Esri Questions

- **Has ESRI considered developing an Add-In/Extensions for these tools?**

  Esri has not considered developing a pre-packaged tool to address this specific workflow. We instead have focused on developing the essential tools/processes that make up parts of this workflow. We then try to provide as many tools to help our users customize ArcGIS Pro to fit their needs. For example, ModelBuilder, python tools, and Tasks are all ways that we enable you to build your solution using our tools as building blocks.

  For those with an interest in developing on ArcGIS Pro, we also expose our SDK which can be used to build custom Add-ins. We have an example for stockpile volumes available on our GitHub: ArcGIS Pro SDK Community Samples – Scene Calc Tools. You can download and deploy this tool yourself to see what it looks like. We depend on our Esri Business Partners, such as Seequent, to develop industry specific Add-ins/Extensions.

  However, if there is a specific enhancement that you think is relevant to the mining industry, please share with us on ArcGIS Ideas. ArcGIS Ideas is our forum for gathering software enhancement requests from customers. You can tag ideas with the mining tag as well to raise attention to the mining team.

- **Is ESRI is going to publish this demo (with data especially 3D Scene) into ArcGIS Online public access?**

  Yes, you can access a version of what was shown at the webinar here: Asphalt Plant Scene. We will also make available a recording of the webinar which can be shared.

- **Has Esri considered sharing the ArcGIS Pro Task shown in the demo?**

  Esri can make the ArcGIS Pro tasks available. We will post a blog on the Esri Mining GeoNet page. If you would like to have it sooner, you can email Matt Ballard (mballard@esri.com) and he will provide you the ArcGIS Pro Task.

- **Can the volume tools work on underwater trenches excavated for seabed mining, using multibeam DSM's?**

  Yes, this analysis can be done with DSM's derived from multibeam sensors for underwater trenches. In the seminar, we looked at calculating volumes above a surface (cut), but for trenches, you might need to calculate the volume below a surface (fill).

- **Can you do volumes from surface to surface instead of a generic boundary?**

  Yes, you can do volumes from surface to surface. One option is to use the tool Surface Difference. We also have a tool called Extrude Between which would create a 3D multipatch feature that you could calculate the volume of. Depending on your workflow, Cut Fill may also be applicable. And if you have a "before surface" you could also use Raster Calculator & Zonal

Statistics. Please see the answer to question 11 for a further elaboration on calculating between two irregular surfaces.

- **When calculating pile volumes can it take into account a curved pile bottom? For example, a pile made into a hillside. Without having previous imagery.**

In the demo, we looked at two methods for calculating volumes. The first method, using image mensuration tools, can interpolate a bottom surface to use in the volume calculate. You can see more about that workflow here: measure feature volume based on an elevation surface raster.

The second workflow calculated the mean z-value from the vertices to define a flat base surface. Then we used Polygon Volume to calculate the volume between the surface and it's average base elevation. For stockpiles with curved bottoms, a flat surface won't yield accurate calculations. Instead, we will need to interpolate a surface from each of the surrounding elevations.

One method for doing this would be to interpolate a surface from each of the vertices on the stockpile boundaries polygon layers. Since the vertices have elevation values that reflect the base elevation, the interpolation will be our best guess as what the base looks like, without having previous imagery. From there would could clip the interpolation to the polygon stockpile boundaries and create a new surface model from a combination of the original and our interpolated assumptions. This will yield a raster with the stockpiles "disappeared". Now all that needs to happen is the volume calculations which could be done with the Cut Fill tool and summarized with zonal statistics. As in the webinar, this workflow could be documented and automated with Tasks or ModelBuilder.

- **Is the Master Imagery Dataset organized by date?**

Yes, you can add any type of metadata to your imagery catalog, including but not limited to collection date, sensor type, source, and much more. Then this metadata can be used to query and filter your data. Or you can sort how the imagery displays, with the most recent appearing on top.

- **Is there any other documentation that exists for best practices when trying to create, share, and maintain that master elevation or master imagery dataset? This would be very useful when providing the most up to date view of our many aggregate locations.**

For managing the master elevation and imagery datasets, we utilized mosaic datasets and ArcGIS Image Server. Many of our imagery workflows can be found documented on this website: ArcGIS Imagery Workflows. With this workflow, we highly recommend reaching out to discuss more specifics because for many customers, the workflow will vary.

- **Are all raster functions available for all license levels?**

You can view a list of available raster functions here: list of raster functions. Certain functions require additional licenses, such as Spatial Analyst or Image Analyst, but not all functions will require them.

