

# Migrating from 22.x to 23

The bulk of important changes are found on the [release notes](#) page.

Below is a list of removed or deprecated options, features, etc. These may have been redundant and removed to better streamline workflows. Please see the existing documentation on Options, Attributes, and more in this section of the docs.

The following are deprecated and will be removed in a future release.

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The API functions `GetNearestHitsAndPdfs()` and `GetTransmissionAndPdfs()` have been deleted. Their extra pdfs were only used by the UPBP integrator (which we're retiring in 23)

- A new API `RixShadingPlugin::SynchronizeData()` as been added.
- Some `RixInterfaces` are not available anymore before `SynchronizeInstanceData()` or `RenderBegin()`
  - `RixLPEInfo`
  - `RixCustomLPE`
- Some `RixInterfaces` are deprecated when used before `SynchronizeInstanceData()` or `RenderBegin()`
  - `RixRenderState`, mainly access to Options and Attributes
- `RixProjectionFactory::CreateProjection()` constructor isn't provided with `RixIntegratorEnvironment` anymore. This structure is now given to `RixProjection::RenderBegin()`.
- `RixProjection::Project()` now needs to explicitly initialize the ray directions and `raySpread` (the renderer doesn't provide built-in values anymore). See `PxrPerspective`.
- `RixProjectionEnvironment::deepMetric` has been removed, in favor of using the `GetProperty()` mechanism. Projection plugins previously modifying this value should now return it when `RixProjection::GetProperty(RixProjection::k_DeepMetric)` is invoked.

## Old `RixInterfaces` marked for deprecation (or removed) include:

- `RixDeepTexture`
- `RixResourceResolver`
- `typedef void (*RixCleanupFunc)`
- `RixStorage`
- `RixTokenStorage`
- `RixThreadUtils`
- `RixMutex`
- `RixMemoryPool` - removed
- `RixLPE` - These were removed from the `RixLPE` interface
  - `RixLPE::AnyShadowLPEs`
  - `RixLPE::m_anyShadowLPEs`
  - `RixLPE::SplatShadow`
  - `RixLPE::SplatShadowLPE`
  - `RixLPE::SplatEmission`bool isShadowCollector``
  - `RixLPE::SplatValue`bool isShadowCollector` parameter`
  - `RixLPE::SplatValue`RtColorRGB const& shadowWeight` parameter`
  - `RixLPE::SplatPerLobe`bool isShadowCollector` parameter`
  - `RixLPE::SplatPerLobe`RtColorRGB const& shadowWeight` parameter`

## Old Statistics modules that are removed are:

- `texture/brickmaps/nBrickMapsAccessed`
- `texture/brickmaps/nReadHeaderBytes`
- `texture/brickmaps/texture3DBrickmapTime`
- `pointclouds/texture3DPointcloudTime`
- `pointclouds/getpointsTime`
- `pointclouds/subsurfaceTime`
- `pointclouds/occlusionTime`
- `pointclouds/indirectdiffuseTime`
- `pointclouds/fileReadTime`
- `pointclouds/buildOctreesTime`
- `pointclouds/rasterizeTime`
- `pointclouds/pointCloudMem`
- `pointclouds/pointOctreeMem`
- `rayGprim/gutRadiosityShaded`
- `rayAccel/bboxTests`