



A Guide To
Digital Panoramic Photography

• PRESENTED BY WILLIAM HAUN •

What is a Panoramic Photograph?



One super-wide photo?

Several photos side by side?

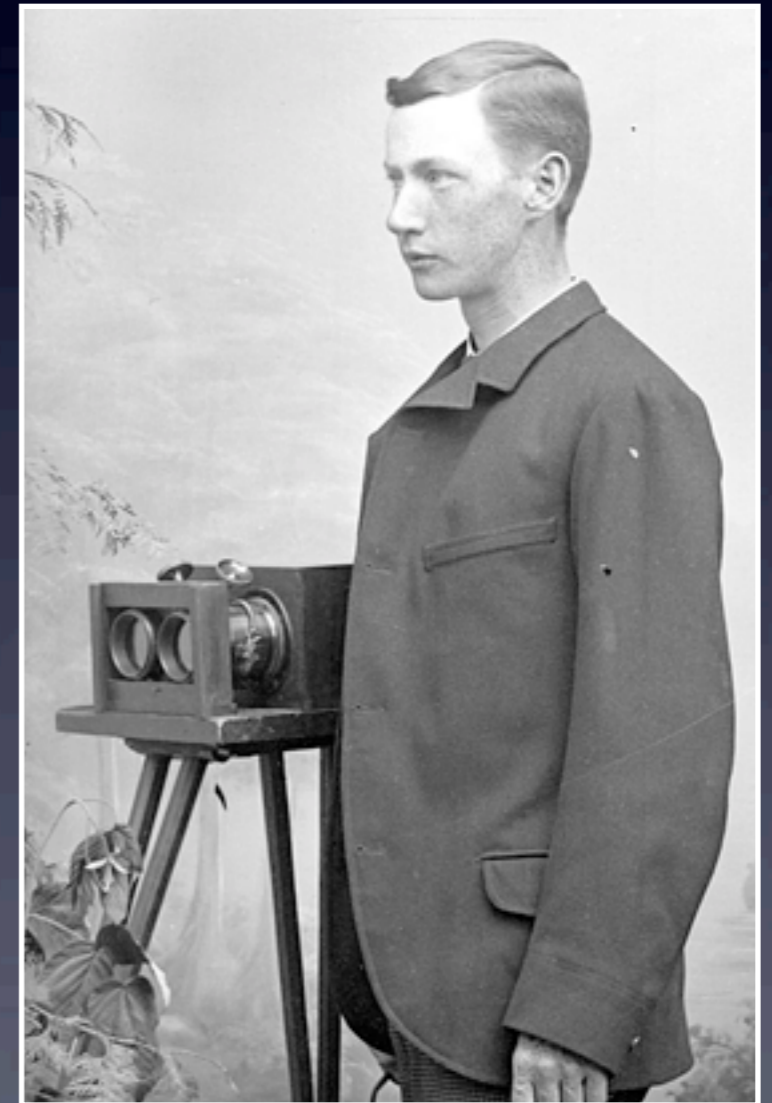
Several photos stitched into one single image?

A Quick History Lesson



San Francisco, 1851

- The first panoramas were ordered prints displayed side by side
- Crank cameras & stereo cameras made panoramas more accurate. Plate glass was the main issue
- Flexible paper film led to the invention of a swing-lens camera in 1877
- Throughout the 1900s, advances in glass making led to wider field of views in fixed lenses



