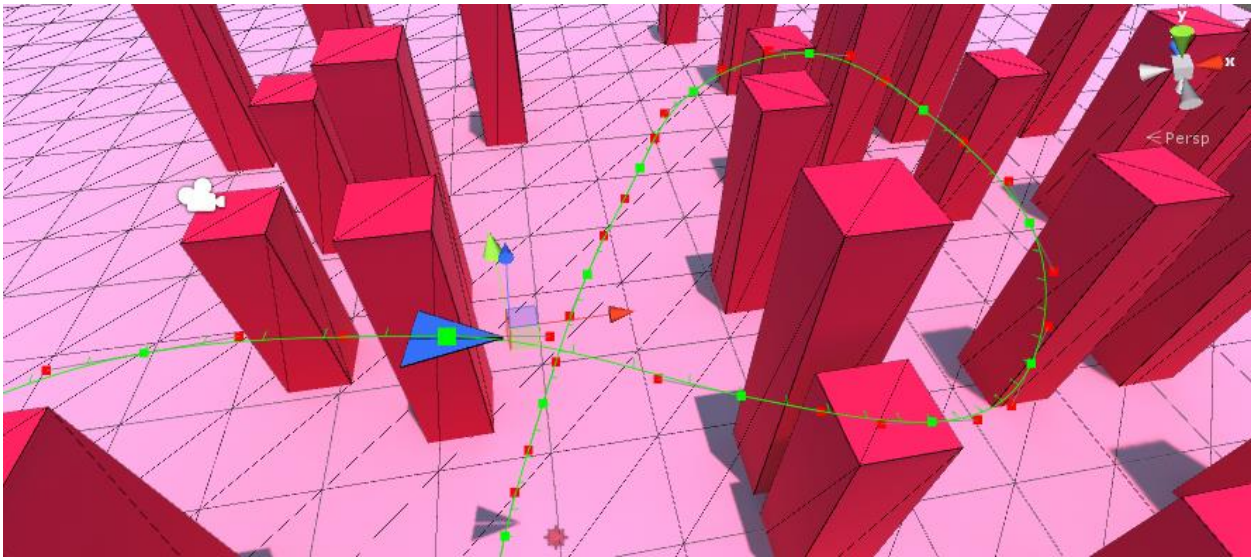**Spline** editor extension will help you easily create and maintain splines in your project.

Fig.1 Spline Editor

Features

- Spline loops;
- Spline smoothing;
- Spline control point modes: Free, Aligned, Mirrored;
- Spline control points editing (support unity snap mode);
- Full editor Undo/Redo support;

Package Structure

Spline Editor Package is located in **Assets/Battlehub/SplineEditor**

Script file located in **Assets/Battlehub/SplineEditor/Scripts**

Editor scripts and menu in **Assets/Battlehub/SplineEditor/Scripts/Editor**

Demo scene in **Assets/Battlehub/SplineEditor/DemoPackage.unitypackage**

Menu

There are one submenu and five menu items:

1. **Create** menu item allow you to create spline
2. **Set Mode** submenu allow you to set spline or control point mode. There are three control point modes (**Free**, **Aligned** and **Mirrored**) and special spline **Rigid** mode, which forces Free control point mode. All these modes explained in **Control Point Modes** section.
3. Use **Append/Prepend** to extend wire and curve.
4. **Remove curve**.
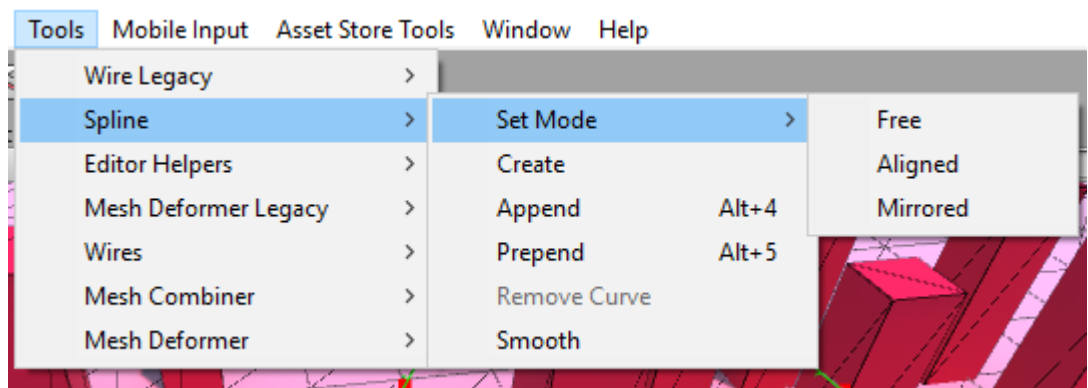5. **Smooth Spline** using this algorithm

Fig.2 Menu

Control Point Modes

Each control point can be Free, Aligned or Mirrored.

All of these modes shown in fig.3.

