

- HOME
- BLOGS
- ARTICLES
- SHOWCASE
- NEWSLETTER
- WEBINARS
- INTERVIEWS
- EVENTS
- ABOUT
- CONTACT

FROM SCANNING FILM TO 3D ONLINE MAPPING

[November 4, 2015](#) | [Leave a comment](#)



THE HISTORY

This mapping story begins with a small company that was dominating the scanning market some 15 years ago, but it wasn't the 3D laser scanning market – it was the scanning of large format aerial film. In those days digital cameras were just coming onto the scene and established aerial mapping companies were still looking to recover their investment in their film cameras.

Subscribe to our mailing list

Subscribe

SPONSORS



POLL

The company was Vexcel. Founded in 1985, they had developed the market leading technology for converting film into digital image data for use in what was called soft copy photogrammetry. Vexcel had 20 to 30 people working in Austria developing the technology and another 100 based in Boulder, Colorado, along with subsidiaries in Canada, the United Kingdom and the Netherlands.

In late 2004 Google made the decision to [acquire](#) Keyhole Corp, a Silicon Valley digital mapping start-up that had been founded in 2001 in order to jump start their entry into the consumer mapping business. Dubbed as an exciting new search tool that, “enabled users to view 3D images of any place on earth as well as tap a rich database of roads, businesses and many other points of interest.” This was the start of Google Earth and Google Maps. Interestingly Google recently [announced](#) that they will be shutting off the Google Earth API for security reasons and some say lack of interest.

Vexcel in the meantime had realized that scanning film was not going to be needed much longer so they decided to develop the UltraCam, their own digital aerial survey camera, which hit the market in 2004 and was an instant success.

Enter Microsoft, who needed to address the threat that Google Earth and Google Maps had begun to create with the Keyhole technology. Microsoft’s answer was Virtual Earth, which we now know as Bing Maps. In 2006 Microsoft [acquired](#) Vexcel along with its UltraCam digital camera products, as well as related 2D and 3D remote sensing technology. The race was on, but that’s a story for another time.

THE BENEFITS OF LIDAR

In an interview, Wolfgang Walcher, Group Program Manager at [Microsoft’s UltraCam Business Unit](#), explained that “for almost 10 years we have been working on both external commercial products and

Are you planning to make use of photogrammetry to capture

LAST WEEK'S POLL RESULTS

Do you think we should add a user

SPONSORS



Specializing in
Building Documentation
2D Plans, 3D Laser Scanning & BIM

www.arc-corporate.com 949.851.8115



working on both external commercial products and secret internal Microsoft projects. Only now are we allowed to discuss some of these internal projects.”

Starting in 2007, Microsoft’s first generation mobile mapping solution used camera systems only to capture panoramic street-level data. “Our photogrammetric methods were actually too compute-intensive for consumer needs,” Wolfgang recalled. “We were facing high processing costs for extracting 3D from imagery, as well as the expense of managing and storing vast quantities of high resolution photographic data. We just did not need that 3D point density for our application.”

In 2009, for Microsoft’s second generation mobile mapping system, the group took a look at mobile laser scanning as a way to reduce post-processing costs and to acquire fewer but more meaningful data points while still meeting their resolution and accuracy requirements. The sensor they selected was the relatively new-to-market [Velodyne HDL-64E](#), a real time 3D, 64-channel LiDAR scanner, which started an enduring, mutually beneficial relationship between the two companies.

Once Velodyne’s real time 3D, 32-channel [HDL-32E](#) LiDAR sensor became available, Vexcel migrated its [UltraCam Mustang](#) street-level mobile mapping system to that scanner. The Mustang is now in its third generation.

Microsoft recently [sold](#) all of its Boulder-based mapping content creation team to Uber. This did not include the UltraCam Business Unit, however. In an interesting twist of fate, this now enables UltraCam to make public technology that was once considered highly proprietary and available for internal use only.

One of these formerly top secret products is a mobile backpack mapping system that Wolfgang is very excited about. The [UltraCam Panther](#) is being readied for formal launch in early 2016. The Panther features Velodyne's VLP-16, a very lightweight, real time 3D, 16-channel LiDAR sensor, or what most people call the Puck (as in hockey). Velodyne announced the product in October 2014 and due to the close relationship between Microsoft and Velodyne and the perfect timing of Velodyne's announcement for Walcher's project, the first commercially shipped Puck actually went to Microsoft's team in Graz, Austria.

The Puck was chosen for its light weight, compact footprint and low power requirements, but it is the rotating multi-beam scanner design (the signature of all Velodyne scanners) that is the most important differentiator. This multichannel architecture means that data from Velodyne's sensors is much more reliable than alternative designs. "Reliability is critical. We have driven millions of kilometers with Velodyne (VLP-16)-equipped UltraCam Mustang sensors and were impressed," Wolfgang observed. "The Velodyne technology has an excellent track record under a wide range of environmental conditions."

The Panther will fill in those areas where a vehicle is not permitted, taking you right to your front door and even inside. Now, this is where things get interesting. Wolfgang reports that they have tapped into some of Microsoft's most advanced research and have developed a proprietary technology that provides highly precise, multi-floor geo-positioning. Add to this the Panther's 360-degree, spherical imaging capability, which includes 172 megapixel geo-referenced 30 Hz video streams or still imagery. After stitching, this results in 70 megapixel spherical videos or panoramas, plus of

course 300,000 3D points/second from the Puck, so it is clear that this portable mapping system is going to get a lot of attention.

Be sure to keep an eye on the Panther — one very impressive system.

tagged with [Featured](#), [Microsoft](#), [Ultra Cam Panther](#), [Velodyne](#)

LEAVE A REPLY

Your email address will not be published. Required fields are marked *

Name *

Email *

Website

Comment

Post Comment