Stereo camera, c.1870s

Some Notable Early Panoramas



Sherman's March on Atlanta - George Barnard, 1864



Early Swing-Lens Panorama - John Connon, 1890

Some Notable Early Panoramas



The Great San Francisco Earthquake of 1906, George Lawrence



"Bathing Girl Parade" - Miles Weaver, 1917

Making a Digital Panorama



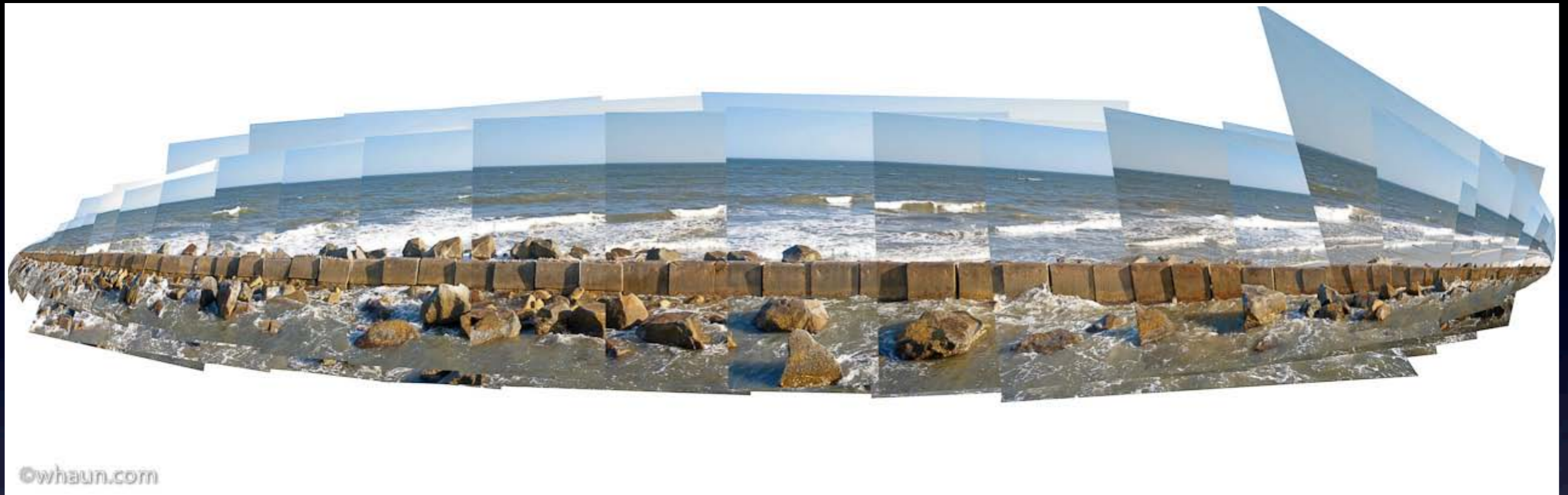
Festival in Ghana - ©William Haun, 2008

1. Photograph a series of images that overlap
2. Use special software to “stitch” them together
3. Print as a very high resolution photograph
or
Create an interactive image on the computer



Golf course in La Romana, Dominican Republic - ©William Haun, 2008

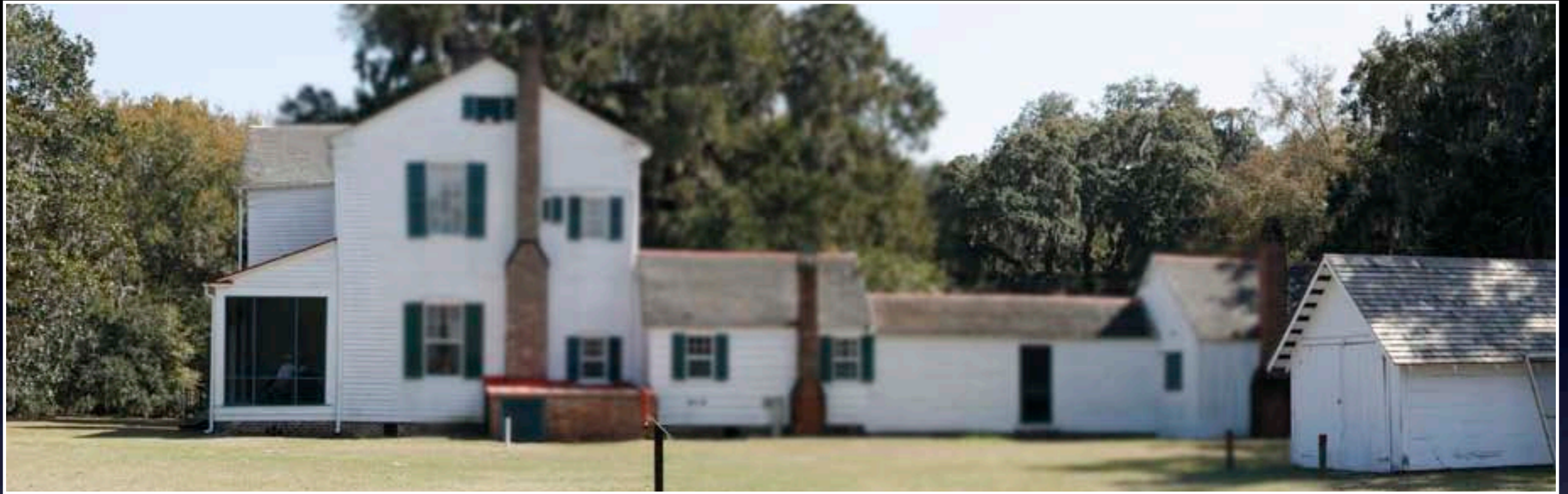
Panoramic Shooting Tips



The above panorama was unable to be properly stitched due to the movement of the waves