1) Free – move Control points independently

2) Aligned – variable distance between control points
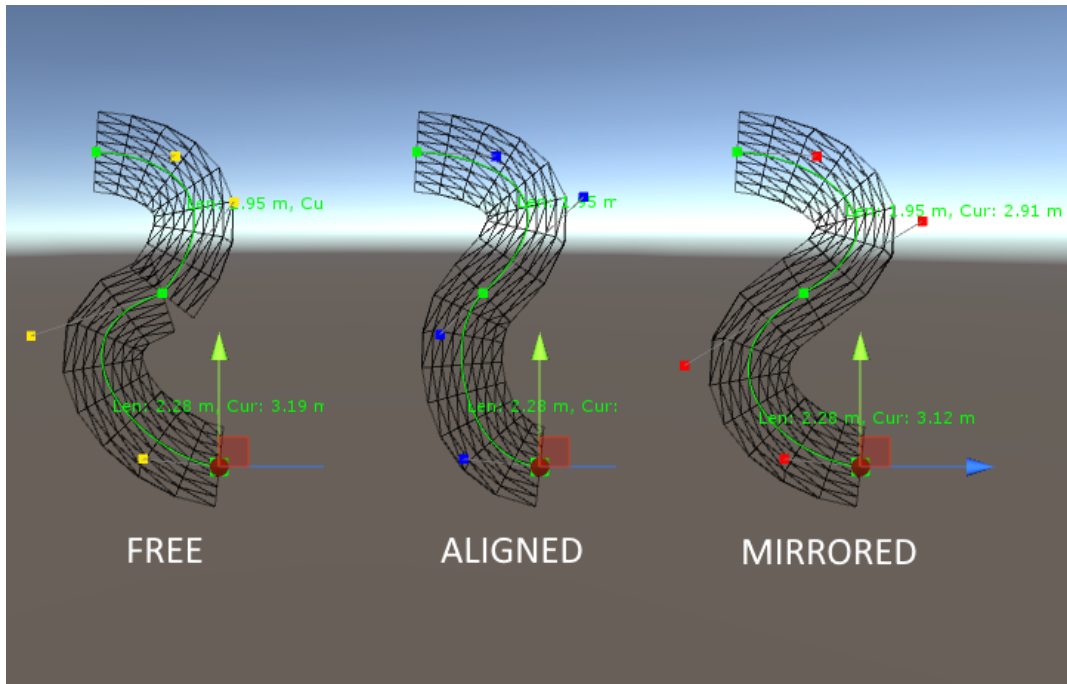
3) Mirrored – same distance between control points

Fig.3 Control Point modes
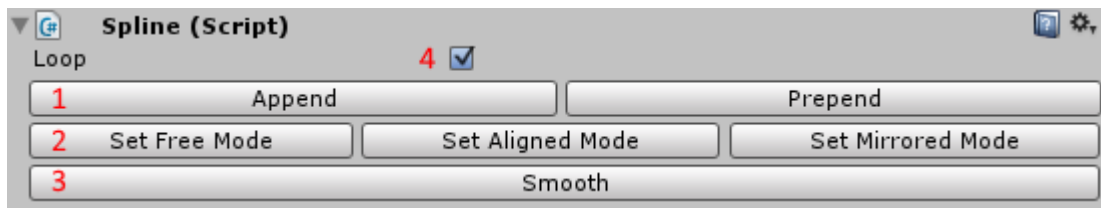
Spline Editor

Fig.5 Spline Editor

1. Extend Spline
2. Set Control Point Mode
3. Smooth Spline
4. Create spline loop

Control Point Editor

This editor allow you to change individual control point mode and set twist angle and twist offset.
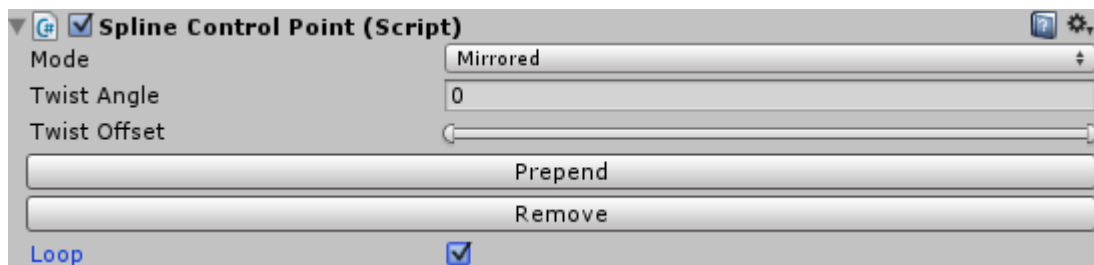

Fig.6 Control Point Editor

Spline Script

Description

class in Battlehub.Spline

Wire class contains main functionality of package

Properties

Spline Settings
```
public override bool Loop
public int CurveCount
public int ControlPointCount
```

Methods

Spline measurement methods
```
public float EvalLength(int curveIndex)
public float EvalCurveLength(int curveIndex, int steps)
```

Spline data access methods (ControlPointMode: Free, Aligned, Mirrored)
```
public ControlPointMode GetControlPointMode(int index)
```

Spline data access methods (World Space)
```
public Vector3 GetPoint(float t, int curveIndex)
public Vector3 GetPoint(float t)
public Vector3 GetControlPoint(int index)
public Vector3 GetVelocity(float t, int curveIndex)
public Vector3 GetVelocity(float t)
public Vector3 GetDirection(float t, int curveIndex)
public Vector3 GetDirection(float t)
```

Spline data access methods (Object Space)
```
public Vector3 GetPointLocal(float t, int curveIndex)
public Vector3 GetPointLocal(float t)
public Vector3 GetControlPointLocal(int index)
```

Spline data access methods (Twist Angles measured in degrees)
```
public float GetTwist(float t, int curveIndex)
public float GetTwist(float t)
public Twist GetTwist(int index)
```

Spline data modification methods
```
public void SetControlPointMode(int index, ControlPointMode mode)
public void SetControlPoint(int index, Vector3 point)
public void SetControlPointLocal(int index, Vector3 point)
public void SetTwist(int index, Twist twist)
```

Spline smooth method
```
public void Smooth()
```

Limitations and Issues

- Twist angles are not editable using mouse. Editing possible using editor or script.

Support

If you have any questions, suggestions, you want to talk or you have some issues please send mail to Vadim.Andriyanov@outlook.com or Battlehub@outlook.com.