Chapter 8
Google Maps and Google Local Search

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8.1 A Brief History of Google Maps for Business

Google realized that location search, and mapping as an inseparable part of it, was arguably the most important and useful feature a search engine should have. Many of Google's competitors were far ahead when "Search by Location" was launched as part of Google Labs in September 2003. However, trying to produce accurate results entirely based on scraped data proved to be not just difficult, but in fact impossible. Before the official launch of Google Local in March 2004, Google improved the location data it had acquired via site indexing with additional structured data from yellow pages sources. At that early stage of development, the main factors Google used in their local search algorithm were "location", "prominence" or "trust", and "relevance" (as part of Google's general organic search algorithm). It was only in February 2005, when Google Maps was officially launched, that "distance" came in the mix to bring the algorithm closer to its current form.

8.2 Google Local Business Center (LBC)

The biggest breakthrough in the area of serving business owners came when Google Local Business Center (LBC) was officially announced in March 2005. The LBC had a great impact on all stakeholders:

(1) Businesses were able to get control of their business information and make sure it was accurate;

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(2) Customers had one more source of correct and reliable information for products and services;

(3) Google benefited by having their business database improved for free.

To get hold of their business listing, or to create it if it did not exist, business owners or representatives needed to verify their ownership over a listing by obtaining a PIN, which was mailed to the business's address by Google.

The first publicly released version of Google's business dashboard was relatively basic. It included only information editing options to update business name, address, phone number, website, email, and a brief description. About 2 years later, in March 2007, Google released a major update to the Local Business Center. Businesses were able to add customized details, which could include anything from information about services to areas served. One important addition was that the verified business owner could "tell" Google about certain information that was attributed to the business listing was incorrect. Why was this important? Since the launch of the business dashboard, Google would add related information that it found on the web and show it in the local search results together with the business listing. Such information included images and map location. Frequently such data was incorrect, and so it was essential for businesses to be able to edit or completely remove those connections to their business record.

8.3 Google Street View

Google's main goal since the launch of Google Maps (and Google Search) had always been to collect the entire world's data. Maps was the most ambitious of all of the data collection projects, because what conglomeration of data could be bigger than the world itself? Google realized that relying solely on online sources to map the world was not enough. What was more, all the information Google obtained online was very untrustworthy, because it might have been derived from offline sources dating a few years back. As millions of buildings are erected worldwide every year and others are demolished, new roads are built, and businesses move their offices, data older than a few months could very easily be outdated. The only logical solution was that data needed to be obtained "on the ground". Thus, in May 2007, Google officially announced one of its largest projects yet—Street View. At that time they had 360° street imagery collected for only a handful of cities in the United States (San Francisco, New York, Las Vegas, Miami, and Denver). It was only in July 2008 that Street View was introduced outside the US—in selected cities in France and Italy, followed by imagery from Australia and Japan. By June 2015, Street View covers the entire inhibited part of the United States, Canada, Australia, and New Zealand, Mexico, almost entire Europe (excluding only Macedonia, Montenegro, and parts of Ukraine and Belarus), big parts of South America, large parts of inhibited Russia, Southeast Asia, Japan and Korea, as well as parts of India. The least covered continent remains Africa, with only South

Africa, Botswana, and Madagascar available, as well as small landmark parts of Tanzania. Overall 88 countries and territories have complete or partial Street View imagery by June 2015, with more than 10 additional countries to be added soon.

8.4   Google Maps

The next step for Google was to get the largest possible pool of contributors involved in the process of mapping the world—the general users. In March 2008, Google officially opened its entire Maps database (available for US, Australia, and New Zealand maps only at the time) for public edits. Google was arguably not well prepared for the amount of updates they started receiving from users, and the data verification complications involved in making sure that the user feedback was accurate. However, it is possible that they were forced to act fast, because since July 2007 reports of spam and abuse, mainly related to business listings, had been frequent. Google lacked the capacity to effectively stop, or even slow, the spam wave, and the easiest way to achieve at least partial victory was to get well-meaning users to help. Unfortunately, later it seemed that the attempt backfired, because the early adopters of the public edit functionality were the exact same spammers. They found easily exploitable loopholes and literally flooded Google Maps with fake business listings. Because of the nature of Google Maps, such spam was useful predominantly to service-based businesses, i.e. businesses which serve customers at the customers' location, and frequently do not even have a public-facing location (for instance, they operate from home). Locksmiths, towing service companies, garage door repair contractors, carpet cleaners, and bail bonds were the main culprits. Prominent local search blogger Mike Blumenthal notes in his February 2009 article that there were "more locksmiths in NYC than cabs" if one was to trust Google Maps. In an attempt to prove the ease with which the system could be abused, Blumenthal took control of Microsoft's Redmond, WA business listing and changed the location, the website URL, and even the business name—to Microsoft Escort Service.

