

## Multi-Radar Scan Conversion

How to use the SPx scan conversion library to efficiently display scan conversion from multiple radars

### Summary

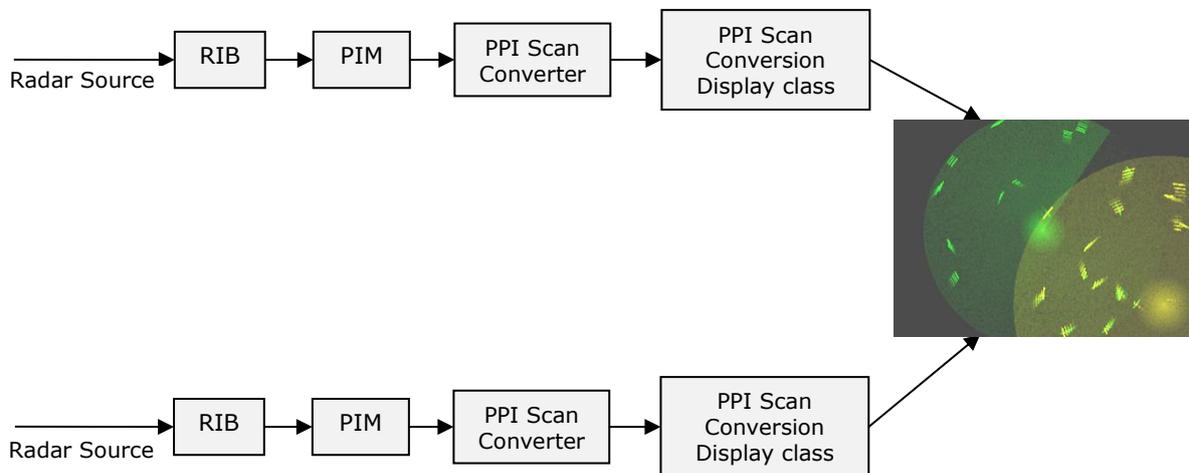
*Displaying the video from multiple radars can result in significant resource usage when the number of radars is large.*

*Various options are available to reduce the resource usage for display of multiple radars.*

*These options have limitations that must be considered when selecting the desired approach.*

### Standard usage

The standard method for displaying multiple radars using SPx is for each radar to have its own scan converter object and its own display object. These display objects may be displayed in the same window. Figure 1 demonstrates how two radars may be scan-converted and displayed in a window using the standard method.



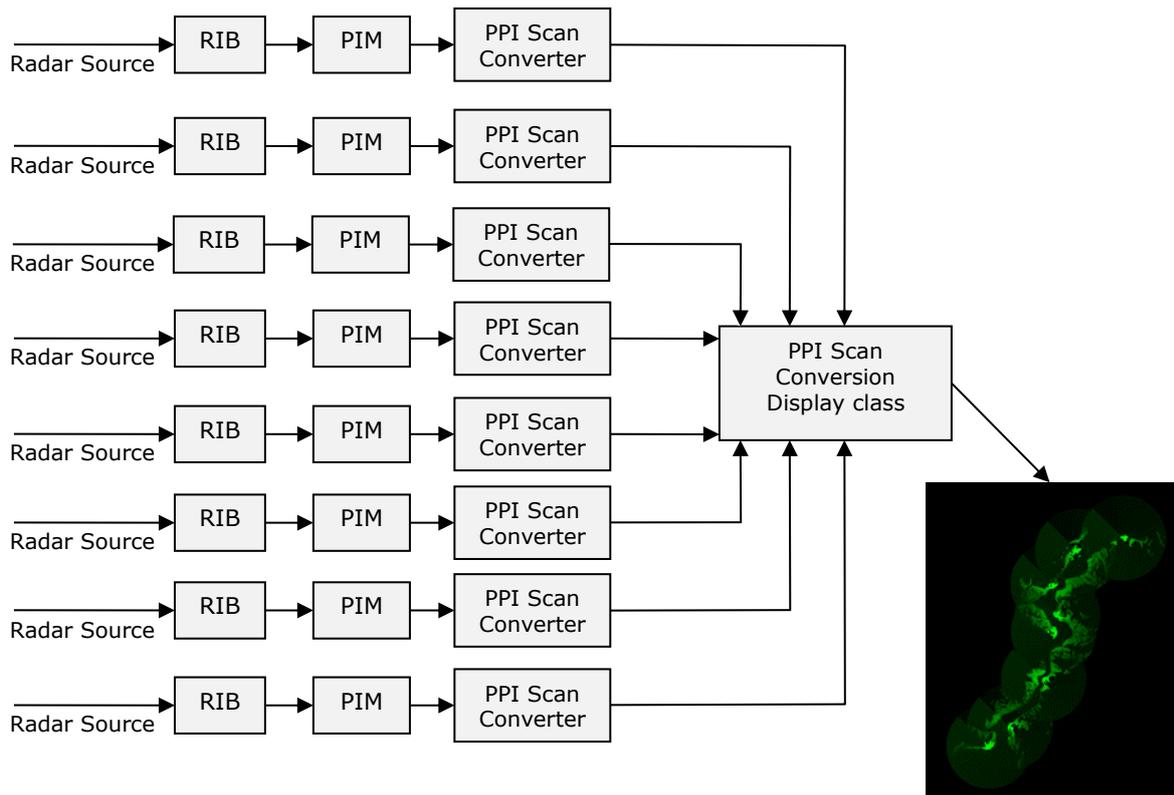
**Figure 1 - Two scan conversions in a single window with radar from separate sources**

