



[Volume XXXIX-B1](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B1, 39-44, 2012  
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXIX-B1/39/2012/  
doi:10.5194/isprsarchives-XXXIX-B1-39-2012  
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### THE ULTRACAM STORY

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Keywords: Photogrammetry, Camera, CCD, Aerial, High Resolution

Abstract. The UltraCam-project created a novel *Large Format Digital Aerial Camera*. It was inspired by the ISPRS Congress 2000 in Amsterdam. The search for a promising imaging idea succeeded in May 2001, defining a tiling approach with multiple lenses and multiple area CCD arrays to assemble a seamless and geometrically stable monolithic photogrammetric aerial large format image. First resources were spent on the project in September 2011. The initial UltraCam-D was announced and demonstrated in May 2003. By now the imaging principle has resulted in a 4th generation UltraCam Eagle, increasing the original swath width from 11,500 pixels to beyond 20,000. Inspired by the original imaging principle, alternatives have been investigated, and the UltraCam-G carries the swath width even further, namely to a frame image with nearly 30,000 pixels, however, with a modified tiling concept and optimized for orthophoto production.

We explain the advent of digital aerial large format imaging and how it benefits from improvements in computing technology to cope with data flows at a rate of 3 Gigabits per second and a need to deal with Terabytes of imagery within a single aerial sortie. We also address the many benefits of a transition to a fully digital workflow with a paradigm shift away from minimizing a project's number of aerial photographs and towards maximizing the automation of photogrammetric workflows by means of high redundancy imaging strategies. The instant gratification from near-real-time aerial triangulations and dense image matching has led to a reassessment of the value of photogrammetric point clouds to successfully compete with direct point cloud measurements by LiDAR.

[Conference Paper](#) (PDF, 765 KB)

Citation: Leberl, F., Gruber, M., Ponticelli, M., and Wiechert, A.: THE ULTRACAM STORY, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B1, 39-44, doi:10.5194/isprsarchives-XXXIX-B1-39-2012, 2012.

