

When Out-of-the-Box Toolbars are Not Enough, Make Your Own

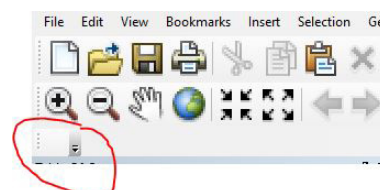
Every-day Esri ArcMap users, often involved in production-type GIS work, find themselves focusing on routine and systematic workflows throughout the life cycle of a project. As an every-day user, we can directly relate. One task will often take weeks or months of focus and only requires the same few ArcMap tools which may be scattered among multiple toolbars. For example, when “Qing” an auto-collected waterbody shapefile, you may routinely use tools from the Standard toolbar along with the Editor toolbar, Advanced Editing, Tools, Creative Features, LAS Dataset, Effects, and the Drawing toolbar. A working map document (MXD) starts to feel cluttered with so many docked toolbars, and the end-user wastes valuable time jumping between all these active toolbars.

To combat the fatigue that comes with repeatedly switching between the same few tools, consolidating multiple, diverse tools into one toolbar can provide a welcomed change to the workflow. Before starting a task that you know will be repetitive, just create a custom toolbar that can be revisited and switch between tools without hunting across the entire suite of active toolbars and drop-down menus.

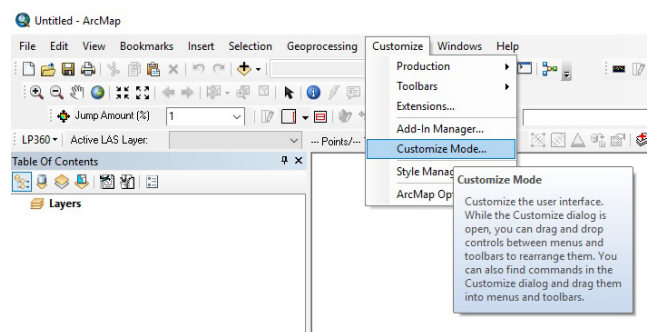
Below is an example we created called “My Great Toolbar” with tools from nine (9) different toolbars! From left to right, tools are for panning up, left, right, down, and revisit a previous extent in the data frame (Pan/Zoom toolbar); cut a vertical cross section from an LAS Dataset (LAS Dataset toolbar); swipe between layers (Effects toolbar); annotate with rectangular polygons (Draw toolbar); select editable features and reshape editable features (Editor toolbar); Explode Multipart Features (Advanced Editing toolbar); delete selected features and undo edits (Standard toolbar); save edits (Editor toolbar); and Identify features (Tools toolbar).



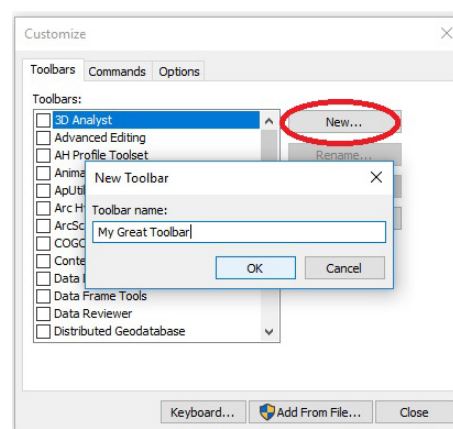
To create your own custom toolbar in ArcMap, navigate to Customize > Customize Mode (Step 1 below). Within the Toolbars tab of the Customize window, select New..., then name your new toolbar (Step 2 below). The new toolbar will appear as a small, empty toolbar near the upper left of your data frame (shown below) or docked with your other toolbars in the toolbar dock.



Step 1 – Navigate to the Customize | Customize Mode... on the ArcMap interface



Step 2 – On the Customize dialog box, select “New” and type a Toolbar name for your custom toolbar. The new toolbar will appear



continued on page 396

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“all software needs to accurately determine the orientations and positions of images relative to each other. Once that is done, the collinearity condition is used to intersect rays to generate point clouds”

Dr. Abdullah, Question 2: The thing we need to understand here is that SfM is a matching technique that is more efficient than the typical auto-correlation we used in photogrammetry. Whether traditional photogrammetric or SfM-based, all software needs to establish image geometry at the instant of exposure. In other words, all software needs to accurately determine the orientations and positions of images relative to each other. Once that is done, the collinearity condition is used to intersect rays to generate point clouds. Besides its efficient image matching technique, SfM-based software provides more flexibility in dealing with imagery that does not have absolute georeferencing information to start with, as compared to the traditional photogrammetric approach where you need at least an approximate camera position and orientation. Having accurate internal camera parameters are beneficial, but not absolutely required, for both approaches—especially if you are going to process the data through the standard workflow. Having a known geometry of internal camera parameters helps the software in

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the initial modeling and estimation stages of processing. However, most if not all software optimizes the initial camera parameters based on their modeled and refined block geometry. This is especially true for processing imagery from an unmanned aircraft system (UAS) due to the consumer-grade cameras UAS use. Most of these cameras come without a calibration report and do not hold firmly to their internal geometry during operations. Even if you have a metric photogrammetric camera that provides an accurate calibration report, you will find the software alters the calibrated camera parameters slightly to give you the best product from the imagery. I would say it is always good

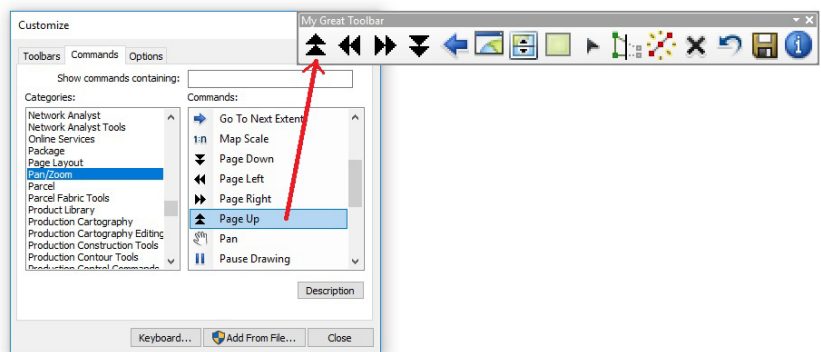
practice to provide software with accurate internal camera parameters, but it is not absolutely necessary if the software has the capability to refine these parameters through a process that is referred to in traditional photogrammetric practices as “camera self-calibration.”

***Dr. Abdullah is Vice President and Chief Scientist at Woolpert, Inc. He is also adjunct professor at Penn State and the University of Maryland Baltimore County. Dr. Abdullah is ASPRS fellow and the recipient of the ASPRS Life Time Achievement Award and the Fairchild Photogrammetric Award.*

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GIS Tips & Tricks, continued from page 393

Step 3 - In the Customize window, select the Commands tab. Search for different tools using the ‘Show commands containing:’ search box or by navigating through the Categories list. Then, drag-and-drop your favorite tools into the new, blank toolbar.



When the “Customize” mode is active, you can add new tools to a toolbar or rearrange the icons by simply dragging them to a new position. To delete an icon (tool) just drag it away from the toolbar and release it. Of course, the icon is still available to be chosen from the Commands menu and your new toolbar will be saved with your map document. It is really that easy to make your own custom toolbars.

Toolbar customizations are unlimited in diversity. Please feel free to share yours with us. Send your questions, comments, and tips to GISTT@ASPRS.org.

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