8.5   Google Map Maker

At that point it was evident that Google had to do something fast. Their response came in June 2008 when Google Map Maker was launched. In essence, it was an improved user-generated content (UGC) gathering and verification system. Its main purpose was to both make it easier for users to add or update mapping and business data (including complicated geographic objects such as roads, rivers, and buildings), and at the same time give more control to Google's mapping data verification team. The effort was relatively successful as spam was at least partially contained, although later on numerous withstanding loopholes were discovered. The main problem of Map Maker was its great reliance on humans, and specifically on Google's

verification team. Unfortunately, due to lack of focus on the problem, Google made the mistake to outsource this crucial part of the process to an overseas team in India. The overseas members were poorly trained by Google, and they lacked the important insight of understanding the realities of life in different countries around the world (one team was responsible for verifying UGC from all over the world). The problems culminated in the temporary suspension of Map Maker in May 2015 after several abuses had received worldwide media coverage. One of the most publicized pranks was the inclusion of a business named "Edward's Snow Den" at the address of The White House. However, the one that prompted the quick suspension of Map Maker was an image of the Android mascot seemingly urinating on the logo of Apple. The image was mapped out using vegetation outlines addition on an empty piece of land south of Islamabad, Pakistan.

8.6   Google Reviews and Google Places

While Google gradually figured out the best ways to obtain and verify mapping and business data, the last piece of Google's local search puzzle was the introduction of an option for customers to provide their feedback on a company's business listing. In the early days of Google Local, Google would associate reviews (or content they believed was reviews) they found on the web or provided directly by third-party sources with the corresponding business listing. However, third-party data could never be the most reliable and trustworthy source, and that is why in June 2007 Google announced the introduction of native Google reviews to Maps. For a variety of reasons (probably due to Google's apparent inability to comprehend "social") the task of getting enough high-quality business reviews proved to be beyond Google's capabilities. They realized that relatively fast, because by December 2009 they were in advanced acquisition negotiations with review site Yelp. The speculated $500-million deal fell through, however, which prompted Google to make significant effort in the area of reviews and ratings.

Google's first significant effort in adding improvements to the "reviews department" was an update to their sentiment analysis algorithm, which was designed to analyze content around the web to see if it potentially included feedback sentiment on an "entity". Google would then match the entity's speculated review (usually an excerpt from a block of text in a blog or news article) to a business listing that they believed corresponded to that entity. Furthermore, in August 2010, Google added the ability for business owners to be able to reply to reviews, in an attempt to gain the support of business owners and to encourage Google reviews. The arguably most successful effort was the launch of Hotpot in November 2010. Hotpot was meant as a personalized recommendations booster. The logic derived from the fact that if a friend of yours left a positive review for a business, the chances that you would also like that business were much higher than the chances that you would like another business for which a stranger left a similar

positive review. Later on, Hotpot was integrated into Google Places—the new name of Google Local Business Center.

8.7   Google Products for Local Businesses

As discussed above, Google realized early on that there could be mutual benefit if they work together with business owners to improve business data in Google's data clusters. However, the road to creating a product that was useful and at the same time user-friendly was not straightforward.

8.8   Google Business Dashboard with Google+

Google's business dashboard went through three re-brandings and tens of updates to finally be seen in the way it is today. The latest version of the dashboard is integrated with Google+—Google's social network (or "layer" as Googlers like to call it). It is both the most sophisticated and the easiest to use version yet. Some of the most important benefits of the integration with Google+ are as follows:

 (a) The ability for business owners to "socialize" with their customers.