When creating PPI scan converters, the display destination class is passed to the SPxScSourceLocal constructor:

```
SPxScSourceLocal *sc = new SPxScSourceLocal(dest, SPX_SC_TYPE_PPI);
```

## Sharing the destination

Beginning with SPx V1.82, multiple scan converter objects may write to a single display object. This can significantly reduce memory usage and improve performance, particularly for large numbers of radars. Figure 2 demonstrates how eight radars can be displayed in a window using a single display object.



**Figure 2 - Eight scan conversions in a single window with radar from separate sources**

When creating the PPI scan converters, the first scan converter must be of the type `SPX_SC_TYPE_PPI_MASTER`:

```
SPxScSourceLocal *sc1 = new SPxScSourceLocal(dest, SPX_SC_TYPE_PPI_MASTER);
```

All the other PPI scan converters must be of the type `SPX_SC_TYPE_PPI_SLAVE`:

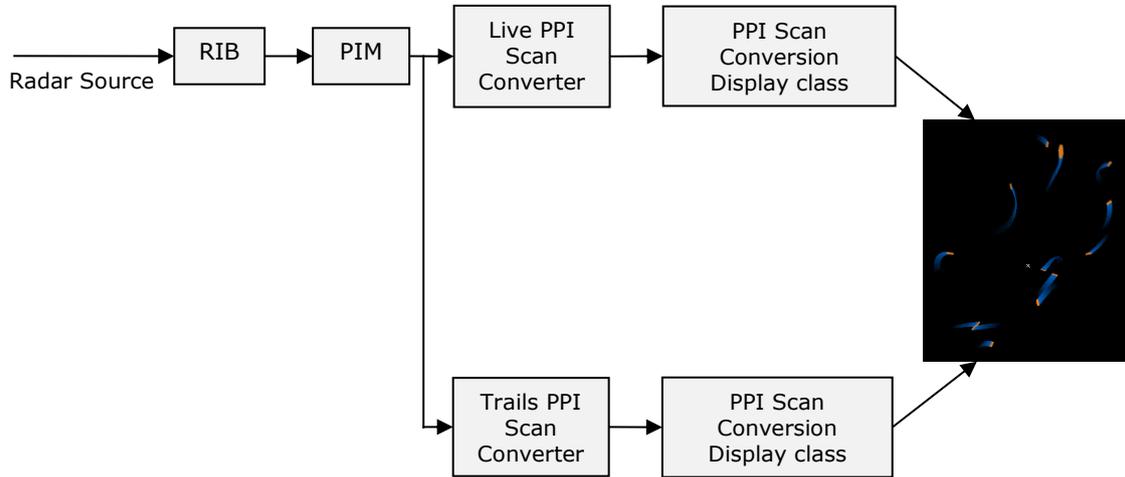
```
SPxScSourceLocal *sc2 = new SPxScSourceLocal(dest, SPX_SC_TYPE_PPI_SLAVE);
```

