# EXHIBIT 1

Case Clip(s) Detailed Report

# **IP Engine v Google**

Saturday, October 18, 2012

**IP Engine v Google**

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📁 **Alferness, Jonathan (Vol. 01) - 06/21/2012**　　　　　　　　**2 CLIPS　(RUNNING 01:03:50.270)**

🎬 Mr. Alferness, can you state your full name for ...

**ALFERNESS1**　　　　　　**31 SEGMENTS　(RUNNING 00:35:59.671)**　　　‖‖‖‖‖‖‖‖‖‖‖‖‖

**1. PAGE 8:05 TO 8:08　(RUNNING 00:00:06.727)**

```
05      Q      Mr. Alferness, can you state your full name for
06   the record, please?
07      A      Sure.  My full name is Jonathan Glenn
08   Alferness.
```

**2. PAGE 8:13 TO 8:18　(RUNNING 00:00:10.862)**

```
13      Q      And what is your position at Google?
14      A      I'm a director of product management.
15      Q      And you understand that you're here to testify
16   on behalf of Google and not in your personal capacity
17   today?
18      A      I do, yes.
```

**3. PAGE 8:22 TO 9:07　(RUNNING 00:00:45.202)**

```
22      Q      Are you familiar with the term Quality Score as
23   it relates to AdWords or AdSense research?
24      A      I am, yes.
25      Q      And what is Quality Score?
00009:01   A      Quality Score is a bit of an overloaded term.
02   At the highest level, we use Quality Score as a way to
03   explain how our search ads auction works to our
04   advertisers, to our partners.  We also use the term
05   Quality Score as a way to represent to AdWords
06   advertisers the aggregate or sort of overall quality of a
07   particular ad.
```

**4. PAGE 10:05 TO 10:17　(RUNNING 00:00:52.613)**

```
05      Q      Why was the Quality Score introduced at Google?
06      A      So again I think Quality Score was introduced
07   as a way to talk to advertisers about the auction, to
08   talk about some of the intricacies of what happens behind
09   the scenes; and more primarily, as a way to represent
10   back to the advertisers the performance of their key
11   words, the performance of their ads in the way in which
12   they were used in the auction.  So we talk to advertisers
13   about the Quality Score of a particular keyword or of a
14   particular ad so they can understand whether or not that
15   creative, that keyword, is of high quality with respect
16   to our users, our system, or if it is, I don't know -- I
17   guess I would say considered lower quality.
```

**5. PAGE 10:21 TO 12:14　(RUNNING 00:02:46.284)**

```
21      A      It just becomes a proxy -- a mechanism that we
22   can use to communicate back and forth with advertisers
23   about, you know, again the overall quality of the ad.
24   The way that I would describe it to advertisers is if we
25   go back in time, Quality Score used to just be
00011:01   essentially three separate values.  You would have, you
02   know, okay -- poor, okay and good or great.  So the way
03   that I would talk to advertisers about this is, I would
04   say, "What you should do is you should focus on those
05   keywords, those ads that are of lower Quality Score,
06   maybe some of the poor or the okay ads.  The ads that
07   came back with the Quality Score of good or great, those
08   are working fairly well for you.  You can ignore those
09   and focus on optimizing or improving the lower quality
10   ones."
11      Q      And underlying that, what was the goal,
```

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```
12   Google's goal, in providing that information to the
13   advertisers?
14       A     At a high level, the AdWords system, the search
15   ads that we show on our search results page, we want them
16   to be of high quality for our users.  We've, you know,
17   for many, many years served users with high quality
18   search results as well as high quality ads; and to the
19   extent that the ad experience is one that doesn't
20   match -- that is not, I don't know, of sufficiently good
21   quality, it detracts from the overall search experience.
22   So the quality -- or the goal of the broader ads quality
23   team, the search ads team, is to work to A, improve
24   monetization for Google overall but also B, insure that
25   the user experience on Google.com from an ads perspective
00012:01   is a good one as well.  So Quality Score became a
02   mechanism that we could communicate back to advertisers
03   about essentially Google's point of view or the system's
04   point of view of the perceived quality of those keywords,
05   those ads, such that, you know, for the lower quality
06   ads, advertisers could work to improve them.
07       Q     Okay.  When you say improve monetization, what
08   do you mean by that?
09       A     Search ads is one of the primary revenue
10   engines for Google, and as such, you know, as a growing
11   company, it's important to keep an eye on how our search
12   ads revenue is growing, how the system overall is
13   performing, as it again provides essentially the lion's
14   share of revenue to a large and growing company.
```

### 6. PAGE 14:01 TO 15:24  (RUNNING 00:03:29.783)

```
00014:01       Q     Now, are there different Quality Scores used in
02   connection with AdWords or AdSense research?
03       A     So again I think what we're getting at -- so I
04   think of Quality Score as a bit of an overloaded term, so
05   Quality Score as an umbrella.  The way that -- the way
06   that we tend to think about this on the technology side
07   at Google -- so product management, engineering -- is
08   that Quality Score is primarily this thing that shows up
09   in the AdWords front end, the interface that advertisers
10   come to to interact with AdWords; and again, primarily a
11   communication vehicle back to advertisers, right?  And
12   we've progressed so now Quality Scores are a numeric
13   range from 1 to 10.  I would say also in that
14   communication bundle there are things where we talk to
15   advertisers about more actionable metrics, like first
16   page bid, for example.
17             What I think you're getting at is from the
18   perspective of how we communicate to advertisers in the
19   Help Center documentation in some of our marketing
20   material.  We also use Quality Score there as, I would
21   say, a proxy or a -- an abstraction of what's actually
22   happening under the covers.  So in the Help Center
23   documentation, you'll see things like Quality Score 1,
24   Quality Score 2, for example; and these essentially are
25   referring to metrics that are used behind the scenes
00015:01   under the covers for purposes of running the auction.
02       Q     What do you mean by Quality Score 1?
03       A     So I think the way that we talk about this in
04   the Help Center documentation is Quality Score 1 refers
05   to essentially the QBB PCTR.  So that is the value that
06   comes out of our quality-based-bidding Smart Ass models
07   that represents again the predicted click through-rate or
08   in our -- you know, in broader terms, the quality of a
09   particular keyword.  And in the sense of QBB or Quality
10   Score 1, the quality of that keyword is done independent
11   of query.
12       Q     And what is QS2?
13       A     So Quality Score 2 then represents the auction
14   time predicted click-through rate.  So again, a Smart Ads
15   style predicted click-through rate that is used for
16   purposes of actually running the auction.
```

```
17      Q       When was QS1 introduced?
18      A       So QS1 as a term to advertisers, you know, when
19 we started talking and segmenting Quality Score in the
20 Help Center to Quality Score 1, Quality Score 2, that I
21 can't answer as well.  But Quality Score -- if the
22 question is more around Quality Score 1, "When did you
23 guys introduce QBB as a mechanism into the overall search
24 ad system," that happened in the 2004 time frame.
```

**7. PAGE 17:04 TO 18:11 (RUNNING 00:02:32.384)**

```
04      Q       What is QBB?
05      A       So QBB stands for quality based bidding.  It is
06 again a somewhat umbrella topic.  On one hand, QBB on the
07 more engineering technical side represents the actual
08 systems that are used.  So QBB is again a Smart Ads
09 model.  These are machine learning systems that are
10 employed to essentially predict the future.  In many
11 cases, we haven't seen how ads in our system have
12 performed in the past and we need to be able to predict
13 how they will perform agnostic of any real performance
14 data and so we use machine learning systems to be able to
15 do that.  So QBB is a particular instance of a machine
16 learning algorithm and system at Google.  It is based on
17 a piece of technology at Google that's referred to as
18 Smart Ads and, you know, is one of a number of different
19 learning machine systems that we'd have at Google.
20              The goal of QBB is again independent of things
21 like query.  We wanted to be able to assess the broad
22 quality of a keyword and creative so that we could
23 express that back to the advertiser.  And QBB as a
24 broader concept was introduced as a way to essentially --
25 we found -- the idea was to set minimum bids on ads such
00018:01 that the minimum bid was inversely proportional to the
02 quality of the ad; I got that right; such that the higher
03 quality the ad was, the lower the minimum bid that we'd
04 specify for the advertiser.  And only -- this is now back
05 in the 2005 time frame -- only if that bid was higher
06 than the minimum bid that we were providing to the
07 advertiser would the ad get run in the auction to
08 potentially show on the results page.  So it was a means
09 of improving the overall quality of the user experience
10 by enforcing higher quality ads through this inverse
11 relationship in minimum bid.
```

**8. PAGE 18:12 TO 19:17 (RUNNING 00:01:49.526)**