   Previously, business owners were able to share short, Twitter-like updates on their business listings, but these lacked the exposure and the overall integration with the public interface of the listings to be of any real use. Additionally, while previously introduced an option for users to "like" their favorite business listings, the option was buried and thus very few people used it on a regular basis. The "like" function and the "update sharing" function were not connected, i.e. if a business shared an update on their business listing, a user that had liked the listing would not be notified. This changed with the integration into Google+, and now users are able to get notifications when a business posts something on their stream. Additional social function was the introduction of Google Hangout—a way for businesses to set up online video conferences with customers.

 (b) Integration with Google Analytics.

   Measuring results of online marketing efforts has always been one of the biggest concerns for businesses of all sizes. Google's old business dashboard provided very basic details about impressions (how many times a business listing has shown in the search results) and actions (how many people have clicked on the displayed result), but even such basic feature frequently malfunctioned and were generally known to provide inaccurate statistical data. Due to various technological constraints of the way the old business dashboard had been set up, Google was unable to successfully integrate it with Google Analytics—the specialized search and conversion data

analysis tool by Google. This changed with the integration of Google+. Additionally, Google improved the dashboard's native statistical data display and overall performance. The function is nowadays called "Insights" and it provides a good amount of data, including driving direction requests, phone calls, social engagement (for instance, how many people have +1'd or shared the posts of the business), and audience segmentation.

(c) Increased trustworthiness of business data.

This is arguably the most important change that occurred. Previously, even though a business might have claimed their online listing on Google, it was very possible that the information displayed in the search results would differ from the one the business owner or representative had provided via the dashboard. This was caused by a discrepancy between the data which Google might have discovered or received from third-party sources and the data provided by the verified owner or representative (more on this later). After the integration with Google+ was completed, information provided by the verified business owner became the most trustworthy source of data, and even if Google decides that different data should be displayed publicly, they notify the owner, and allow them to re-update the information if they want to.

Additional features were also added after the integration was completed, and at the same time some features were dropped or updated (as mentioned above).

8.9   Google AdWords and AdWords Express

By now you might be wondering how Google monetized this whole endeavour, as the investment of time and money into building the best possible location data was extraordinary. The major means for Google to get revenue from all of their online properties is ad placement. Their now highly sophisticated AdWords product is their most important income source by far. In 2014 their revenue from advertising was close to $60 billion, out of a total of $66 billion revenue for the year. In other words, Google relies 90 % on its power as an advertising platform. The logic behind the monetization of Google Maps is not different—more users and more relevant results mean more clicks. This could only be achieved with the provision of as much high-quality and in-depth information as possible. However, attracting as many users as possible is only one side of the story. Google needed to have a sophisticated, yet easy to use, advertising dashboard to entice business owners.

At first, AdWords was not a perfect dashboard for business owners, because location targeting was inaccurate or non-existent. In July 2009, Google launched a "location extensions" function for AdWords—an integration with LBC. However, it soon became evident that AdWords was too complicated for some business owners and they were not able to get it to work successfully for their marketing needs. That is why in October 2010 Google Boost was introduced (later re-branded

to AdWords Express). It was a very simplified solution tailored specifically to small businesses that lacked the knowledge (and time) to be able to play around with the multitude of functions that the regular AdWords dashboard offered. Nevertheless, the main advantage of AdWords Express is not just about simplicity but also the 5-star (or fewer stars, depending on the ratings) review rating that shows up in the advertisement. This has empirically been proven to be a great click-through rate booster, which made the product relevant for businesses which had good Google reviews. However, the cost per click for AdWords Express was much higher than a well-tailored AdWords campaign with location extension. Eventually AdWords Express was absorbed by AdWords, probably due to the fact that Google Places (the name of Google's business dashboard at the time) was moving to Google+. As of June 2015 AdWords Express is still an available advertising option.

