1. Setup and simulate your fluids in Aero, or use a cache
2. Use voxel centers as points in point to volume to make a level set version of your simulation
3. Compute the gradient of your level set – this is now your volume normal
4. Convert the volume normal you just computed from **world** space to **tangent** space
5. Write your volume out to a **VDB Cache**, making sure you cache the following grids:  
   *voxel\_fog\_density, voxel\_temperature, voxel\_normal, voxel\_velocity*
6. Disable Bifrost and load in the cache as an **Arnold volume.** Load the *voxel\_fog\_density* and *voxel temperature* into the “Grids” field and *voxel\_velocity* into the “Velocity Grids” field.
7. Apply a standard volume material to the Arnold volume, utilize the “Default Bifrost Aero” preset.  
   Graphical user interface

   Description automatically generated
8. Create another standard volume material and change the “Emission” and “Temperature” fields to *volume\_normal* and blank respectively. Make sure your Scalaing setting is set to “opacity”.  
   Graphical user interface, application

   Description automatically generated
9. Apply the first volume material that you made to the Arnold volume, then set up two AoVs:  
   A screenshot of a computer

   Description automatically generated with medium confidence  
   Make sure both are set to “rgba” and “tif” drivers – this will become important later.
10. Add an Arnold DomeLight or Physical Sky light to provide your volume direct illumination – this can be very flat as it can be adjusted later in engine – this AoV is going to become your “smoke”
11. Render the sequence **as TIF files** – this should be done from an orthographic camera, with a resolution suiting your project. The example file is 512x512 and 64 frames – these become important soon as we’re going to be making a sprite sheet from these renders.
12. Remove your AoVs and apply the normal shader to the Arnold Volume. This will render the normal as a beauty pass, disabling the light is also a good idea here.
13. We’re done with Maya and Bifrost now
14. In an image editor (preferably one that supports batch operations) convert all your tifs to pngs. This should consist of your emission, volume direct and normal files.
15. Open your files in a texture atlas program, preferably one that supports and generates Optical Flow. I am using Slate, which is available for free from <https://www.facedownfx.com/> - this will make your sprite sheets and your motion vector images. Motion vectors are needed to make a smooth, re-time-able sprite in engine and is better to generate them as a 2d-operation, even though it’s possible to generate them in Bifrost.  
    Table

    Description automatically generated Chart, treemap chart

    Description automatically generated
16. You are now ready for Unreal … get ready to Blueprint …

<https://www.youtube.com/watch?v=Hc4xkXeIJs8>