```
12      Q       And was that referred to as a disabling -- part
13 of a disabling process?
14      A       So QBB at the time would have been thought of,
15 and still is to some degree, yes, as a disabling process.
16 So those ads -- those keywords for which advertisers had
17 not provided bids above the minimum would have been
18 disabled, in a sense, in that we would not have brought
19 them into the auction to potentially show on a search
20 results page.  It's important to know that at that time,
21 QBB acted mainly and only on exact match keywords, which
22 meant that again, QBB being agnostic of query, was
23 looking at just the keyword and the creative and
24 reflecting those back to the advertiser, also using it as
25 a minimum bid.  And essentially what we were saying was
00019:01 that as long as you, the advertiser, were bidding above
02 this minimum bid for exact match variance of the
03 keyword -- that is, where the keyword matches the query
04 exactly -- we would guarantee to show the advertiser's ad
05 for that query.
06              For non-exact match variance of that keyword,
07 so certainly we can spend more time on this, but you can
08 imagine the query is for flowers and the advertiser's
09 keyword is for roses.  There is, you know, some might
10 argue, a match between flowers and roses even though the
11 strings are not a one for one match.  Those are what we
```

```
12  call non-exact matches.  Those are our broad or expanded
13  match keywords.  And at the time that we're talking
14  about, QBB did not disable for non-exact match variance.
15  So those keywords would have still been brought into the
16  auction and we would have, you know, dealt with them
17  there.
```

### 9.  PAGE 20:20 TO 21:02  (RUNNING 00:00:22.963)

```
20      Q     Now, you talked about Smart Ads.  I've also
21  heard something called Smart Ass.  Have you heard of that
22  term Smart Ass?
23      A     So absolutely.  And I will -- I don't know.  We
24  will probably move back and forth somewhat
25  interchangeably in this conversation, so to be frank,
00021:01  Smart Ass, A-S-S, is the official technical internal term
02  for the system.  For purposes of --
```

### 10.  PAGE 21:23 TO 24:06  (RUNNING 00:04:09.008)

```
23      A     I'm happy to use either term.  I will try to
24  Smart Ads.  For purposes of just additional
25  clarification, ASS was actually an acronym.  It stood for
00022:01  Smart Ads Selection System.  And we thought we were cute,
02  I'm sure.
03      Q     Okay.  Now, I've also heard reference to
04  something called Dumb A-s-s.  Can you tell me what that
05  is?
06      A     So at a fairly high level, this is a bit of a
07  history lesson.  So Dumb A-s-s was a system that was in
08  place before my time at Google and before we introduced
09  and launched Smart Ads, and it was a much more
10  rudimentary system that was used for, you know, again,
11  purposes of running -- running a search style auction.
12  The values that came out of -- out of Dumb Ass I believe
13  were much more dumb.  So how do I want to talk about
14  this?
15          One of the -- one of the strong points of Smart
16  Ads is its ability to generalize, its ability to make
17  predictions when it hasn't seen an exact instance of
18  something in our system before.  On the flip side,
19  Dumb Ass was much more of a memorization system such that
20  it would essentially record performance of individual ads
21  and be able to relay that performance back to the auction
22  system.  This became a problem as AdWords grew in scale
23  and scope, as we grew number of advertisers, number of
24  accounts, campaigns, ads, keywords that were in the
25  system.  It became such that many, many of the ads that
00023:01  we wanted to be able to run in the auction were ads that
02  the system had never seen before.  So we couldn't rely on
03  a memorization technique any more.  We had to be able to
04  predict for cases where we hadn't seen this particular ad
05  in context before how it would perform.
06          So that was the underpinnings of why we needed
07  to leave this -- this more rote memorization system and
08  evolve to Smart Ads.
09      Q     Now, when we've talked about QS1 as being QBB
10  PCTR, has that -- was that determined by Smart Ads?
11      A     So the -- so yes, I think it's important to
12  understand that Smart Ads again is an umbrella term.  It
13  is -- you know, on a technical or more engineering level,
14  it's a set of infrastructure really.  So if you think
15  about machine learning systems, today it's a gradient
16  descent algorithm.  So Smart Ads as a whole has a number
17  of infrastructure components.  It needs to be able to,
18  you know, read data from logs.  It needs to -- it's a --
19  you know, it's a distributed system so it needs to be
20  able to work, you know, across distributed machines.  It
21  needs sort of the core algorithm itself, this gradient
22  descent algorithm.  But how the model itself is set up
23  and what data is fed into the model are agnostic of all
24  of that infrastructure.  So at Google, we have again a
```

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      25   number of high level machine learning type systems,
 00024:01   packages almost, that our engineers can use.  Smart Ads
      02   is one of those.  And again, the underlying model and
      03   data that's fed in can be different per application of
      04   Smart Ads.  In AdWords, in the search ad system, we have
      05   two instances of Smart Ads, one for QBB and again one for
      06   the actual auction time predicted click-through rate.
```

**11.  PAGE 24:18 TO 25:22  (RUNNING 00:02:15.202)**

```
      18      Q      Okay.  For the Smart Ads that relate to QBB, I
      19   think of that as one of the Smart Ads.  And then there's
      20   another one for run time; is that correct?
      21      A      That's the way I think about it, yes.
      22      Q      What are the -- and this is in the 2004-2005
      23   time frame up until what you said may have been in the
      24   2006 time frame.  What were the inputs to the Smart Ass
      25   system as it relates to developing Quality Score?
 00025:01      A      So if I can clarify your question, the way that
      02   I would think about this -- and you can correct me -- is
      03   what were the inputs to Smart Ads for QBB that were then
      04   reflected in Quality Score to the advertiser?
      05      Q      Well, QS1, I would say.
      06      A      Okay.  So the exact templates, the exact data
      07   that goes into the individual Smart Ads models is I'd say
      08   something that we change somewhat frequently so I won't
      09   off the top of my head be able to list out all of the
      10   inputs or all of the features.  Again, at the QBB level,
      11   these models are being run independent of query.  We
      12   don't know what the query is.  This is all being done in
      13   the abstract.  The model itself certainly has keyword as
      14   an item in it.  It certainly has some components or
      15   features of the creative itself.  So you can imagine a
      16   visible URL landing page -- you know, a click-through URL
      17   or landing page advertiser.  And again, the exact
      18   features and templates, sort of how those features are
      19   arranged in the model, are something that change with
      20   enough frequency that, you know, I can talk about this at
      21   a high level but the actual specifics at a point in time
      22   I wouldn't be able to go into.
```

**12.  PAGE 25:23 TO 26:12  (RUNNING 00:00:49.998)**

```
      23      Q      Okay.  How about the run time Smart Ads system?
      24   Does that run off of different input?
      25      A      So again, the model itself -- the features, the
 00026:01   templates, the data that's fed in, is, yes, different.
      02   Part of the reason is that the run time model does
      03   include query, right, because we are doing this at the
      04   point of running the auction so we understand what the
      05   user is searching for.  So that would be one difference
      06   in the two models.
      07          The run time model has had more development,
      08   more experimentation, more iteration, so it tends to be a
      09   slightly more sophisticated model in terms of again the
      10   components of the creative that are fed into it that it
      11   looks at as well as how these components are arranged in
      12   the actual model itself.
```

**13.  PAGE 27:14 TO 28:01  (RUNNING 00:00:50.815)**

```
      14      Q      Now, you mentioned keywords in creative.  What
      15   do you mean by creative?
      16      A      So we talk about creatives as essentially the
      17   ad itself.  I try to be a little bit specific as ad again
      18   can be an overloaded term.  The system itself, like if I
      19   think of AdWords, there's -- there's no atomic sort of
      20   unit of an ad in AdWords.  The atomic units that we think
      21   of are more the creatives -- are the key words themselves
      22   that the advertiser's bidding against that we're using to
      23   match against the query.  And then the advertiser for any
      24   specific -- for any particular keyword has the ability to
      25   enter one or many creatives that are associated with that
```

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```
00028:01  keyword.
```

**14. PAGE 30:15 TO 31:08 (RUNNING 00:01:12.686)**

```
       15      Q      Now, you mentioned that Quality Score was used
       16  early on as an early pass with respect to QBB, and then
       17  later on when it was implemented at run time, it was used
       18  for a later pass.  What do you mean by pass?
       19      A      So I -- I mean I guess what I mean by pass is
       20  first pass disabling, second pass disabling, right?  And
       21  again, if we think about it, QBB was and to some extent
       22  still is a first pass disabling.  And at time of actually
       23  running the auction, you know, we need to figure out
       24  which ads are eligible for top or for right-hand side so
       25  that we can rank and then figure out which ads to show on
00031:01  the page.  That eligibility, top versus right-hand side,
       02  can be thought of as run time disabling, right?  So a
       03  second pass of disabling.
       04      Q      And does that use the Quality Score to
       05  implement that pass or disabling?
       06      A      At the run time step, we use a -- again we use
       07  the PCTR as is computed from the run time Smart Ads
       08  model.
```

**15. PAGE 31:09 TO 32:05 (RUNNING 00:01:26.423)**