- Watch out for moving subjects
- Overlap your images at least 25%
- Shot vertical images
- Use in-camera help if available (StitchAssist)

Panoramic Shooting Tips



The above panorama contains portions out-of-focus because the camera was not set to fixed focus

- Shoot with manual/fixed focus
- Use manual exposure
- Remove polarizing filter

Panoramic Shooting Tips



This panorama shows the result of not having the horizon level © Flickr user srd_01002, 2007

- Use a tripod for smooth panning
- Keep the horizon level
- Keep a fixed pivot point
- Pivot on lens' nodal point for best results

Stitching Software

Freebies

- Camera Bundled Software (like Canon's PhotoStitch)
- Windows Live Photo Gallery
- Open-source engines like Hugin or PanoTools



©whaun.com
Ringling Bros. and Barnum & Bailey Circus, Atlanta, GA - © William Haun, 2009

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- Autodesk Stitcher (\$350)
- Adobe Photoshop (\$700)
- Adobe Photoshop Elements (\$99)
- ArcSoft Panorama Maker (\$40)

Stitching Software Differences



This panorama failed to stitch in Photoshop CS3, but CS4's upgraded Photomerge engine pulled it off
Amelia Island, FL - © William Haun, 2009

- Automation
- Stitching & Rendering Speed
- Accuracy & error correction
- Image blending
- Distortion & vignette compensation
- Export options
(flat JPG, cubic JPGs, Flash movie, Quicktime VR)

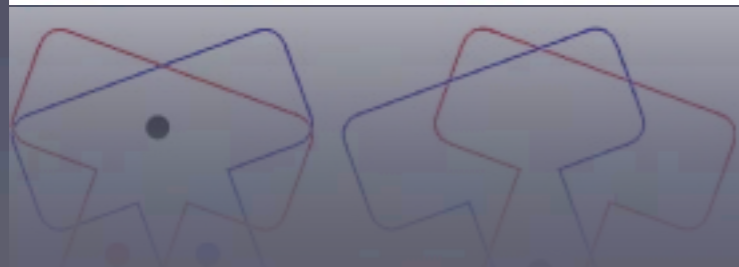
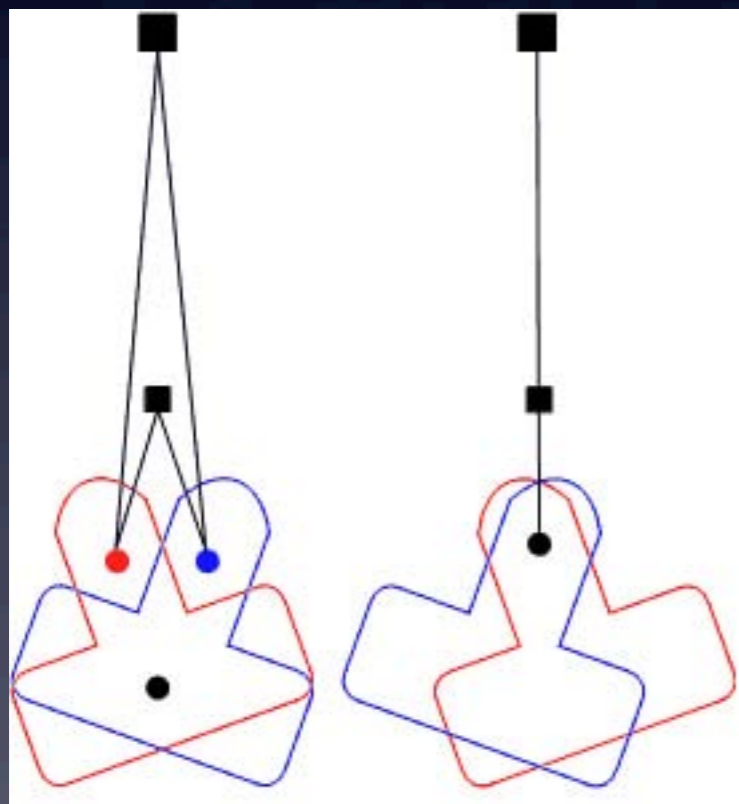
Recommended Hardware

