

# **Legal and Strategic Perspectives on Click Measurement**

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Search engines, such as Google and Yahoo!, have revolutionized the way people search for information. Advertisers, eager to take advantage of this great potential for customers, have been bidding to display clickable links to their websites as sponsored search results. This revolution, however, and the ten-billion dollar industry it created have been threatened by the rising number of invalid clicks. The viability of the performance-based Cost-Per-Click (CPC) advertising model, which is the search engines' basic business model, may be in jeopardy. There is no consensus on the proportion of invalid clicks in the industry, but reported estimates range from 5% to 50% (Kitts et al., 2005). Invalid clicks are often due to click fraud, a term, which broadly speaking refers to various practices that produce invalid clicks. Search engines, in fact, have recently been sued by advertisers who have argued that the search engines have not done enough to curb click fraud.

There is no consensus among advertisers regarding the legal and economic implications of click fraud. Some have argued that click fraud would only lower CPC levels, if it affects every advertiser equally (Kitts et al., 2005), while others have argued that it may destroy the entire Internet economy (Mann, 2006). Google's chief financial officer (CFO) characterized click fraud as "the biggest threat to the Internet economy" and he added "potentially it threatens

our business model” (Delaney, 2005). Even though click fraud methods were known as early as 1999 and were recognized as a major problem for the CPC model (Anupam et al., 1999),<sup>1</sup> the industry currently lacks many institutional safeguards against click fraud. Google’s Advertiser Terms and Conditions, for example, do not include any widely accepted standard definitions; payments are determined only by “*Google’s click measurements*” without any reference to an audit mechanism (Adwords, 2005), although, we note that Yahoo!’s recent settlement of its lawsuits attempts to grapple with the problem.

This article analyzes the problem of click measurement from legal and strategic perspectives. From a legal standpoint, cooperation comes to light as the most important strategy. To protect the industry from click fraud, search engines and advertisers should work together to establish standards and a reliable and mutually agreeable detection process to verify the authenticity of clicks. This process must be open to independent third-party auditing. Getting the courts involved in the matter will not serve the industry well, as judges and juries will end up making technological decisions instead of the experts. This prospect should strongly motivate search engines to find a cooperative solution that establishes trust between the engines and advertisers.

Cooperation can start by acknowledging the strategic incentives created by the imperfect nature of fraud detection technology. A variety of data, which is available to different parties, can be used to detect invalid clicks. Click measurement can be improved by relying on all sources of data. A standard process and certified technologies will greatly improve the reliability of counting clicks.

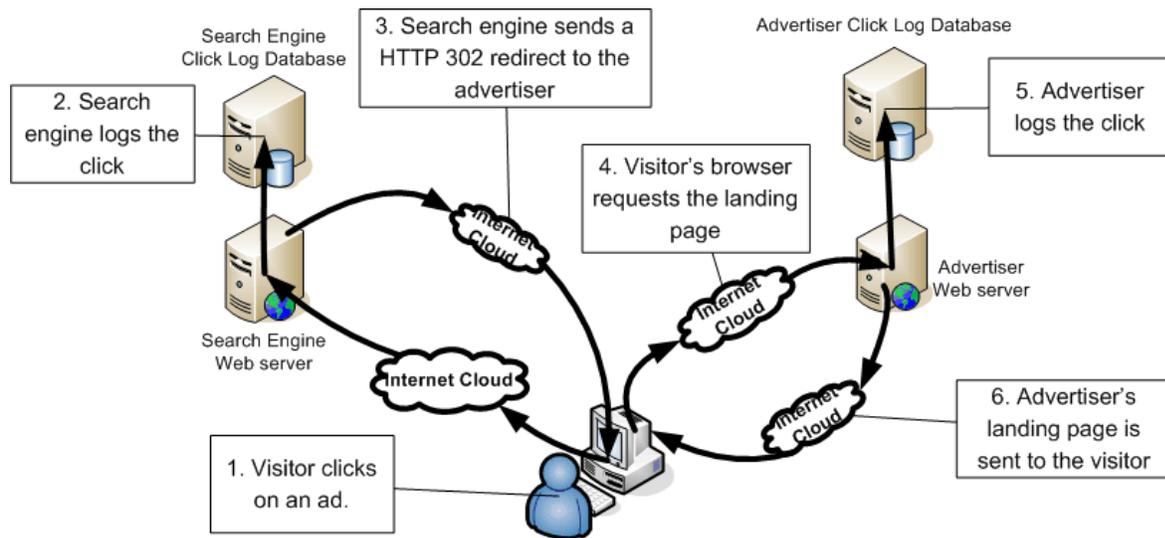
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<sup>1</sup> Click fraud can occur in any CPC model setting (search engines, e.g. Google Adwords and ad networks, e.g. Google AdSense). Click measurement is relevant at the strategic level in all these settings that suffer from different types of click fraud attacks.