```
       09      Q      Okay.  But do you use Quality Score, as we've
       10  been talking about it, in the -- when it was moved to run
       11  time, the use of Quality Score, do you use that for
       12  disabling?
       13      A      Again we need to be careful with the term
       14  Quality Score, right?  Under -- at a technical or
       15  engineering level, we do not use Quality Score at all
       16  within the systems, right?  We use this notion of
       17  predicted click-through rate either computed from a QBB
       18  Smart Ads model for purposes of the, you know, QBB first
       19  path disabling step, or we use predicted click-through
       20  rate PCTR as computed from the run time Smart Ads model
       21  for purposes of, you know, running the query time option
       22  as well as doing disabling at query time.  Both of these
       23  are explained to advertisers in our Help Center
       24  documentation as Quality Score 1 and Quality Score 2.
       25  And as an umbrella term again, Quality Score appears in
00032:01  the front end as a reflection back to advertisers; some
       02  notion of an aggregate value or really representation of
       03  the quality of their keywords, right?  It is not the
       04  numeric value that we use underneath the covers for
       05  purposes of computing anything.  Does that make sense?
```

**16. PAGE 37:21 TO 37:23 (RUNNING 00:00:08.292)**

```
       21      Q      Do you know what the purpose of this type of
       22  document is that would discuss ads quality or provide an
       23  overview of ads quality?
```

**17. PAGE 37:25 TO 38:09 (RUNNING 00:00:30.139)**

```
       25          THE WITNESS:  I mean I guess I would hope, I
00038:01  would believe, that it means, you know, this is a
       02  document for folks who joined the team, who are
       03  joining -- who are new to the team or new to Google but
       04  on the team -- who would need an overview, a primer, of
       05  how the ads quality system worked, at least to some
       06  extent, at the time in which the document was written.
       07  BY MR. JACOBS:
       08      Q      And is it meant to be accurate?
       09      A      I think that's the hope.
```

**18. PAGE 39:05 TO 39:07 (RUNNING 00:00:06.313)**

```
       05      Q      Do you see at the head of the -- at the top of
       06  the document it says Quality Score?
       07      A      I do.
```

**19. PAGE 39:11 TO 39:13 (RUNNING 00:00:07.097)**

```
11     Q     Is the Quality Score referred to here what
12  we've been referring to as QS1 in our discussion?
13     A     Largely, yes.
```

**20. PAGE 39:14 TO 39:24 (RUNNING 00:00:46.960)**

```
14     Q     Why do you say largely?
15     A     Again we're -- let's see.
16           The Quality Score that we are describing here
17  is the Quality Score again that's computed largely from
18  the QBB Smart Ass model that is the Quality Score that is
19  shown to advertisers in the front end.  And it is my
20  belief -- so I don't know all of, you know, our Help
21  Center documentation that well, but it's my belief that
22  this covers, you know, largely the concept that's
23  referred to as Quality Score 1 in that Help Center
24  documentation.
```

**21. PAGE 40:02 TO 40:05 (RUNNING 00:00:15.886)**

```
02           Is this Quality Score that's referred to on the
03  page bearing Bates stamp G-IPE-0223571 referring to a
04  Quality Score other than what we've referred to in our
05  conversation as QS1 and QS2?
```

**22. PAGE 40:07 TO 40:21 (RUNNING 00:00:59.623)**

```
07           THE WITNESS:  Quality Score is more of a
08  concept, and the struggle I'm having here is that you're
09  describing it as if it were an atomic element.  So that
10  in here, you know, again I'm not the author of the
11  document, I wasn't involved in the creating of the
12  document.  What the author is referring to here is
13  broadly Quality Score.  I believe what he meant by this
14  is Quality Score as is represented to advertisers in the
15  front end.  And so for that reason, I say it largely maps
16  to the notion of Quality Score 1.  I'm not sure whether
17  the author of the document gets into more specifics about
18  the actual predicted click-through rate, et cetera,
19  that's used for purposes of disabling at the QBB pass so
20  I can't say anything more, I guess, than the word
21  largely.  Yeah.
```

**23. PAGE 53:15 TO 53:20 (RUNNING 00:00:22.780)**

```
15     Q     I would like to refer you to --
16     A     Actually, I would like to make just one quick
17  clarification before we move forward if that's okay.
18  Quality Score was -- I indicated Quality Score came to
19  being in the 2003-2004 time frame.  To be more specific,
20  Quality Score came to being in 2004 specifically.
```

**24. PAGE 54:01 TO 54:17 (RUNNING 00:01:21.846)**

```
00054:01     Q     I would like you to look at Alferness Exhibit 1
     02  and in particular the page bearing Bates stamp
     03  G-IPE-0223570.
     04     A     Okay.  I'm there.
     05     Q     Okay.  Do you see the heading "Disabling (QBB,
     06  LPQ, and Min CPC)"?
     07     A     I do.
     08     Q     Is disabling -- what is disabling?
     09     A     Disabling, as we talk about somewhat broadly in
     10  AdWords, is the process or the mechanisms that we use to
     11  select which ads we do not want to show or produce on our
     12  search results pages for our end users.
     13     Q     It says:  The first round of disabling,
     14  sometimes called shard disabling, takes away bad ads
     15  before they reach the ad mixer.
     16           What does "takes away bad ads" mean, if you
     17  know?
```

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**25. PAGE 54:19 TO 56:10 (RUNNING 00:03:03.961)**

```
         19          THE WITNESS:  In this case, I would say "takes
         20  away bad ads" is a synonym for disabling, right.  We
         21  are -- for a number of reasons at this time, we wanted to
         22  make sure the ad mixer itself could only handle so many
         23  creatives, keywords, ads, if you want to think of it like
         24  that, in the auction.  Various just latency and overall I
         25  would say overhead constraints meant that we couldn't
  00055:01  take all of the eligible or candidate ads for an auction
         02  and bring them all into the mixer at once.  So in this
         03  case, what we're saying is there is some amount of
         04  disabling -- i.e., removal of lower quality ads, to help
         05  with the overhead of when things reach the ad mixer.
         06  BY MR. JACOBS:
         07     Q     What's a bad ad?
         08     A     So in this case, the author is describing a bad
         09  ad I think as, you know, a fairly broad term, but we're
         10  referring to lower quality ads that we believe either
         11  users wouldn't respond to, would be harmful to users, or,
         12  you know, the Google brand or the user experience.  These
         13  might also just be lower quality ads for which we think
         14  that we have higher quality alternatives to show.
         15     Q     What does shard disabling mean?
         16     A     Yeah, so this is an older term.  At Google we
         17  use the term shard to represent an individual -- if you
         18  think of distributed computing, you often have multiple
         19  machines, computers, working in tandem to calculate, to
         20  compute something.  An individual computer in this
         21  broader distributed sense we call a shard.  So the notion
         22  here was that there's -- some amount of the ads at this
         23  time were stored in a more straightforward -- the
         24  creatives, the keywords, were stored in a more
         25  straightforward manner in shards, so in individual
  00056:01  machines, and some amount of disabling -- this is
         02  removing these lower quality ads -- happened at each
         03  shard before we brought them back into the mixer.  So
         04  that's shard disabling.
         05     Q     What is an ad shard?
         06     A     Again an ad shard is, you know, likely
         07  referring to one of these pieces of distributed computing
         08  machinery that works in tandem with others to essentially
         09  hold on to be a data store for the creatives, the
         10  keywords themselves.
```

**26. PAGE 83:06 TO 83:10 (RUNNING 00:00:17.216)**

```
         06     Q     How does Google describe its customers for
         07  AdSense for search?
         08     A     How do we describe our customers for AdSense
         09  for search?  I think you're getting at potentially the
         10  term partner or publisher?
```

**27. PAGE 83:11 TO 83:14 (RUNNING 00:00:10.092)**

```
         11     Q     We'll take partners.  Does Google share
         12  advertising revenue with its AdSense for search of
         13  partners?
         14     A     Yes, we do.
```

**28. PAGE 101:04 TO 101:07 (RUNNING 00:00:21.762)**

```
         04     Q     Okay.  I would like you to turn your attention
         05  to what's been marked as Alferness Exhibit 4 bearing
         06  Bates stamp G-IPE-0241639 through G-IPE-0241642.  Do you
         07  recognize this document?
```

**29. PAGE 101:08 TO 102:04 (RUNNING 00:01:32.987)**

```
         08     A     I don't, no.
         09     Q     Okay.  Do you know what a product communication
         10  plan is?
         11     A     So I know roughly what the language is
         12  referring to.  It is, as it says.  This is a plan for how
```