- Computer with:
 - Lots of memory (RAM)
 - Plenty of free hard drive space
 - Fast CPU speeds up stitching & rendering times
- Tripod
 - Preferably have a level on the head



Optional Hardware

- **Panoramic Tripod Head**
(like the Nodal Ninja)
Rotates on nodal point,
Marked degrees of rotation



- **Automation Rigs**
(like the Gigapan)



Taking Panoramas to the Next Level



360° Panorama from top of Bradley Mountain - © William Haun, 2008

- Full 360° panoramas
- Spherical panoramas
- “Pan along” images



Log “Pan-along” at Hamburg State Park - © William Haun, 2009

Taking Panoramas to the Next Level



Laura S. Walker State Park - © William Haun, 2009

- HDR panoramas
 - Take bracketed shots
 - Using batch HDR processing software like PhotoMatix
- Vertical panoramas



Taking Panoramas to the Next Level

- Abstract stitching



Planet of the Birds - © William Haun, 2009



Trey's Tent - © William Haun, 2009

- Pano planets

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For questions & comments contact
William Haun via
www.whaun.com

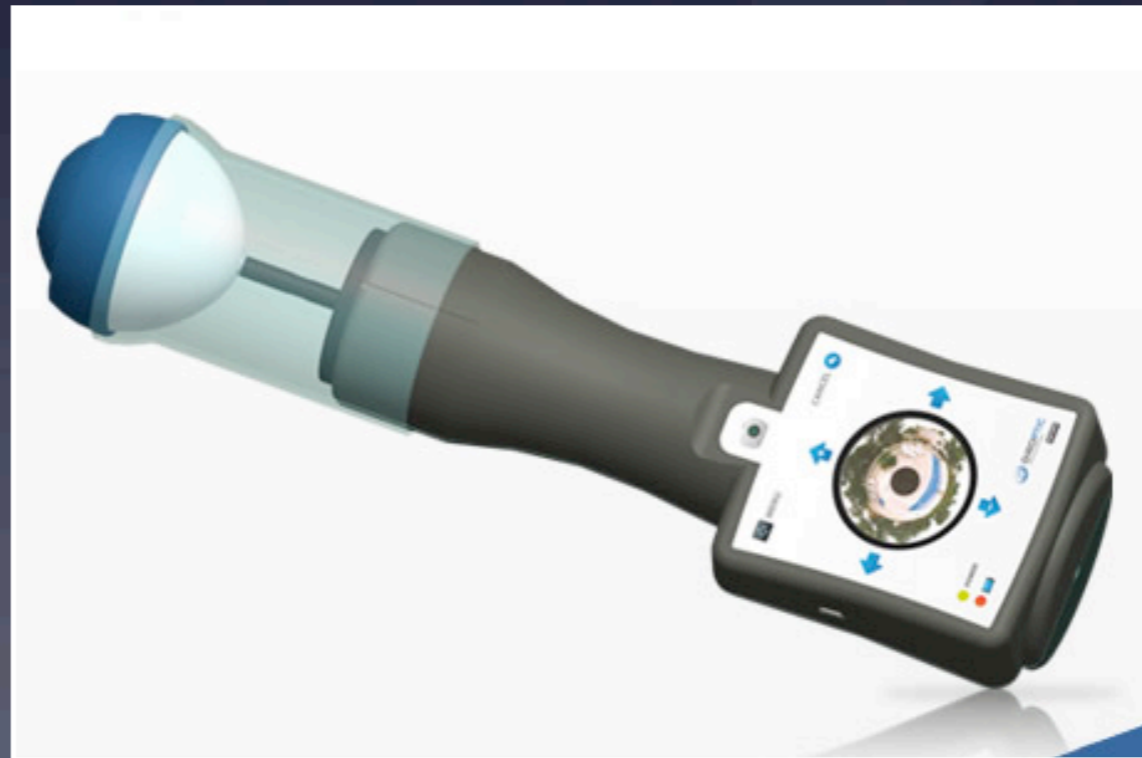
New (whacky) Panoramic Cameras



Triops



Sony HX-1 - \$480, built-in pano stitching



Giroptic
Takes full 360° photos