## Current Click Measurement Technology

A click (i.e. click-through) is formally defined by Internet Advertising Bureau (IAB) as a user-initiated action of clicking on an ad element, causing a re-direct to another Web location.<sup>2</sup>

Figure 1 shows the typical measurement of clicks. A click is measured by the search engine and involves Steps 1 through 3 in Figure 1: the visitor clicks on an ad and is successfully redirected to the advertiser web server.



**Figure 1:** Current click measurement process

Click fraud is an attempt to manipulate the system for financial gain either by publishers clicking ads on their own websites or by advertisers clicking competitor's ads. Since perpetrators of click fraud can imitate legitimate visitors, they can very well be successful in their schemes.

Currently, clicks are counted by the search engine and advertisers. Advertisers pay a fee for each click based on the search engine count. After receiving their invoices, advertisers can dispute the invoice by making claims for invalid clicks. The search engine then reviews the claims and determines the final payments.

<sup>2</sup> <http://www.iab.net/standards/measurement.asp>

## **A Legal Perspective on Click Measurement**

Those who commit the click fraud may be violating California's criminal code, which contains a section (California Penal Code § 502) dealing with computer crimes. The more interesting and financially relevant question, though, is the liability of the search engine to the advertisers. At least two lawsuits have been filed against Yahoo! and Google, which were recently settled. The lawsuits alleged that the search engines were not doing enough to prevent click fraud.<sup>3</sup> The lawsuits sought damages in the amount that the advertisers were over-billed for the fraudulent clicks. Both Yahoo! and Google agreed to settle the lawsuits, whereby they both agreed to pay out some damages to the advertisers. Yahoo! took the extra step of agreeing to work with those in the industry to define click fraud, presumably with an eye to better measuring it and hence avoiding billing for invalid clicks. Despite the recent settlements, the discussion is still relevant, as many advertisers may opt out of the settlement. More importantly, the settlement only addresses past wrongs; if in the future advertisers feel they are being improperly billed, they can always launch a new suit for their new grievances.

Google's CFO's statement that click frauds are "the biggest threat to the Internet economy" has come back to haunt Google in the lawsuit. Since Google has acknowledged that click fraud is a problem, so the lawsuit's argument goes, Google should be doing more to prevent click fraud. The lawsuits alleged that Google is guilty of breach of contract, unjust enrichment, negligence, and a violation of state consumer protection statutes.

The starting point for any legal analysis is the contract between the advertisers and the search engine. Google's contract, for example, states that advertiser will be charged for "actual clicks", but the contract is silent as to the definition of "actual."

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<sup>3</sup> One suit in California is Click Defense Inc. v. Google, Case No. C05-02579 (N.D. Cal. 2005). The discussion regarding the legal merits of the suit is taken from the complaint in this case. Details on the settlements can be found at [http://news.yahoo.com/s/ap/20060629/ap\\_on\\_hi\\_te/yahoo\\_click\\_fraud\\_2](http://news.yahoo.com/s/ap/20060629/ap_on_hi_te/yahoo_click_fraud_2).

<b>Breach of contract:</b> Since Google bills for actual clicks, and actual should mean valid, Google is breaching its contract by billing for fraudulent clicks.
<b>Unjust enrichment:</b> Since Google is being enriched at the expense of the advertisers due to the fraudulent clicks, Google should not be allowed to keep the moneys earned through the fraud.
<b>Negligence:</b> Google is being negligent in not doing enough to stop click fraud when it knows it is a rampant problem.
<b>Unfair business practices:</b> Google is breaking the laws meant to protect consumers (including commercial ones such as advertisers) against fraud.