- **How do we find out what ArcGIS workflows are available for use in the mining industry?**

There are a number of places to learn more about mining industry workflows. First, the [Esri Mining website](#) is a good first start. Second, [GeoNet has a Mining space](#) for learning, discussing, and asking questions about all things mining. Feel free to ask and answer questions here. This is a great place to learn what peers are doing. And don't forget to keep up with activities of the Mining User Group, such as this webinar, and join the [MUG LinkedIn group](#). Finally, make sure to reach out to Pete Will or Darin Bryce, Esri's account managers for the mining industry. They would be able to talk to you about the more ArcGIS workflows in the industry.

- **What are the spatial analysis tools that we have in ArcGIS Pro?**

On the ArcGIS Pro documentation website, you can find a list of [capabilities of the Spatial Analyst toolbox](#) as well as some [sample applications](#) of the tools. For a more broad overview of our spatial analysis capabilities, I suggest looking at this page: [Spatial analysis in ArcGIS Pro](#). You can already read our short book on the [Language of Spatial Analysis](#).

- **Are there any required license add-ons to perform this type of stockpile calculations? i.e. 3d analyst, spatial analyst, etc.**

In the demonstration, we utilized 3D Analyst.

- **Thank you for showing tasks, What level user can run tasks?**

Tasks can be created, shared, and run by any ArcGIS Pro license level (Basic, Standard, Advanced).

Seequent Questions

- **Can you publish this Downhole Drillhole Survey Scene to AGOL?**

Yes, you can and it looks great! You can see an example of one [here.](#) This will require any ArcGIS Online named user credentials.

- **To Geosoft for drillholes - if we have well deviation which has been linear referenced with events (formations), can we import directly into Pro and view in 3D**

We can import linear referenced files, eg well deviation logs.

- **Is there any support for raster borehole logs like acoustic televiewer or optical televiewer**

Support for ATV and OTV data will not be in the first release (coming in November), but we will consider it for a future version. Our plans are to evaluate the early adopter feedback and implement high priority features after the initial release.

- **Is there a way to plot a series of sections (not stacked) on separate sheets?**

Yes, You can use the [Layout tools](#) to create maps for section views. If you want to create a set or series of sections, you should be able to do this by saving a [layout file with empty map frames](#) that you can use with several different section views.

- **Can we generate cross sections for each stockpile in one map layout/template?**

While we do not currently have plans to build a dedicated specific tool to create stacked sections, you can use the [Layout tools](#) to create maps for section views. We are currently investigating how the layout tools will respond to several section views created from a single source 3D scene.

- **It is possible to build a stacked section for this version?**

While we do not currently have plans to build a dedicated specific tool to create stacked sections, you can use the [Layout tools](#) to create maps for section views. We are currently investigating how the layout tools will respond to several section views created from a single source 3D scene.

- **Is there still an LP360 toolkit available for ArcGIS Pro?**

Yes, LP360 provides many tools for Lidar and Photogrammetric Point Cloud processing and it appears there is an extension available for ArcGIS 10.6, but we are not sure about Pro integration specifically, please see this website for more info: https://www.idaholidar.org/tools/lp360-for-arcgis-and-windows/

- **With the Seequent merger is there going to be a closer tie in from Pro to LeapFrog?**

Yes, there will be closer ties between ArcGIS Pro and Leapfrog Geo. One of the first features we are planning is to include support for the [Open Mining Format](#) (which is already supported by Leapfrog), as a means of transferring 3D geospatial datasets between the two packages. In the future, expect to see richer workflows that will help support our customers who use both products.

- **Our exploration team is currently using ArcMap and standalone Leapfrog. We hope to migrate to ArcGIS Pro soon. Will the new drillhole tool be licensed separately?**

Our current plan is that Target for ArcGIS Pro and Leapfrog will be separately licensed products; they will however use the same ID licensing system.

- **Will the Geosoft and My Leapfrog IDs be consolidated?**

Yes, the two identification and licensing systems will be consolidated by the end of 2019.

- **Is the Geosoft add in for Arcgis Pro with all the functions license free?**

There are actually two add-ins that I showed in the webinar yesterday:

- A free add-in for raster interoperability which is available now – please see this page for more info: www.geosoft.com/products/add-in-for-arcgis-pro
- An unreleased drillhole extension that will be paid. The Drillhole add-in will be available in November of this year.

- **What will the approximate price point be for this Geosoft/LeapFrog add-in?**

  Please contact Seequent for pricing information, as there are several variables at play.