```
13  folks planned to communicate externally the changes that
14  are encompassed or -- yeah, the changes that would happen
15  as a result of a launch or a change to one of our
16  products or systems.
17      Q     When you say externally, to whom externally
18  would this be communicated?
19      A     Primarily to advertisers.
20      Q     Okay.  I want to turn your attention to the
21  first question under Landing Page Quality Facts.  Do you
22  see that?
23      A     Yes.
24      Q     It says:  Quality Score equals keywords CTR
25  plus relevance of your ad text plus historical keyword
00102:01  performance plus landing page quality plus other
02  relevancy factors.  I think we've talked about the
03  keyword CTR.  Would that be QBB PCTR or would that be
04  something else?
```

**30.  PAGE 102:06 TO 102:18  (RUNNING 00:00:53.138)**

```
06          THE WITNESS:  So we need to keep in mind that
07  this is not a technical document at all.  This is a
08  marketing document.  So what's being described here is
09  not a true mathematical formula as it would relate to how
10  the ad system operates.  This is meant to give
11  advertisers, yeah, a high level feel for how the system
12  works.  So it's meant to give advertisers, in the way
13  that we can best describe and explain to, you know, many,
14  many non-technical folks out there, you know, at a high
15  level what Quality Score is.  So I would describe this
16  more as Quality Score.  Yeah, this is not a formula in
17  and of itself.  This is merely a means of communicating
18  to advertisers.
```

**31.  PAGE 102:20 TO 103:16  (RUNNING 00:01:21.103)**

```
20      Q     Well, what does keyword CTR mean?
21      A     So I think in this document they meant it to
22  mean the actual or current or past click-through rate for
23  the keyword.
24      Q     Not a predicted click-through rate; is that --
25      A     Again, if you think about having to communicate
00103:01  this to thousands -- hundreds of thousands of lay people,
02  the notion of trying to communicate a predicted
03  click-through rate was thought, at least at the time, to
04  be too challenging so folks used the proxy of talking
05  about click-through rate broadly rather than trying to go
06  deeper and talk about predicted click-through rates.
07      Q     When you say at the time, it shows a launch
08  date of December 5th, 2005.  Is that what you mean,
09  around that time?
10      A     Yeah.  Yeah.  And I'm trying to make the
11  distinction because to some extent, in more recent terms,
12  we have started to talk more about, you know, predicted
13  click-through rate externally with advertisers.  It still
14  doesn't become -- it's still not a very commonly used
15  term in our external documentation, but we are shifting
16  it to some degree.
```

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📁 **Alferness, Jonathan (Vol. 01) - 06/21/2012**          **2 CLIPS  (RUNNING 01:03:50.270)**

🎬 What about relevance of your ad tax?  What does ...

**ALFERNESS3**                    **23 SEGMENTS  (RUNNING 00:27:50.599)**              |||||||||||||||||||||||||

**1. PAGE 129:25 TO 131:17  (RUNNING 00:02:45.187)**

```
         25      Q     For run time disabling -- is included within
00130:01  run time disabling the idea of the top ads?  You know,
         02  what you're going to include in the top ad auction?
         03      A     Yeah.  I mean I think the way to think about
         04  disabling as it occurs at run time is you can almost look
         05  at it as an eligibility sort of requirements.  So if we
         06  think about how the auction works itself, we look at the
         07  set of candidate keywords, creatives that we have, and
         08  for each of those we figure out whether or not they are
         09  eligible first for the top portion of the page.  Once we
         10  have figured out all of the ads that are eligible for the
         11  top portion of the page, we run the auction with those --
         12  again, with those ads, we rank those and then we can show
         13  up to three.  The remainder, the ads that were not shown
         14  at the top as well as the ads that were not eligible for
         15  the top, are brought into a second auction, which is
         16  utilized for the ads that show up on the right-hand side.
         17  So again we rank those to show up to eight on the
         18  right-hand side and then the remainder can be used for
         19  showing in subsequent pages.
         20      Q     What metric do you use to determine whether
         21  someone -- an ad will be eligible for the top spot on
         22  the --
         23      A     Sure.  So we don't use a single method.  Again
         24  we have this notion of thresholds, right?  And to the
         25  extent that the factors that go into computing the score
00131:01  for the ad are greater than this threshold, then that ad
         02  is eligible for the top.
         03      Q     And what are those thresholds?
         04      A     The thresholds are again sort of numeric
         05  values, surfaces, curves that live in space.  I believe
         06  you're asking for the factors that go into computing the
         07  score to compare against the threshold?
         08      Q     Yes.
         09      A     Okay.  So again, at run time we are using the
         10  Smart Ass predicted click-through rate; and that's the --
         11  this is the run time auction level Smart Ass model.
         12  That's the primary signal that goes into thresholds.  In
         13  addition, we use this good click signal, which is
         14  mentioned in this e-mail here, and good click in
         15  shorthand is now referred to as LQ.  And in addition to
         16  LQ, we use CQ, which is this notion of creative quality
         17  that I've been talking about.
```

**2. PAGE 131:18 TO 131:21  (RUNNING 00:00:20.498)**

```
         18      Q     Do all of those signals that you talk about,
         19  predicted click-through rate, GC signal I think you
         20  mentioned, and CQ signals -- do those determine what the
         21  threshold is going to be?
```

**3. PAGE 131:24 TO 132:07  (RUNNING 00:00:36.292)**

```
         24          THE WITNESS:  No.  The threshold is --
         25  threshold is static.  Those signals are used to
00132:01  compute -- imagine that we have a function which takes as
         02  input a predicted click-through rate, the good click
         03  signal, the creative quality signal, and that function --
         04  the value of that function, the output of that function
         05  has to be, you know, essentially greater than or equal to
         06  the static set thresholds in order for that ad to be
```

```
07   eligible for either the top or the right.
```

**4. PAGE 132:11 TO 132:14  (RUNNING 00:00:10.757)**

```
11       Q     How about for the right-hand side eligibility
12   for that?
13       A     It's the same process.  It's just different
14   thresholds.  Different threshold values.
```

**5. PAGE 188:09 TO 188:14  (RUNNING 00:00:19.815)**

```
09       Q     Okay.  We've been talking a lot about Quality
10   Score but I'd actually like to step back and look at the
11   broader AdWords and AdSense for search systems and sort
12   of walk through those.  So let's talk about what happens
13   after someone clicks on "Search."  Where does the query
14   go and what happens to it at each step?  And if it's
```

**6. PAGE 188:23 TO 195:14  (RUNNING 00:10:19.700)**