In this mode, real-time fading is the only supported fade mode and all the scan converters share the same colour, brightness, and fade time. Configuration of the radar colour, brightness and fade time must be through the master scan converter.

## Live and trails scan conversion

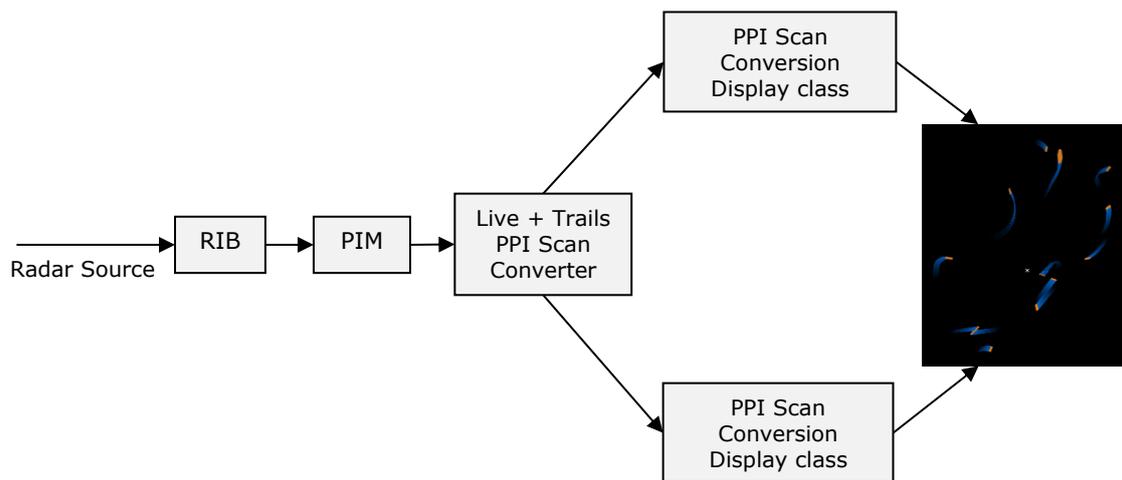
It is sometimes desirable to display live radar video from the current radar scan in one colour and display faded trails radar video from previous radar scans in a different colour.

This can be achieved by using two separate scan converters driven by the same PIM. Figure 3 demonstrates how live and trails radar video can be displayed in a window using a separate scan converters and display objects.



**Figure 3 - Live and trails video using two scan converters**

Beginning with SPx V1.82, a more efficient alternative is to use a single scan converter for the live and trails radar video. This single scan converter shares common scan conversion tables, but provides different data to the two display destination objects. The live and trails radar video may have different colours, and fade modes. Using a single scan converter can reduce processor load. Figure 4 demonstrates how live and trails radar video can be displayed in a window using a single scan converter and separate display objects.



**Figure 4 - Live and trails video using a single scan converter**

When creating the scan converter, two destination display objects are provided. The scan converter will write the live scan-converted video to the first display object and the trails scan-converted video to the second display object:

```
SPxScSourceLocal *sc = new SPxScSourceLocal(destLive, SPX_SC_TYPE_PPI,  
                                             destTrails)
```

Configuration of the radar colour, brightness and fade settings for the live and trails video uses the standard configuration functions. These functions include a `rid` parameter that is set to "0" when configuring the live video, and "1" when configuring the trials video.

It is often desirable to preserve radar video trails when the view is changed. This is supported when using two scan converters with a history process that is passed to the trails radar video scan converter. When using a single scan converter for live and trails radar video, the history process passed to the scan converter will automatically be used for the trails radar video and not the live radar video.

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