**Table 1:** Legal arguments against search engines

On one hand, “actual” does not include fraudulent or invalid, but on the other hand, “actual” could encompass fraudulent as well as valid clicks. The word “actual” usually means real, but also means authentic. Hence, the fact that “actual” is not defined has introduced an ambiguity into the contract. Ambiguities in contracts are usually construed against the drafter of the contract, especially if the drafter is a sophisticated party and the other party is less so. This would mean, that under the terms of the contract, a court could order Google to bill the advertisers for only valid clicks. Clearly, measurement is an issue here – for even if a court issued such an order, how could it enforce it? A superior solution would be for Google and the advertisers to agree upon some independent mechanism that can audit the clicks for authenticity, especially when a dispute arises.

The unjust enrichment claim is premised on Google charging the advertisers for clicks that were wrongfully entered. Imagine if a warehouse charged by the amount of boxes stored, and suppose the warehouse had a client who rented space for storage by the client’s customers. Suppose a fraudster arrives and asks for its boxes to be stored, but falsely identifies itself as the client’s customer, so that the warehouse sends a bill for the boxes to the client. The client would be quite upset to find out that it was paying for invalidly stored boxes . The warehouse did store the boxes, but by billing the client, the warehouse is unjustly enriching itself at the client’s

expense. Similarly, the advertisers could claim that even though actual clicks were made, those clicks were not valid, and hence Google had unjustly enriched itself at the advertisers' expense.

If the warehouse and the client could agree upon a protocol for verifying when a customer is really the client's customer, the case would be much easier to resolve. Similarly, if the search engines and the advertisers could agree upon a mechanism for verification, the unjust enrichment aspect of click fraud issue would be easy to solve.

As to the claim of negligence, imagine the following: If a store is aware that the sidewalk outside its premises is slippery, and a passer-by slips, the store could be liable to the passer-by on a theory of negligence. Similarly, if a shopping mall does not hire a security guard when it knows that there is a strong potential for attacks on its customers in its parking lots, then the mall could be liable to a patron who is attacked in the parking lot. In the case of click fraud, the argument would be similar. Since click fraud is a crime or at least a fraudulent act, and given that there is a strong probability that it is taking place, the search engine has a responsibility to the advertisers to take necessary measure to prevent the fraud. Of course, Google could argue that it is indeed taking such measures, in which case the issue becomes one of adequacy. Determining whether Google's anti-fraud measures are adequate is a question of fact for a court to decide. This is not a pleasant prospect, since it means that the judiciary as opposed to the technicians will be driving purely technical decisions. Anyone who has observed what litigation has done to the practice of medicine will understand why it is not desirable to have judicially imposed standards.

One way to resolve this issue of adequacy of preventive measures is for the search engines and advertisers to agree upon what exactly is an adequate measure. Even spelling out that in case of dispute, a third neutral agency will conduct an audit to certify Google's security

measures could resolve the dispute. Courts generally are receptive to privately negotiated standards, since it relieves the courts from becoming experts in technical areas.

Finally, many states have unfair business practices laws that are aimed at combating practices such as deceptive advertising. By promising to bill for real clicks, but billing for real and fraudulent clicks, the advertisers could argue that the search engines are engaging in deceptive business practices. This claim depends on whether the definition of “actual” click can be resolved. Again, a contract that was more explicit as to the definition of “actual” or that had an audit mechanism would solve this problem.

The problem is not just one of legal certainty. If the courts rule for Google, will advertisers have enough confidence to continue advertising with Google and Yahoo, or will there be a chilling effect? Even if the courts side with the advertisers, this will only remedy past wrongs. Google could respond by posting more disclaimers in its contract, and by defining “actual” clicks as real and including invalid ones too. But would this restore confidence to the market? Clearly, a cooperative solution, such as the settlement between Yahoo! and its advertisers, where the search engines and the advertisers can agree on the detection and measurement of fraud would solve both the legal and commercial aspects of the problem.<sup>4</sup> However, cooperation is challenging due to the nature of click measurement.