```
        23           THE WITNESS:  So I'm going to assume that we're
        24   starting with a user, an individual having entered a
        25   query into the search box.
  00189:01   BY MR. JACOBS:
        02       Q     Yes.
        03       A     And the user has either pressed "Enter" or
        04   clicked on "Search."
        05       Q     Correct.
        06       A     So we have a query.
        07       Q     What happens next?
        08       A     At a high level, the first thing that
        09   happens -- why don't we start high level and then we can
        10   work our way down.  At the highest of levels, that query
        11   comes into a system called GWS, which is -- the best way
        12   to describe GWS is it is our Web server.  You know, it
        13   serves the HTML for Google Web pages and it also becomes
        14   the main gateway through which communication flows in and
        15   out.  So when the query is sent to Google, the first
        16   thing it does is it comes into GWS.  GWS then makes two
        17   separate requests with the query, one to the ad
        18   systems -- to the search ad system, the other to Web
        19   search, to essentially the organic Web search.  Both of
        20   those happen independently.  And GWS waits for their
        21   responses.  The Web search engines and algorithms return
        22   back a set of snippets of Web search results.  The ads'
        23   back ends do something similar.  They return a set of ads
        24   for both the top and the right-hand side.  GWS's job is
        25   then to lay out the page, to essentially render the HTML
  00190:01   with both components and send it back to the user's
        02   browser.  So that's the highest of levels.
        03           So now we can go in and we can dissect that
        04   ad's path.  So again, query goes into GWS.  GWS sends the
        05   query to the ad system.  Let's start there.  Actually
        06   ahead of even the ad system seeing the query, GWS does
        07   some high level kind of cleanup and management of the
        08   query, so simple things like insuring that spaces or
        09   funky characters are dealt with so that we can deal with
        10   it in the various systems.  It is responsible for passing
        11   to the ad system things like the user's location if we're
        12   going to use that later.  We talked about some of this
        13   property code stuff that will be passed from GWS to the
        14   ad system as well.  And to some extent, GWS does some
        15   amount of rewriting or thinking about this query in
        16   different contexts.  One of the most straightforward
        17   rewrites that GWS can provide is a spelling rewrite.  So,
        18   for example, if you misspell flowers, GWS can inform the
        19   ad system that:  The original query was this misspelling
        20   of flowers, but we believe that the query "flower" is
        21   correctly spelled and is also accurate or is also useful.
        22           So the ad system essentially has a number of
        23   inputs coming in: a query, sometimes variations of that
        24   query pertaining to GWS, and a bunch of other signals.
        25   The ad system has a few steps to perform and then we can
```

00191:01  go through each of them in more detail.  The first is in
      02  these sets of expansions; so understanding that the query
      03  might not just be the query but that it might also be,
      04  you know, similar queries, similar terms, essentially
      05  expansions.  And there's a number of ways that we can
      06  look at that.  We can look at the query as being a part
      07  of a broader keyword or vice versa.  We can look at the
      08  query as, you know, containing bits of the keyword.  And
      09  all of these things become relevant.  So essentially at
      10  this point, you can think of this as the broad match or
      11  the expanded match phase.  And we have generated out now
      12  a list of, you know, many variations on a query.  Given
      13  those many variations on a query, the system then needs
      14  to look up and find all of the key words that match, you
      15  know, the query or variations on the query.
      16          You can imagine that we generate a set of --
      17  that once we've done that, we now have a set of keywords.
      18  And these aren't just strings.  These are pointers to
      19  keywords as entered by the advertisers.  So associated
      20  with these key words, we understand things like the
      21  advertiser's bid and the creative associated with the
      22  keyword.
      23          So again, given all the keywords, we now go
      24  through a set of initial steps.  I guess the best step to
      25  think about next is really the first phase of disabling,
00192:01  which we've talked about an awful lot, which is this QBB
      02  disabling pass.  So for each of the keywords that we --
      03  that we have found in the system, we need to make sure
      04  that each keyword's minimum bid or actual bid is greater
      05  than their minimum bid such that they would pass through
      06  QBB.  And if so, then we can keep that keyword in our
      07  list of keywords.  Once we've passed this, you know,
      08  initial disabling step, we now have what I think of as
      09  our candidate ads that we would pass to the mixer.
      10          Again it's the mixer's job to do or the
      11  auction's job to do a series of things.  It needs to
      12  determine eligibility for top versus right-hand side.  It
      13  also needs to -- before I can even get to that, it needs
      14  to compute the click-through rate for each of these ads.
      15  It needs to bring in -- you know, we've talked about
      16  associated CQ and LQ scores for the ads -- for the
      17  keywords and the creatives that together form an ad.
      18  So for each of the keywords that we have, we'll pull in
      19  all of that data such that we can then do the math on a
      20  per keyword basis to figure out if this keyword is say
      21  eligible for the top.  We will find all of the keywords,
      22  creatives associated with them that are eligible for the
      23  top and then we run a top auction, right?
      24          So using PCTR, advertiser's bid, we rank the
      25  ads and essentially we can show at most three top ads, so
00193:01  we will choose the top three of that rank, we will show
      02  them on the top, and then we have a remainder set of ads
      03  potentially left from that top auction.  That remainder
      04  set of ads gets combined with the remaining set of
      05  non-top eligible ads that we have left over.  Now we look
      06  at that larger set to ensure that those ads are eligible
      07  for the right-hand side.  As long as they are, they all
      08  get stuck in a pool and we run an auction for those
      09  right-hand side ads.  Again we can show at most eight, so
      10  we'll show one through eight, and then the remainder are
      11  stored for potentially being used in next pages.
      12          So now we have found the keywords associated
      13  with the query, we have gotten through -- or we've done
      14  our expansions, we've found keywords associated with the
      15  query, we've gotten through the QBB disabling step, we
      16  have identified and run auctions for top and right-hand
      17  side.  That gives us our ads to actually show on the
      18  results page that can be handed back to GWS for these
      19  purposes of rendering and showing to the end user.
      20     Q    Internally we dealt with the ad system.  What
      21  are the constituent components within the ad system that

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```
 22    are relevant to serving the ads?
 23       A     Yeah, so it doesn't break down super cleanly
 24    but I highlighted them in my overview just now.  So I
 25    would talk about, you know, a set of themes.  We have
00194:01    this notion of expansion so this is the expanded match
 02    systems and there's an expanded match team that goes
 03    along with that.  We talked about QBB and QBB disabling,
 04    again a set of systems and a team around that.  We talked
 05    about bringing in -- once we actually get to the mixer,
 06    we talked about bringing in additional signals like, you
 07    know, the good click or the LQ signal and the CQ signal.
 08    Those also come from systems into the mixer.  We talked
 09    about inside the mixer itself doing this eligibility
 10    disabling for top and right-hand side.  To some extent,
 11    we think about those as separate systems even though
 12    they're kind of part of the same.  The auction itself can
 13    be thought of as again a slightly separate system even
 14    though it's part of the same.  And then the one piece
 15    that we didn't get to is around pricing, right?  So once
 16    you have identified your ads and you've ranked your ads,
 17    we need to compute what each of the ad's actual cost per
 18    click will be in case the user clicks on that so that we
 19    know how to actually go and register that cost.
 20             Those are the -- I've talked about it -- those
 21    are the highest level systems involved in selecting and
 22    ranking and showing ads.  From an infrastructure
 23    perspective, around the sides there can be thought of as
 24    a couple of additional systems.  There's an ads database,
 25    which becomes the bulk of the data store for essentially
00195:01    the data that advertisers enter into the system, right?
 02    So this has the key words, this has creatives.  The ads
 03    database also has roll-ups for performance metrics for
 04    advertisers: how these keywords perform; how the
 05    creatives perform, how much -- how many clicks this
 06    particular creative has gotten, for example.  So that's
 07    the ads DB.  It's a piece of infrastructure also that
 08    feeds into all of this.
 09             And the other side of things is broadly I would
 10    say the logs infrastructure, stats loops, et cetera, such
 11    that when ads get served, we can count the fact that they
 12    were served, that we showed impressions.  When ads get
 13    clicked, we can register that.  We can count those clicks
 14    and eventually feed them back into the ads database.
```

**7. PAGE 196:22 TO 197:16 (RUNNING 00:01:03.500)**

```
 22       Q     Okay.  We talked about Smart Ads before or
 23    Smart A-s-s.  Where would this fit --
 24       A     My apologies.  Yeah.
 25       Q     -- in the pantheon of AdWords components?
00197:01       A     So Smart Ads is another very large component of
 02    the overall systems.  It is ancillary.  It sits off to
 03    the side of the rest of these systems but its data, its
 04    output, essentially these predicted click-through rates,
 05    right, are used both for -- right, again there's more
 06    than one, but if I think of the primary one, the options
 07    Smart Ads system is generating predicted click-through
 08    rates for use in the auction.  So I talked about it
 09    briefly when I talked about going through the steps of
 10    the auction.  Once we have figured out eligibility, for
 11    example, for the top or the right-hand side and we have a
 12    set of candidates, for each of those candidates we need
 13    to be able to -- actually even before this, once we have
 14    our set of candidates, each keyword needs a predicted
 15    click-through rate.  So that's fetched from the Smart Ads
 16    servers.
```

**8. PAGE 198:05 TO 198:18 (RUNNING 00:00:48.808)**

```
 05       Q     What kinds of information does the Ad Mixer
 06    pass to the Smart Ads system?
 07       A     It needs to be able to -- well, the Smart Ads
```

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08    system needs to be able to respond with a predicted
09    click-through rate, so the system requesting that needs
10    to be able to uniquely identify a number of signals.
11    Essentially the keyword.  You know, the various
12    components of the creative: the headline, the visible
13    URL, the click-through URL.  In addition, because this
14    run time Smart Ads system understands the query, it's
15    likely that the mixer would also pass it, the query.  To
16    the extent that Smart Ads takes into account other
17    factors -- for example, location -- that would need to be
18    passed from the mixer as well.

**9. PAGE 211:22 TO 213:10  (RUNNING 00:02:30.074)**

22        Q     Okay.  So I wanted to talk about the AdSense
23    for search system.  I think you've described sort of the
24    ad system and we talked about certain components of that:
25    the ad mixer, the Smart Ads system, DSUs, back end
00212:01    servers.  How does that -- is that augmented or changed
02    through AdSense for search?
03        A     It's largely the same.  So the architecture,
04    the logic and the flow as I described, you know, for
05    Google.com is much the same as it is for AdSense for
06    search.  I'd say the easiest things to talk through are
07    the key differences.  And so first of all, this doesn't
08    happen with a end user in a query on Google.com.  This
09    happens somewhere else, right?  So this will happen on an
10    AOL property.  So a query is issued on an AOL property.
11    It is then the partner's responsibility to take that
12    query and to send it via HTTP requests to Google servers.
13    This is the highest level again.  Google servers respond
14    back to the partner with a pay load of essentially XML,
15    right?  Here are the web search results and here are the
16    ads associated with this query.  And if you recall, this
17    is similar to the work that GWS was doing on the search
18    ad side of the world.  It's then the partner's job to
19    package up that XML and actually render out the response.
20    So to render the ads as well as the search results.
21            If we think about it, on Google's side of the
22    world, the Google systems, the key differences are really
23    around the run time Smart Ads models that we've
24    mentioned, the fact that these are trained not on the
25    performance of the ad on Google.com but the performance
00213:01    of the ad on the partner property.  So that's a major
02    difference.  I would say, you know, more subtle
03    differences.  The set of ads that we have to utilize for
04    showing on partner properties is different than the set
05    of all ads available to Google because advertisers have
06    the ability to opt out of showing their ads on AdSense
07    for search.  And I'd say the last difference is the
08    thresholds and essentially where the thresholds are set,
09    right?  So they are set differently for partners than
10    they are for Google.com.