8.10   Google Tags

A short-lived product, launched in February 2010, was Google Tags. Although it was discontinued in April 2011, Google Tags is worth mentioning because it was one of the very few products outside the realm of AdWords, which Google launched for the immediate purpose of gaining additional revenue. The pricing structure of Google Tags was rather unique—a flat rate of US$25/month fee. Google Tags offered the opportunity for business owners to add a small yellow-coloured tag under their business listing with a featured message and link to a part of their business listing. For example, if an advertising business was a restaurant, it might be beneficial for them to feature a link to their listing's images in the search results, so that customers could easily see the ambience and pictures of the cuisines on their dining menu. Additionally, the tag would occupy real estate space in the immediately visible part of the Google search result page, and it would attract attention, because of its colour. Unfortunately, the main disadvantage of Tags, which probably led to their demise, was the fact that they were useful only if a business was already ranked within the top local search results. If they were not, additional visibility at a place where no one has any visibility (i.e. second page of Google's search results) would not be worth even the $25 Tags cost.

8.11   Google Business Views

Google Street View was able to display the exterior of a business, as well as the surroundings. Google Maps would show the driving directions, and Google Places would provide information about the business such as its phone number, working hours, and services. However, Google realized that the piece of "data" it lacked was an interactive imagery of the inside of a business. Business owners were able to

post pictures on their listings, but those could feature anything from the face of the owner to the logo of the company, and they would rarely give a clear idea about the interior of the premises. In February 2010, the first rumours of a new product called Google Store Views appeared. In May 2011, the product was officially launched under the name Google Business Photos (later re-branded to Google Business View). In the beginning, it consisted of a series of photos of the interior of a business that were later uploaded by the Google certified photographer who took the photos for the business listing. Later on, the product evolved into a 360° imagery walk into the store, an exact copy of Street View. The trusted photographer (or agency) would normally do the sales and actual implementation of the service, and would share some of the profits with Google. Thus, Google Business Views does not cost Google anything. Today there are hundreds of trusted photographers and agencies in 29 countries.

There are speculations that in future Google will be looking into using Google+ as a platform for increased ads exposure, or that they would experiment with different, new types of advertising products, but as of June 2015 nothing concrete has been announced.

8.12   Google Business Listings and Business Data

Up to now we discussed mainly the relationship among Google, its products' users, and business owners in providing and updating mapping and business information on Google's multitude of platforms. However, these are not the only sources of information that Google has been using. In fact, the main layer of the basic data comes from third-party sources. Google collects it in two main ways: by purchasing it and by scraping it.

8.13   Business Data Aggregators

Google purchases licensed business data from the main business data providers in each country they have ever introduced Google Places. In the United States, for instance, the main business data aggregators (as they are better known) from which Google has been getting data in exchange for payment are Infogroup, Acxiom, and LocalEze (see "Appendix" at the end of the chapter for a list of major business data providers for Google in selected countries). Each of these aggregators "aggregates" business data from numerous other sources, such as government records, printed yellow pages, and direct phone calls to businesses. Google pays for such data, because it is generally more accurate and up-to-date than "scraping" local business data.

8.14   Business Data Scraping

Scraping is the process in which Google's crawler bots go through a website's content (which is mostly in structured form) and compile information that might be useful for Google and could be re-used by them in different ways. If the scraped information is structured, in other words, if the site provides additional encoded details about what each bit of information represents, it is even easier for Google to determine if and when such scraped data might be useful. That is why the majority of the scraped data that Google uses for business listings are obtained by going through the content of online business directories, Internet yellow pages (IYPs), and websites whose main purpose is not to serve as business directories but to collect and display information about a large quantity of businesses. The most famous (and most frequently scraped) IYPs in the United States are Yellowpages.com, Superpages.com, Citysearch.com, and Merchantcircle.com. Other sites that are not necessarily business directories but are Google's favourites are Yelp, Yahoo! Local, and Foursquare.

