Case: 2012-0630-001A

A Car With More Than a View (A)

Marius Milner swiveled in his office chair at Google's Mountain View headquarters, drumming his fingers excitedly on the armrest, and checked the time on the clock in the corner of his computer screen. It was early in the afternoon on May 29th, 2007, and Google Maps Street View had been live for only a few hours. Although Larry Page, co-founder and current CEO, is largely credited with the idea of what began as an experimental project to snap photos of every public building in the world and put them online, Milner was one of the lead software engineers assigned to build and deliver what would be known as Street View.

Milner's email blinked with a fresh message from Stephen Chau[1], Google's project manager for Street View. Chau was keeping a close watch on public reaction online and had sent Milner and the team a compilation of user reviews so far and from the looks of it, things were picking up. Several sites like streetviewfun.com had already been asking users to submit interesting images captured by the Google service that had been taken as Street View cars drove around miles of streets around San Francisco, New York, Las Vegas, Miami and Denver. With the release of Street View, the blogosphere began to light up with positive comments about the application. One blogger wrote, "Google Street View can scope out real estate, travel destinations, and even save you from your next parking ticket! It combines the convenience of standing in the street and looking around with the comfort of not being hit by a truck." But not all the reviews focused on the applications functionality. At least some parts of the Web were abuzz about Street View but the topics focused on privacy concerns instead of the stored images.

Google had said in a public statement that it takes privacy seriously and considered the privacy implications of its service before it was introduced on Tuesday. Google also stated that it had consulted with public service organizations and considered their feedback in developing the service, which allows users to request that a photo be removed for privacy reasons. "Street View only features imagery taken on public property," the company said. "This imagery is no different from what any person can readily capture or see walking down the street."[2]

Milner scrutinized the early user reviews, his mind and pulse racing. He had sunk more than a year of his life into developing software to automate the capture of street views. He was known

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[1] http://google-latlong.blogspot.com/2007/05/introducing-street-view.html
[2] http://www.nytimes.com/2007/06/01/technology/01private.html

for being thorough and he kept wondering if he had anticipated everything. He clicked open the 'design document' of Street View on his desktop and scrolled through the pages wondering: Was the team missing something? Had they thought through all the potential pitfalls and consequences of launching this product?

Background

Larry Page, founder and current CEO of Google, once described the "perfect search engine" as something that "understands exactly what you mean and gives you back exactly what you want." Since he spoke those words Google has grown to offer products beyond search, but the spirit of what he said remains embedded in the company. According to Google, "with all our technologies—from Search to Chrome to Gmail—our goal is to make it as easy as possible for you to find the information you need and get the things you need to do done."[3] Google has tried to maintain this philosophy at the core of its products and perhaps it was with this philosophy in mind that they acquired Keyhole, Inc. in 2004. Keyhole, Inc. was a software development company that specialized in geospatial data visualization applications.

Larry Page

Keyhole's marquee application suite, Earth Viewer, emerged as the highly successful Google Earth application in 2005 while other aspects of core technology were used in subsequent products like Google Maps.[4] John Hanke was the CEO and founder of keyhole and later Vice President of Google's 'Geo' division, which included Google Earth, Maps, Street View etc. What made this technology so unique was its ability to combine impressive 3D graphics with enormous amounts of data like satellite images and aerial photographs of most of the earth. The technology essentially paved the way for mapping the planet for common activities like planning trips and obtaining directions. Once Google had undertaken the project and enjoyed roaring success, the company decided to further 'enhance one's ability to understand the world through images'. Google wanted to enable the virtual exploration of city neighborhoods by viewing and navigating within 360° scenes of street-level imagery.

Milner, a software engineer with Google since 2003, was originally working on Youtube, a completely separate branch of the company, when he was approached to program for Street View. What prompted the offer was his past experience as the creator of Net Stumbler—a wireless detection software that detects LAN signals and is also used for "wardriving," where people drive around trying to pick up wireless signals and other information including signal strength and security. Wardriving was one factor that contributed to the creation of Wi-Fi network security as information on unsecured networks could be captured. The purpose of creating a location database of Wi-Fi hotspots as Street View cars drove around mapping neighborhoods, was to make Google Maps more useful on mobile devices—phones without

Marius Milner

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[3] http://www.google.com/about/company/products/
[4] http://en.wikipedia.org/wiki/Keyhole,_Inc

GPS chips could now use the database to approximate their physical location, while GPS-enabled devices could use the system to speed up their location-monitoring systems. Milner was hailed as a rockstar in the community of technologists working with wireless and hence was Google's choice to develop its latest foray into the geospatial world with the launch of its Street View application. Google initially partnered with Immersive Media, a digital imaging company specializing in spherical immersive video and the idea was to have vehicles equipped with cameras drive around streets, collecting images. Google later chose to develop its own cameras as the project expanded.

How did it work?

The original technology was a patented 11-lens camera system that simultaneously took photos in 11 directions based on dodecahedron geometry. The 360° system digitally captured 30 frames a second of high-resolution video. The technology had previously been used for security and the planning of state visits by dignitaries.[5] Although Street View started off as full-frame video, Google later switched to stills that would be stitched together to form panoramas when it started to use its own cameras.

With either camera system, the result was the same—Google Street View provided 360° panoramic street-level views and allowed users to view parts of selected cities and their surrounding metropolitan areas at ground level. Google Street View was navigated by using the mouse in the user's direction of travel. Using the website, the photos could be viewed in different sizes, from any direction, and from a variety of angles. According to Google, "It feels as if you're walking down the street!"

As the vehicles drove around, first capturing video and then later images, they were careful to pay close attention to the sun to ensure the best quality of images. They also had particular schedules mapped around weather and temperature to prevent snow, fog or rain causing delays or blurred imagery. The schedules ensured that Street View provided authentic and great quality imaging. Now it was possible for people who had never been to San Francisco, for example, to virtually 'walk' the streets or 'hills' of the city. And if it still struck their fancy, they could book a real trip there, choose their hotel carefully by perusing the sights within walking distance, and figure out the route on their walk to the nearest coffee shop as well. Once they actually made this trip, it was now even possible to travel back in time, if you will, and revisit the panorama from the top of the Golden Gate Bridge that they felt they hadn't photographed enough. The possibilities were endless!

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[5] http://www.gearthblog.com/blog/archives/2007/05/technology_behind_go.html

Time to Celebrate

As Milner tried to think through his various doubts, racking his brain to ensure that he hadn't forgotten anything, he felt absolutely sure of one thing – he had worked very hard on an accelerated schedule to deliver a breakthrough innovation. But then why did he feel like something was amiss? He thought that maybe he should check with Chau to explore if there was any aspect of the business model that was at risk. Shaking his head as if to clear it, Milner took a deep breath and stood up—it was time to join the team for a celebratory huddle on the successful launch of Street View.