**10. PAGE 213:20 TO 214:14  (RUNNING 00:01:12.118)**

20        Q     Okay.  I wanted to talk next about AdSense for
21    mobile search or what you called I think or referred to
22    as mobile AdSense for search.  Can you describe generally
23    how that would interface with Google's systems?
24        A     It can --
25        Q     How it's different than the AdWords or AdSense
00214:01    for search?
02        A     The closes analogy is really the AdSense for
03    search product that we just talked about.  So in general,
04    things operate very much the same way except again we are
05    using a different and separate Smart Ads model such that
06    they're trained for these properties in this mobile
07    context.  We have some additional ad inventory that we
08    can show so we've talked about things like ads that have
09    click to call or we have other sets of ad inventory that
10    allow mobile users to, for example, download apps from

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11  the ad itself.  So the inventory is slightly different as
12  well.  We talked about the Smart Ads model, the
13  inventory, and the third thing is again the thresholds
14  are somewhat different in the mobile context as well.

**11.  PAGE 217:11 TO 217:13  (RUNNING 00:00:12.515)**

11      Q      When you use expanded match or broad match,
12  would the AdWords or AdSense for search system pull
13  keywords that are not relevant to the query?

**12.  PAGE 217:15 TO 217:15  (RUNNING 00:00:01.377)**

15          THE WITNESS:  It's certainly possible.

**13.  PAGE 217:20 TO 218:10  (RUNNING 00:00:57.907)**

20          THE WITNESS:  -- I guess it depends on how one
21  defines relevance.  It's certainly -- how to think about
22  this.  The expanded -- we have quite a number of
23  expansions so you can think of -- again if we go back to
24  the keyword or the query flowers and you think of the
25  many ways in -- the many items that could be related to
00218:01  flowers, it may or may not be relevant.  While they may
02  be related to each other, they may or may not be relevant
03  to the query at hand.  Oftentimes, there's ambiguity in
04  the queries or the terms entered, and while an expansion
05  may be pertinent to one meaning or, yeah, one use of the
06  term, it may not be for others.
07  BY MR. JACOBS:
08      Q      But generally the goal is to get keywords that
09  are relevant to the query.  Isn't that generally the
10  goal?

**14.  PAGE 218:13 TO 218:25  (RUNNING 00:00:59.494)**

13      Q      Of selecting key words for a particular query?
14      A      The goal I'd say of the broader search ad
15  system, ads quality systems and the team, is to show high
16  quality ads on the search results page and it's primarily
17  that.  There are numerous mechanisms in the system that
18  will work against cases in which expansions of key words
19  or expanded match variance, so to speak, might -- how do
20  I want to say this?  The set of expansions that we look
21  at, the universe of expansions that we look at, can be
22  larger than the set of most pertinent expansions because
23  there are other pieces of the system that either
24  immediately or over time will deal with those lower
25  quality variances in those cases.

**15.  PAGE 219:01 TO 219:04  (RUNNING 00:00:10.990)**

00219:01      Q      Okay.  When you say high quality, though, that
02  the goal is ultimately to get high quality ads, doesn't
03  that high quality also encompass the idea of getting
04  relevant ads?

**16.  PAGE 219:06 TO 219:12  (RUNNING 00:00:17.870)**

06          THE WITNESS:  I mean, you know, certainly in
07  order for users to engage with and interact with the ads
08  that are shown on a search results page, they have to
09  find that those ads are useful in context to the query
10  that they're doing.
11  BY MR. JACOBS:
12      Q      Meaning relevant to the query, right?

**17.  PAGE 219:14 TO 220:02  (RUNNING 00:00:52.876)**

14          THE WITNESS:  I believe I used the word useful.
15  BY MR. JACOBS:
16      Q      What's the difference in your mind between
17  relevant and useful?
18      A      You know, there are plenty of instances in
19  which ads which we might consider relevant based on the

```
20   user's query -- there's plenty of instances where those
21   ads may or may not be -- or may be deemed relevant by say
22   humans and yet users, for whatever reason, never interact
23   with them.  So I would say while those ads are relevant,
24   the users have not found them useful.  So while relevance
25   may be a component of overall some of the things that we
00220:01   look for in producing ads on Google.com, it is -- it
02   can't be the only thing that we do.
```

**18.  PAGE 220:03 TO 220:04  (RUNNING 00:00:03.925)**

```
03   Q   But all useful ads would be relevant ads,
04   correct?
```

**19.  PAGE 220:06 TO 220:14  (RUNNING 00:00:20.153)**

```
06           THE WITNESS:  No, not necessarily.
07   BY MR. JACOBS:
08   Q   Why isn't that the case?
09   A   If you came to Google and you searched for
10   flowers and the top ad was "A hundred dollars for free,
11   click here now," and when you clicked, you got through to
12   a landing page that wrote you a check for a hundred
13   dollars," that to me sounds like a useful ad, but it's
14   not relevant.
```

**20.  PAGE 279:21 TO 279:22  (RUNNING 00:00:05.090)**

```
21   Q   Is the relevancy of an ad important in
22   determining if it is a high quality ad?
```

**21.  PAGE 279:24 TO 280:01  (RUNNING 00:00:09.208)**

```
24           THE WITNESS:  The ads relation to the user's
25   intent is one of a number of factors that's important to
00280:01   determining the quality of the ad.
```

**22.  PAGE 293:19 TO 294:06  (RUNNING 00:00:55.192)**

```
19   Q   So what is the primary goal of Google's ad
20   quality initiative?
21   A    Well, it's primarily a search ad system.  The
22   goal of the ads quality and the broader search ads team
23   is to essentially show search ads to users with respect
24   to the queries that we receive on Google.com, you know,
25   through a variety of means, and, you know -- let's see --
00294:01   the team clearly cares about making sure that the
02   experience broadly works well and is, you know, a good
03   experience.  And, you know, certainly revenue is
04   something that the team cares about as well.  Interesting
05   complex software engineering problems would be another, I
06   don't know, core passion of the team.
```

**23.  PAGE 305:05 TO 306:07  (RUNNING 00:02:37.253)**

```
05   Q   Do you recognize this document?
06   A   It looks similar to the document that we just
07   looked at.  It's not a document that I recall.
08           MR. JACOBS:  I'll hand you what the court
09   reporter will be marking as Alferness Exhibit No. 25.
10   It's a document bearing Bates stamp IPE-0009778 through
11   0010032.
12           (Deposition Exhibit 25 was marked for
13           identification by the court reporter.)
14   BY MR. JACOBS:
15   Q   Do you recognize this document?
16   A   Not necessarily.  I can read the cover.  This
17   looks to be from Morningstar.  This is a Form 10K filed
18   by Google Inc. on February 11, 2011 for the period ending
19   December 21st, 2010.
20   Q   Okay.  I would like you to review page 25 of
21   the document bearing Bates stamp ending in 9805 under the
22   header How We Generate Revenue.  Is advertising revenue
23   made up of -- strike that.
24           Does advertising revenue make up 97 percent of
```

## IP Engine v Google

```
        25  all Google revenue in 2008 and 2009?
00306:01      A     So again we are looking at a document which at
        02  least purports to be a Google Inc. 10K filed document.
        03  So while not having authored the document myself, I would
        04  sure hope that the contents of the document are accurate.
        05  So one would believe that advertising revenues made up
        06  97 percent of revenue in 2008-2009 and 96 percent in
        07  2010.
```

**IP Engine v Google**

📁 **Diorio, Jonathan (Vol. 01) - 09/18/2012**          **1 CLIP  (RUNNING 00:16:12.795)**

🎬 Good morning, Mr. Diorio. ...