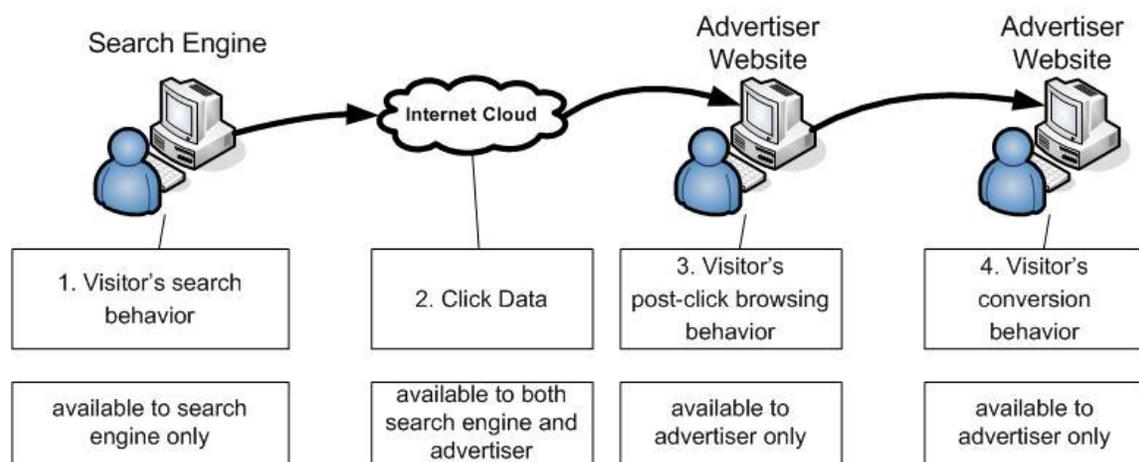
### **Strategic Click Measurement Issues**

Click measurement technology is imperfect. Ideally, all invalid clicks should be detected. However, click fraud detection is a difficult task: fraud schemes change over time and

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<sup>4</sup> Google has also taken legal mechanisms to combat click fraud by suing Auctions Expert International Inc., a Houston based company that allegedly was clicking on sponsored links to fraudulently raise advertising revenues for itself, since it would receive a share of Google’s revenues under Google’s advertising partnership program AdSense.

fraud detection involves examining large data streams, e.g. click stream.<sup>5</sup> Any fraud detection technology suffers from false positives and false negatives. In this context, false positives are valid clicks that are falsely filtered as invalid, while false negatives are invalid clicks that are not filtered. The oft discussed issue in the trade press is false negatives – advertisers paying for invalid clicks (Mann 2006). However, false positives – search engines not getting paid for valid clicks – are equally important. In this respect, click measurement is a double-edged sword that creates tension in the industry.



**Figure 2:** Types of data available for click fraud detection

There are two types of clicks that should be filtered: benign (internal, campaign management related, bot/spider etc.) and fraudulent (competitor, publisher website). It is easier to filter benign clicks than fraudulent clicks since fraudsters try to mimic typical visitors to avoid detection. Figure 2 illustrates three types of data available for detecting invalid clicks: pre-click data (1), click stream (2), and post-click data (3 & 4). Two detection practices have emerged: search engine filtering of invalid clicks with secret methods and advertiser-side click fraud detection tools developed by third-parties with relatively transparent methods. Search engines

<sup>5</sup> comScore reports 7.4 billion searches online in May, 2006 in USA. This is comparable to other fraud detection contexts with large data streams, e.g. AT&T's long distance call data stream of 300 million calls per day (Cortes and Pregibon 2001).

keep their methods secret to prevent fraudsters from exploiting the weaknesses of the process. Despite this, experiments can be used to assess the performance of some of these methods. For example, MarketingExperiments.com found out that search engines are doing a pretty good job of filtering duplicate clicks originated from the same computer.<sup>6</sup> Metwally, Agrawal, El Abbadi (2005a, 2005b) also present algorithms that may be used by search engines. Statistical and signature-based methods are used by advertiser-side detection tools. Statistical methods carry out an offline analysis of aggregate data to capture predicted behaviors (e.g. ClickTracks). If there is a wide discrepancy between the predicted and actual values, this may be an indication of fraud (Kitts et al. 2005). Anomaly-based detection is a signature-based method that creates a signature for visitor characteristics on an advertiser's website.<sup>7</sup> An anomaly-based method can assign fraud scores to each click (e.g. ClickLab), while statistical methods reveal aggregate patterns. In both methods, an unusual pattern (spikes in traffic, drop in sales, increase in one page sessions, shorter times between clicks, etc.) may signal click fraud. Advertisers seem to be favoring such methods since they are hesitant to pay for clicks that do not generate revenue.

