**Landscape Management Tools**

**Desktop Toolset to create Mosaic Datasets and Image Services suitable for Landscape Modeling apps**

Draft 4 – 1st July 2014

Toolset and associated Python Scripts (including MDCS). Following tools:

**Compute Optimum CellSize**  - Not Exist Yet

Based on a feature service does analysis to estimate an optimum cellsize. Typically run on multiple features to determine the suitable cellsize for analysis.

Due to optimization for access using webmaps in WebMercator it is advantageous if optimum pixel size correspond to one of the following

1,2,4,8,16,35,75,150,300,600,1200,2400m

**Feature to Raster ( Density Method needs to be tested)**

Converts feature to rasters based on one of the Present/Absent, KeyAttirbute, Density or Distance Methods.

More info on the processes can be found at <http://resources.arcgis.com/en/help/landscape-modeler/prepare-data/#/Vector_data_processing/03sm00000004000000/>

Takes as input Process Name Cell Size, Field Name, Extents, Snap Rater, Mask Output, Search Radius.

The output extent should be taken either from the defined extent the Mask Output. Pixels should snap to the Snap raster, else be pixel edge aligned (IE pixel edge coordinate is a factor of the pixel size).

Arguments :

* Input Featue Class : Input Polygon Feature class
* Output Raster : Path and name of the output raster ( specify the extentsion as .tif )
* Process Name : Present/Absent, key Attribute, Density, Distance ( refer to Landscape documentation for more info on it)
* Cell Size : the cell size for he output raster
* Field Name: Field denoting values for each point/line. The field is the count or quantity to be used in the calculation of a continuous surface
* Output Extent: The extent with in which the feature will be processed.
* Snap Raster : This will adjust the extent of output raster so that they match the cell alignment to the specified snap raster
* Mask Output : IT will only consider the cell that fall within the analysis mask in the operation
* Search Radius: The search radius within which to calculate density. Units are based on the linear unit of the projection of the output spatial reference.

**Optimize Raster ( Needs to be tested )**

Converts existing rasters to an optimized format and checks other parameters. Optionally also clips rasters to boundary, but does not apply any resampling???

Takes as input, Input Raster

Arguments :

* Input Raster: Input raster to which the correction needs to be applied
* Process Name :
  + Filling Gaps : Performs a conditional if/else evaluation on each of the input cells of an input raster
  + Remove Extraneous Zeroes : it removes all zero values from the input raster
* Output raster : Path and name of the output raster ( specify the extentsion as .tif )
* Input True Raster: The input whose values will be used as the output cell values if the condition is true. It can be an integer or a floating point raster, or a constant value.
* Input False Raster : The input whose values will be used as the output cell values if the condition is false. It can be an integer or a floating point raster, or a constant value.
* Where clause : in case if the user want to set specific value as Null *"Value" = 0* **Output raster**
* Output Extent – sets the processing extents, I think I will remove this as it is not needed

The output raster.

**Update Raster Metadata**

Adds metadata associated with each Raster that will later be used in the Web App and well as in the Image services. The values are stored in the AUX.XML associated with each raster and then read into the mosaic datasets.

Prompts for:

Title - Title to define the layer

URL (Not yet implemented) - URL that would provide detailed explanation about the layer and its source

Description - Description for a pop up

Usage - Defines suitable usage for the layer. Should include definition of accuracy etc.

Display Order - Used to define the order that they layers should be displayed in the app

Input Ranges – see <http://resources.arcgis.com/en/help/landscape-modeler/prepare-data/#/Creating_the_mosaic_dataset_for_Landscape_Modeler/03sm00000003000000/>

Output Values -

NoData Ranges -

Range Labels -

NoData Range Labels -

Min Max Range and ColorMap - Color map to be used to draw the layer. Uses following notation. The Representation for this should be

Minvalue|MaxValue|RangeValue|Colormap

The color Map can be represented in two ways specify the color map name or [[1,255,0,0],[2,0,255,0],[3,0,0,255],[4,120,0,120]]

**Build Mosaic Dataset**

Converts the raster layers in the Map Document to a Mosaic Datasets with the appropriate fields. Or it also takes input as a folder containing raster or a single raster file. Should also later takes as input a feature service defines the extent of the analysis. All rasters would be clipped by this.