**DIORIO**          **59 SEGMENTS  (RUNNING 00:16:12.795)**          |||||||||||||||

**1. PAGE 6:07 TO 6:10  (RUNNING 00:00:04.354)**

```
07     Q.  Good morning, Mr. Diorio.
08     A.  Good morning.
09     Q.  Can you state your full name for the record.
10     A.  Jonathan Diorio.
```

**2. PAGE 6:13 TO 6:16  (RUNNING 00:00:08.724)**

```
13     Q.  And how long have you worked at Google?
14     A.  Just over seven years.
15     Q.  And what is your current title?
16     A.  Senior business product manager.
```

**3. PAGE 21:04 TO 21:07  (RUNNING 00:00:11.692)**

```
04     Q.  Is it correct to say that you served as a
05  product marketing manager from 2005 to the beginning of
06  2011?
07     A.  Yes.
```

**4. PAGE 29:08 TO 29:11  (RUNNING 00:00:20.490)**

```
08     Q.  So, as a product marketing manager, what were
09  your responsibilities?
10     A.  To promote the features and functions that were
11  exiting development and soon to launch.
```

**5. PAGE 36:02 TO 36:05  (RUNNING 00:00:14.570)**

```
02     Q.  In your experience in product marketing, did
03  Google use the AdWords Help Center to educate
04  advertisers about AdWords?
05     A.  Yes.
```

**6. PAGE 36:12 TO 36:15  (RUNNING 00:00:12.840)**

```
12     Q.  We've talked about a number of different kinds
13  of materials that Google used to educate advertisers
14  about AdWords.  Why does Google put out these kinds of
15  materials?
```

**7. PAGE 36:17 TO 36:19  (RUNNING 00:00:08.123)**

```
17        THE WITNESS:  I can't speak for Google, but I
18  believe it's to give our advertisers as much useful
19  information as we can.
```

**8. PAGE 44:24 TO 44:25  (RUNNING 00:00:09.779)**

```
24     Q.  Is the relevance of ads an important part of the
25  AdWords system?
```

**9. PAGE 45:02 TO 45:08  (RUNNING 00:00:16.610)**

```
02        THE WITNESS:  I would say that showing ads that
03  don't appear to have any connection to what the person
04  is searching for is not something we would want to do.
05        BY MS. SCOTT:
06     Q.  So returning relevant ads is --
07     A.  If you define --
08     Q.  -- is a benefit?
```

**10. PAGE 45:10 TO 45:12  (RUNNING 00:00:08.568)**

```
10        THE WITNESS:  If you define relevancy as being
11  the ad has some thematic connection to what the person
```

```
12   is looking for at that time, then yes.
```

**11. PAGE 51:25 TO 52:02 (RUNNING 00:00:09.493)**

```
      25       Q.  In your time at Google, have you had any
00052:01   responsibility with respect to communicating changes in
      02   the AdWords system to advertisers?
```

**12. PAGE 52:04 TO 52:04 (RUNNING 00:00:01.405)**

```
      04           THE WITNESS:  As I stated before, yes.
```

**13. PAGE 52:06 TO 52:11 (RUNNING 00:00:11.887)**

```
      06       Q.  You've had both direct involvement in
      07   communication using AdWords to advertisers, correct?
      08       A.  You said both.
      09       Q.  You had both direct involvement and a
      10   supervisory role?
      11       A.  Correct.
```

**14. PAGE 55:02 TO 55:05 (RUNNING 00:00:10.490)**

```
      02       Q.  In your time at Google, have you had any
      03   responsibilities with respect to addressing
      04   advertisers' questions regarding AdWords?
      05       A.  Yes.
```

**15. PAGE 56:10 TO 56:12 (RUNNING 00:00:06.529)**

```
      10       Q.  For example, have you been involved in the
      11   preparation of frequently asked questions?
      12       A.  Oh, yes.
```

**16. PAGE 60:09 TO 60:12 (RUNNING 00:00:14.321)**

```
      09       Q.  What is the AdWords Help Center?
      10       A.  It is a web destination that contains articles
      11   about AdWords, and it's intended for advertisers and
      12   agencies.
```

**17. PAGE 60:20 TO 61:06 (RUNNING 00:00:55.430)**

```
      20       Q.  Have you had any responsibilities with respect
      21   to the AdWords Help Center?
      22       A.  I have contributed content to the AdWords Help
      23   Center.
      24       Q.  What content have you contributed to the AdWords
      25   Help Center?
00061:01       A.  When we create new features, we typically amend
      02   existing Help Center articles or create new ones.  In
      03   my position as someone who currently creates features,
      04   I'll often guide our writers in what are the important
      05   issues along with other people in the organization who
      06   kind of serve the same function.  It takes a village.
```

**18. PAGE 61:07 TO 61:07 (RUNNING 00:00:03.172)**

```
      07       Q.  Are you familiar with the quality score?
```

**19. PAGE 61:09 TO 61:12 (RUNNING 00:00:07.582)**

```
      09           THE WITNESS:  I know of a concept that is called
      10   quality score.
      11           BY MS. SCOTT:
      12       Q.  What is the quality score?
```

**20. PAGE 61:14 TO 61:17 (RUNNING 00:00:15.648)**

```
      14           THE WITNESS:  I lack any technical understanding
      15   of quality score.  And as I understand it, there are
      16   several interpretations of quality score within Google,
      17   so you'd have to clarify.
```

**21. PAGE 61:24 TO 62:09 (RUNNING 00:00:54.573)**

```
      24       Q.  In your understanding, what are the different
      25   understandings of quality score at Google?
```

```
00062:01      A.  Well, one is a number that we expose in our
      02  reports.
      03      Q.  Reports to whom?
      04      A.  Advertisers.
      05      Q.  And what is the other understanding of quality
      06  score?
      07      A.  I know that there are several in what I'll call
      08  kind of the back end, on the server side, that are used
      09  to measure different things.
```

**22. PAGE 64:16 TO 64:19 (RUNNING 00:00:11.245)**

```
      16      Q.  In your experience at Google, does Google
      17  describe what the quality score is to advertisers?
      18      A.  I'm sure there are articles in the Help Center
      19  that discuss the concept of quality score.
```

**23. PAGE 64:20 TO 64:22 (RUNNING 00:00:06.047)**

```
      20      Q.  Have you had any involvement with the
      21  preparation of those articles?
      22      A.  As answered earlier, I don't recall.
```

**24. PAGE 98:24 TO 98:25 (RUNNING 00:00:08.707)**

```
      24      Q.  Do any of the groups that are reviewing the comm
      25  docs, are they reviewing it for accuracy?
```

**25. PAGE 99:02 TO 99:03 (RUNNING 00:00:08.530)**

```
      02          THE WITNESS:  I think they're reviewing it to
      03  make sure there are no erroneous statements.
```

**26. PAGE 99:21 TO 100:04 (RUNNING 00:00:27.415)**

```
      21      Q.  And what is the time frame for editing a comm
      22  doc?
      23      A.  In my experience, similar to blogs -- well,
      24  weeks.
      25      Q.  Weeks.
00100:01      A.  Yes.
      02      Q.  So it takes weeks to -- from a draft being
      03  circulated to a final draft being agreed upon?
      04      A.  Depending on the complexity of the feature, yes.
```

**27. PAGE 108:16 TO 109:04 (RUNNING 00:00:54.395)**

```
      16      Q.  For the preparation of videos concerning
      17  AdWords --
      18      A.  Uh-huh.
      19      Q.  -- who would be involved in the decision to make
      20  a video?
      21      A.  Again, it would be a broadly shared decision.
      22  There's no one person whose job it is to be the arbiter
      23  of video creation.
      24      Q.  And what groups would be involved?
      25      A.  Marketing would be one.
00109:01      Q.  Others?
      02      A.  Sales.
      03      Q.  Anything else?
      04      A.  Editorial probably.  Product management.
```

**28. PAGE 119:01 TO 119:04 (RUNNING 00:00:20.200)**

```
00119:01      Q.  Would you -- when you were a product marketing
      02  manager and you were supervising other people, would
      03  you expect those people to make sure that the content
      04  was going to be helpful for advertisers?
```

**29. PAGE 119:06 TO 119:15 (RUNNING 00:00:50.732)**

```
      06          THE WITNESS:  Sure.
      07          BY MS. SCOTT:
      08      Q.  Would you expect them to review for
      09  typographical errors?
      10      A.  Sure.
```

## IP Engine v Google

```
   11      Q.   Would you expect them to review for the material
   12   being useful to an advertiser?
   13      A.   Yes.
   14      Q.   Would you expect them to review the content for
   15   accuracy?
```

**30. PAGE 119:17 TO 119:23 (RUNNING 00:00:15.159)**

```
   17           THE WITNESS:  Again, accuracy is vague.  I would
   18   expect them to look for inaccuracy.
   19           BY MS. SCOTT:
   20      Q.   But if there were inaccuracies, you would expect
   21   them to identify them?
   22      A.   If there was a misstatement, yes, I would expect
   23   them to identify it.
```

**31. PAGE 119:24 TO 119:25 (RUNNING 00:00:01.323)**

```
   24      Q.   Okay.
   25      A.   Or -- yes.
```

**32. PAGE 120:10 TO 120:15 (RUNNING 00:00:17.994)**

```
   10      Q.   In your experience, do you expect the
   11   advertisers to rely on the materials in the Help Center
   12   for developing their ad campaigns?
   13      A.   I expect them to use those materials.
   14      Q.   So you expect them to put them to use in their
   15   ad campaigns?
```

**33. PAGE 120:17 TO 120:18 (RUNNING 00:00:02.399)**

```
   17           THE WITNESS:  I would expect them to.  That's
   18   why we make them.
```

**34. PAGE 121:20 TO 121:22 (RUNNING 00:00:19.216)**

```
   20      Q.   Is one of the objectives in providing messaging
   21   materials to advertisers to provide some visibility
   22   into the AdWords system?
```