The source of the tension is the difficulty in measuring false positive and false negative rates. Since there is no standard definition of what constitutes a valid click, advertisers suspect that search engine filtering methods are biased towards high false negative rates. While search engines seem to claim correctly that poorly performing advertising campaigns can produce unusual patterns at advertiser websites and therefore advertiser methods are prone to high false positive rates. Since utilizing all the data is beneficial to both parties, cooperation should be sought in reconciling the two approaches to detecting invalid clicks.

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<sup>6</sup> <http://www.marketingexperiments.com/internet-online-advertising/click-fraud.html>

<sup>7</sup> See Cortes and Pregibon (2001) for an application in the telecommunications industry.

The current process utilized by search engines tries to resolve the conflicts in click counting by allowing advertisers to submit claims on invalid clicks after they receive their invoices for clicks approved as valid by search engines. Unfortunately, search engines do a “black-box” reviews of the claims, which fail to relieve advertisers of their suspicions. We are aware of three types of proposals to improve the system. Switching to a Cost-per-Action pricing model, where advertisers pay for each sale, has been proposed. The argument is that it will be much more difficult for perpetrators to generate fake sales. However, this model creates a moral hazard problem: advertisers may not spend necessary efforts to create good campaigns. The second proposal is that the advertiser click counts can be used for payments, while the search engine can drop the rank of advertisers who under-count.<sup>8</sup> This proposal is susceptible to collusion among advertisers. Advertisers can all submit lower counts and avoid being penalized. Therefore, these two proposals would suffer a bias towards high false positives. Alternatively, advertisers can submit certain visitor signatures (e.g. IP address) that can signal fraud or low converting visitors and the search engine would not display an advertiser’s ad when it observes such a signature (Kitts et al. 2005). This process is desirable since advertisers are now responsible for false negatives. However, their incentive to lower false negatives would increase false positives. Besides, in this process false positives not only reduce the transfer of deserved revenue to the search engine, they also result in lost sales. Furthermore, post-click data is not utilized. Therefore, based on our analysis we recommend improving the existing process.

### **Towards a Healthier Industry**

We propose three main principles in the fight against click fraud. The first and foremost principle is to encourage cooperation between advertisers and search engines. The second principle is to have better contracts that define valid clicks and an agreement of how it will be

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<sup>8</sup> We thank an anonymous reviewer for suggesting this alternative.

determined considering the imperfect nature of click measurement technology. The third principle is to open search engine and advertiser click measurement methods to trusted third-party auditing and certification.

## References

- Adwords, 2005. Google Inc. Adwords Program Terms. <http://adwords.google.com/select/TCCanada.html> (Accessed: 15/1/2006)
- Anupam, V., Mayer, A., Nissim, K., Pinkas, B., and M. K. Reiter, 1999. On the Security of Pay-Per-Click and Other Web Advertising Schemes. *Proc. of the Eighth International WWW Conference*.
- Cortes, C. and Pregibon, D., 2001. Signature-Based Methods for Data Streams. *Data Mining and Knowledge Discovery*, 5, 167–182.
- Delaney, K.J., April 16, 2005. In 'Click Fraud,' Web Outfits Have A Costly Problem. *Wall Street Journal*.
- Kitts, B., LeBlanc, B., Meech, R., and Laxminarayan, P., December, 2005. Click Fraud. *Asis&T Bulletin* <http://www.asis.org/Bulletin/Dec-05/clickfraud.html> (Accessed: 12/1/2006)
- Mann, C.C., January, 2006. How Click Fraud Could Swallow the Internet. *Hotwired Magazine*. [http://www.wired.com/wired/archive/14.01/fraud\\_pr.html](http://www.wired.com/wired/archive/14.01/fraud_pr.html) (Accessed: 12/1/2006)
- Metwally, A., Agrawal, D., El Abbadi, A., 2005a. Duplicate Detection in Click Streams. WWW 2005, Chiba, Japan.
- A., Agrawal, D., El Abbadi, A., 2005b. Using Association Rules for Fraud Detection in Web Advertising Networks. Proceedings of the 31st VLDB Conference, Trondheim, Norway.