8.15   Business Listings

By obtaining information through direct purchases and through scraping, Google is able to determine if a business actually does exist, as well as to cross-check and verify the correct business name, address, and phone number. After Google's algorithm determines that a threshold of trustworthiness is reached, a Google business listing is automatically generated. Such listings usually feature only very basic information about the business—the mentioned name, address, and phone number (abbreviated as NAP) as well as one business category. That is why most businesses do not need to set up brand-new listings on Google, but to search for their business record and claim it instead. However, it is possible that Google might have determined that certain information is trustworthy enough and might have generated a listing using that information, when in fact that information is outdated because the business has closed down, moved, changed phone numbers, or rebranded. That is when the real problem occurs, and that is why Google introduced very early on the Local Business Center as mentioned above. The solution was not as sustainable as Google would have wanted it to be however. Many owners did claim their business listings and updated the information, but once they have closed doors or sold their business, they did not update the information. That is why in the beginning of June 2015, Google introduced a simple system for business information to be kept as up-to-date as possible. Now, in order for a business listing to stay owner-verified and claimed, the business owner would need to log into the dashboard at least once every 6 months. Google would notify them via email 2 weeks prior to the "expiry date". If they fail to log into the account, their account will be disassociated with the business listing, and the listing will be free for the public to edit, and previous information provided by the business owner might get stripped down.

8.16   Business Rankings in Local Search Results

The additional nuance of Google using third-party business data is the fact that the more of certain matching data Google finds, the more trustworthiness this data is in Google's weighed algorithm. Therefore, ceteris paribus, a higher number of accurate mentions of a business's information online would mean a higher ranking in the local search results, because trustworthiness (or prominence) is one of the three major local search ranking factors (relevance, prominence, and distance). The term used within the local search community to refer to such kind of mentions is "citations". A citation could be any mention on any web document (a web page, for instance) of a combination of at least two of the three main business attributes (i.e. NAP: name, address, and phone number). In fact, citations are widely considered to be one of the most important individual ranking factors. According to the most authoritative survey on local search—the Local Search Ranking Factors, conducted by David Mihm, "external location signals" (i.e. citations) carry 15.5 % of the total weight in the organic local search rankings on Google.

8.17   Business Citations

There are two main sub-factors to citations—their "volume" and their "consistency".

8.17.1   Citation Volume

The volume of citations for a business means exactly that—how many citations are associated with a business. Citations, however, are not born equal and some are more valuable than others. Citations could be divided into three groups based on the type of website they are found on—generic citations, industry-specific citations, and location-specific citations. Generic citations are found on sites where any kind of business could be mentioned, such as the main business directories and data aggregators, for instance. The industry-specific and location-specific citations are found on sites where only businesses that comply with certain restrictions could be mentioned. For instance, on the business directory website Justia.com only law firms and lawyers could be listed. In terms of absolute value, generic citations are the heavyweights. However, in terms of relative value as differentiators in the local search rankings, the industry-specific and location-specific citations play a more important role. Therefore, a business that wants to be ranked high in the relevant local search results should optimally obtain a broad mix of citations from both generic and specific citation sources.

8.17.2   Citation Consistency

Google is not the only player who collects business data from different third-party sources. Almost every business directory does the same thing. They all face the same problem as Google does—the business data they obtain is sometimes inaccurate or outdated. As business records on such websites are used by Google as citations, business owners need to make sure that their business data are accurate not only on Google but also everywhere else on the web. The task is difficult and in many cases unachievable, because some sites do not provide an easy way for business owners to claim the existing business listings and to update their business details. The introduction of pay-to-play automated tools introduced since 2013 has made the task even more difficult. Companies providing such solutions get into exclusive relationships with some of the business directories and offer them regular payments in exchange for the access to business directories, allowing them to update business data quickly. Such relationships make perfect sense to both the solution providers and to the business directories. However, since their cost is relatively high, they are generally unsustainable. As they require yearly fee payment, the ones who suffer are the business owners. Once the service is cancelled, the results will oftentimes be reverted back to the state in which they were prior to the service purchasing. The pay-to-play solutions have numerous imperfections in the way they try to resolve the very complex business data issues, and therefore they should not be viewed as a get-and-forget type of offerings.

