Terabite: The First One Terapixel Macro - Background & Statistics.

We will be shooting the Terabite photographs with the GIGAmacro Magnify[2] systems, each configured with a Canon 5D MkIII, Canon MPE-65 Macro lens (set at 1.5X), and using Canon M-24EX Twin Macro Lite. The GIGAmacro Capture Software will operate the robotics and camera systems during the capture process.

All exposures will be made at f10 1/125 second. These settings will give us a Field of View of 22mm. Depth of Field will be 1mm and as our subject has a 5mm height, that means we need to shoot six photos in each "stack" with a 20% overlap for each focus position.
We will lay out the foodstuffs on a series on plexi sheets, each 24" (610 mm) x 48" (1220 mm) with 3 Layout Panels per plexi sheet.

Each Layout Panel will be 16 in x 24 in (407 mm x 610 mm) with a capture area of 16.45 in x 24.25 in (418 mm x 616mm) including .5" (6mm) for stitching overlap between panels.
There will be 37 columns, 45 rows and 6 stacks, for a total of 9990 photographs on each Layout Panel. Time to shoot each panel is 3.42 hours @ 3000 images per hour, for a total capture size of 16.8 gigapixels per Layout Panel.
588 megapixel are "lost" due to overlap with next layout panel in stitching. This gives a net of 16.2 gigapixels per panel. Resolution is 6477 pixels per inch.

There are 61.76 panels are needed to break the 1 trillion pixel target. So, in total 62 layout panels equalling (16 in) 1.333 ft * 62 = 82.67 ft., so 212 hours total photography, with 3 Magnify[2] systems = 70.66 hours, or 2.95 days. Add 15% change over time for loading Layout Panels. 81.259 hours / 24 hours = 3.385 days. That brings the total photographs captured to 9990 per panel * 62 panels = 619,380.

The team will use a combination of software packages to post-process the photographs along with GIGAmacro Viewer to provide online access to the explorable terapixel image. For post-processing, Zerene Stacker will be used to create a high depth of field image from each "stack" of 6 images. AutoPano Giga will be used to "stitch" the images together into a seamless image. Zoomify will be used to produce "tiled" image sets of the final image. The GIGAmacro viewer will provide online access to the full seamless terapixel image allowing the public to explore, share, annotate, and discover.