8.18   Complexity of Online Business Data

The following example illustrates the complexity of the problem with online business data:

LocalEze is one of the most important business data providers in the US. They provide business information to a number of online platforms, one of which is MerchantCircle.com. We do not know with 100 % accuracy how frequently MerchantCircle *receives or pulls data from Localeze's database but for the purposes of this example we will set the cycle at 45 days. Here is an example scenario: On January 1, new business information from an official government source is added to LocalEze's database:*
Business Name: Bob's Painting
Business Address: 25 John's Street, Miami, FL 33133
Business Phone: 305-555-1000
This information is provided for use by the "data receivers" and MerchantCircle.com on February 15. However, in the meantime, on January 25, the business owner (Bob) claims the listing on LocalEze and updates the

information to feature his correct phone number. The LocalEze listing is updated with the new phone number: 305-666-1555

Unfortunately, MerchantCircle.com does not understand (either due to the way the new data is provided by LocalEze, or due to imperfections in their data clustering system) that this new business phone, together with all the other unchanged information, is for the exact same business. It is just that the phone number has changed. Thus, on March 10, a new listing appears on MerchantCircle.com. Now there are two listings for Bob's business on their site:

Listing #1:

Business Name: Bob's Painting

Business Address: 25 John's Street, Miami, FL 33133

Business Phone: 305-555-1000

Listing #2:

Business Name: Bob's Painting

Business Address: 25 John's Street, Miami, FL 33133

Business Phone: 305-666-1555

Here's a summary of the order of events:

January 1—The original listing is added to LocalEze.

January 25—The phone number on the original listing on LocalEze is edited.

February 15—The original listing finally enters the MerchantCircle database (assuming it is a 45-day cycle).

March 10—The edited information enters the MerchantCircle database. However, because MerchantCircle are not good at matching and de-duping info, they create a separate listing (a duplicate) instead of editing the original listing from February 15. Now Bob has a problem he does not even suspect he has.

From the above example, one could understand that the problem with online business data does not end with just finding all the incorrect or outdated listings for a business and updating them. A business owner needs to first understand the original source of the incorrect business data and start by fixing the information at the source. Once this is done, they can update the rest of the listings, as well as removing any duplicate listings that might have been generated. The majority of the automated pay-to-play solutions do not go through any of these two steps (finding and editing the information at the source and removing duplicate listings).

8.19   Google Map Maker and Maps Spam

As mentioned earlier in this chapter, spam has been one of the most significant problems with Google Maps. First spam reports could be found as early as 2007, and in 2015 the situation has improved only slightly. An issue connected with Maps

spam and probably the main catalyst for abuse is the fact that Google seem to be unwilling to invest enough resources on creating stronger anti-spam system. This is hardly a problem specific to Google Maps though. Google have always been trying to resolve complex issues in programmable manner, most probably because of the easier scalability of such solutions as compared to the use of human force. In the early days of Google Maps and Google Places there was practically no way for business owners or users to get in touch with a human being at Google, and the only sporadic communication was automated responses to public edits (e.g. "your edit has been approved"). In addition, there was no clear guidance available for business owners or users on what to expect from Google. The abundance of technical glitches on Google Maps made the situation nearly unbearable. In fact, it was so horrific by the end of 2012 when Google was in the process of transferring the whole business dashboard from Google Places to Google+ that famous local search blogger Mike Blumenthal wrote a now very revered article named "*Google Local: Train Wreck at the Junction*".

8.20 Out of Business?

Up until 2013, there were very few options for Google Maps users to contact directly or indirectly a Google representative. The "Report a problem" feature had been available since 2007, but it had never worked well enough to be a reliable solution. At the same time, it has always taken Google a great deal of persuasion to pay closer attention to particular issue. In fact, it has been proven numerous times that they tend to react on non-prioritized matters only when the story gets picked up by national and international media, and negative publicity looms over Googleplex. A particularly damaging businesses exploit was brought to the attention of *The New York Times* by Mike Blumenthal in 2011. The exploit stemmed from the fact that it was relatively easy at the time to mark a business listing as closed (i.e. to report that the company is out of business) and for such an edit to go live quickly. When a business listing is marked as closed, it disappears from virtually any organic search results, excluding (in some cases) exact-match brand name searches. This was the silver bullet to killing competitors' online presence for many unscrupulous businesses. The exploit had been around for a number of months and literally thousands of businesses had complained via the only possible mean at the time—the Google Places forum, but nothing was done on Google's end to fix it. However, after the story was posted on the NYT on September 5, 2011, it took less than a day for Google to respond publicly that they were taking action, and less than 10 days (including non-working days) for them to resolve the issue.

8.21 Google Phone Support

As mentioned above, the only option for businesses to contact Google indirectly was via the Google Places forum up until January 2013. In a big part due to the significant outrage that arose after the publication of the aforementioned article by Mike Blumenthal (on November 29, 2012), Google introduced phone support for the first time in the existence of the local business center. The phone support began on January 8, 2013—a little over one month after Blumenthal's article, even though the issue had been around for more than 5 years.

8.22 Google Map Maker

In 2014 and 2015, a new wave of loopholes in the Google Maps data verification system was exposed. However, it was not until The White House and Apple's logo got involved that Google decided to unprecedentedly suspend user edits on Map Maker (or at least their publishing) on May 12, 2015. How it all unveiled:

First, in early 2014 a Maps spammer, who had worked together with illegitimate businesses in the past started publicizing Google Maps pranks he had created in order to bring the issue to Google's higher management, and to potentially prompt them to prioritize the closing of the loopholes in the system. He was partially successful, especially with a prank in which he managed to intercept calls to San Francisco's FBI office, as well as Washington's Secret Service office. The publicity was apparently not enough and in 2015 he retried by creating bogus business listing with an address at The White House. The timing that time was "right", because just two weeks before that another story broke the news—of a prank in which Android's logo was mapped out in Northern Pakistan, urinating on an apple that looked very much like Apple's logo. It took just a few days for Google to make the decision to completely suspend user edits on Map Maker. In August 2016, Google Map Maker reopened in over 50 countries with two major changes: (1) Top mappers are empowered to moderate user edits, and (2) polygon editing is no longer available.

In Google's defense, some of the issues, which needed to be attended to, were relatively complex and significant amount of resources and time were needed for them to be fixed. For example, the Google LBC (later Google Places) dashboard was built on a technologically outdated platform, and Google needed the time to transfer the dashboard to the much more advanced Google+ platform. However, the large majority of issues mentioned above required Google's full attention for just a few days to get resolved. Additionally, their main problem had always been the lack of willingness to spend resources on high-quality customer service and ground-truth data verification teams. I have previously offered the following simple anti-spam solutions and they are still valid nowadays.

8.23   Anti-spam Solutions

(1) Never offer phone verification the first time when a listing is claimed.

Instead, include stricter verification requirements for listings created through user-generated content (UGC). For instance, require at least one additional hard-to-fake verifiable supporting evidence (registration with government institution that has public record with business information, local business chamber registration, listing on Localeze (requires payment) or Acxiom (requires document verification), and document related to the business for which all the business information is visible (similar to Acxiom's verification method)).

(2) Stricter checks on users who submit UGC through Map Maker and place restrictions based on the number of edits or reviews on Map Maker.

A great example in this regard is Waze, which allows you to edit only certain areas of the map (where you have passed through), and the areas expand based on your activity on Waze. Some would argue that if stricter information verification rules are imposed, it would be the small business owners and not the spammers who would suffer the most. However, I believe that while spammers are persistent and unscrupulous, driven by potential high profits, it is a big leap from creating fake online business listings to providing counterfeit documentation for verification purposes. I believe that most of them would give up.

(3) Use postcards to verify ownership over a business listing.

Changing the phone number on an existing listing is relatively easy with some persistence under the current state of the Map Maker system. Once the phone number is changed to the one that the spammer has access to, they could easily take control of the listing and potentially change all the information as they like. While there are complicated schemes with rogue and fake addresses, a verification postcard makes it much more difficult to change the address of a business listing as compared to its phone number. Therefore, verification by postcard as the only way to verify one's ownership over a business listing would provide a strong additional protection.

Appendix: Business Data Providers for Google in Selected Countries

Country	Business data providers
United States	Infogroup, Acxiom, LocalEze
Canada	Yellowpages (discontinued), Acxiom (speculative)
United Kingdom	Market Location, 118 Information, Local Data Company

(continued)

Country	Business data providers
Germany	Gelbeseiten, Infobel
France	PagesJaunes, Infobel
Italy	Paginegialle, Infobel
Australia	Sensis
New Zealand	Finda