**35. PAGE 121:24 TO 122:01 (RUNNING 00:00:08.302)**

```
   24           THE WITNESS:  I would say our goal is to provide
   25   them useful information by which they can become better
00122:01   AdWords advertisers.
```

**36. PAGE 126:17 TO 126:19 (RUNNING 00:00:15.792)**

```
   17      Q.   And when you supervised other people in
   18   marketing, did you encourage them to identify
   19   inaccuracies in the materials that they were reviewing?
```

**37. PAGE 126:21 TO 127:01 (RUNNING 00:00:13.539)**

```
   21           THE WITNESS:  I don't think I ever explicitly
   22   said that.  It was a given.
   23           BY MS. SCOTT:
   24      Q.   Why do you think it was a given?
   25      A.   Why would you write something that isn't true?
00127:01        It doesn't make sense.
```

**38. PAGE 129:20 TO 129:21 (RUNNING 00:00:08.145)**

```
   20      Q.   In your experience, has there been blog posts
   21   describing what the quality score is?
```

**39. PAGE 129:23 TO 130:01 (RUNNING 00:00:09.836)**

```
   23           THE WITNESS:  I do recall there was a video by
   24   Hal Varian that explained the basics of the auction.  I
   25   do not recall whether or not -- how quality score was
00130:01   discussed within that.
```

**40. PAGE 149:18 TO 149:19 (RUNNING 00:00:06.445)**

```
   18      Q.   In your experience, does Google try to be honest
   19   in its messaging to advertisers regarding AdWords?
```

**41. PAGE 149:21 TO 150:02 (RUNNING 00:00:18.788)**

```
21          THE WITNESS:  In my experience, my team and I
22  have always tried to be honest with advertisers.
23          BY MS. SCOTT:
24      Q.  Does -- I'm sorry.
25          In your experience at Google, does Google try to
00150:01  be accurate in its communications about AdWords with
02  its advertisers?
```

**42. PAGE 150:04 TO 150:08 (RUNNING 00:00:23.019)**

```
04          THE WITNESS:  Again, accuracy is an overloaded
05  term in my mind.  We strive to provide our advertisers
06  with useful information that is error free.
07          BY MS. SCOTT:
08      Q.  So do you strive to provide correct information?
```

**43. PAGE 150:10 TO 150:11 (RUNNING 00:00:04.354)**

```
10          THE WITNESS:  Same answer.  We strive to provide
11  error-free information.
```

**44. PAGE 150:20 TO 150:21 (RUNNING 00:00:13.021)**

```
20      Q.  Is there a difference in your mind between there
21  not being inaccuracies and something being accurate?
```

**45. PAGE 150:23 TO 151:13 (RUNNING 00:02:12.325)**

```
23          THE WITNESS:  Not being inaccuracies and
24  something being accurate.
25          Yes.
00151:01          BY MS. SCOTT:
02      Q.  What is the difference?
03      A.  Inaccuracy means nothing false or wrong.
04  Accurate means -- accurate is all inclusive of detail.
05      Q.  So, in your mind, for something to be accurate
06  it must include every detail?
07      A.  It could.  Which is why I feel it's an
08  overloaded term.  Or ambiguous.  To not use a computer
09  science term.
10      Q.  In Exhibit 2, when Jonathan Alferness said that
11  this frequently asked question and answer, he thinks
12  it's fine and accurate, did you take that to mean that
13  it included every detail?
```

**46. PAGE 151:15 TO 151:19 (RUNNING 00:00:08.461)**

```
15          THE WITNESS:  I don't recall what I thought two
16  years ago.
17          BY MS. SCOTT:
18      Q.  Sitting here today, do you take that to mean
19  that that question and answer includes every detail?
```

**47. PAGE 151:21 TO 151:21 (RUNNING 00:00:00.500)**

```
21          THE WITNESS:  No.
```

**48. PAGE 154:02 TO 154:03 (RUNNING 00:00:04.665)**

```
02      Q.  In your experience, is Google successful in
03  putting out honest marketing materials?
```

**49. PAGE 154:05 TO 154:05 (RUNNING 00:00:01.381)**

```
05          THE WITNESS:  In my experience, yes.
```

**50. PAGE 154:09 TO 154:14 (RUNNING 00:00:18.149)**

```
09      Q.  Are you aware of any time that it has not been
10  honest?
11      A.  I'm not aware of a time where we've been
12  dishonest.
13      Q.  In your experience, has Google been honest as to
14  materials posted on the AdWords Help Center?
```

## IP Engine v Google

**51. PAGE 154:16 TO 154:19 (RUNNING 00:00:03.897)**

```
16        THE WITNESS:  Yes.
17        BY MS. SCOTT:
18    Q.  And in your experience, has Google been honest
19  in its blog posts?
```

**52. PAGE 154:21 TO 154:24 (RUNNING 00:00:14.628)**

```
21        THE WITNESS:  Yes.
22        BY MS. SCOTT:
23    Q.  In your experience, has Google been honest in
24  its descriptions of the quality score?
```

**53. PAGE 155:02 TO 155:08 (RUNNING 00:00:46.196)**

```
02        THE WITNESS:  To the extent that I've been
03  involved in those communications, yes.
04        BY MS. SCOTT:
05    Q.  And we talked before about trying to avoid
06  inaccuracies.  Is Google, in your experience,
07  successful in putting out marketing materials about
08  AdWords that are free of inaccuracies?
```

**54. PAGE 155:11 TO 155:21 (RUNNING 00:00:38.263)**

```
11        THE WITNESS:  I don't recall any situations
12  where me or my team have put out materials that have
13  inaccuracies.
14        BY MS. SCOTT:
15    Q.  Are you aware of any other team putting out
16  material with inaccuracies?
17    A.  Not that I recall.
18    Q.  In your experience, if a piece of marketing
19  material was published on the blog or the Help Center
20  or sent by an email blast, would it have been reviewed
21  to see whether there were any inaccuracies?
```

**55. PAGE 155:23 TO 156:01 (RUNNING 00:00:07.578)**

```
23        THE WITNESS:  As we've discussed earlier, the
24  reason for having all those people on the email list is
25  to give everybody an opportunity to look for
00156:01  inaccuracies.
```

**56. PAGE 156:16 TO 156:19 (RUNNING 00:00:12.450)**

```
16        If a particular marketing document is published
17  on the Help Center or the blog or sent by an email
18  blast, is it safe to assume that there are no
19  inaccuracies in that document?
```

**57. PAGE 156:21 TO 156:23 (RUNNING 00:00:05.798)**

```
21        THE WITNESS:  Based on my experience with my
22  team, I would expect that there would be no
23  inaccuracies.
```

**58. PAGE 164:20 TO 164:21 (RUNNING 00:00:06.055)**

```
20    Q.  Is maintaining advertisers' trust something that
21  is important to Google in your experience?
```

**59. PAGE 164:23 TO 164:23 (RUNNING 00:00:01.566)**

```
23        THE WITNESS:  In my experience, yes.
```

## IP Engine v Google

📁 **Furrow, Bartholomew (Vol. 01) - 08/03/2012**          **1 CLIP  (RUNNING 00:28:54.667)**

🎬 THE WITNESS:  Speaking as someone without ...

**FURROW1**                    **40 SEGMENTS  (RUNNING 00:28:54.667)**          ||||||||||||||||||||

**1. PAGE 54:13 TO 54:16  (RUNNING 00:00:08.324)**

```
13        Q.    You're familiar with the AdWords system?
14        A.    Yes.
15        Q.    Is the purpose of the AdWords system to
16   serve relevant ads to Google's users?
```

**2. PAGE 54:18 TO 54:19  (RUNNING 00:00:05.321)**

```
18             THE WITNESS:  I wouldn't say that's the
19   purpose, no.
```

**3. PAGE 54:21 TO 54:21  (RUNNING 00:00:02.212)**

```
21        Q.    Would you say that's one of the purposes?
```

**4. PAGE 55:19 TO 56:15  (RUNNING 00:01:17.444)**

```
19             THE WITNESS:  I would say it's a purpose
20   to show useful ads to our users, and I think it
21   would probably be -- again, I don't really have a
22   solid definition of "relevant" as you discovered a
23   moment ago when I couldn't come up with a good one
24   at all.  I would say colloquially that a relevant ad
25   is -- that a useful ad is likely to be relevant to
00056:01   the user's interest.
02             But on the other hand, a user may issue a
03   query and -- or, actually, rather than issuing a
04   query, we talked a moment ago about showing ads on
05   CNN, for example, or showing ads on -- showing ads
06   on television.  When you show ads on television, the
07   audience that you're trying to reach may not find
08   any particular relevance in that television ad to
09   their, whatever they're doing currently, but it can
10   still be useful to them.
11             So actually, I guess that I would say that
12   our purpose is to show useful ads, the ads being
13   relevant to what the user is looking for may help to
14   make those ads useful, but again I don't have a good
15   definition for what exactly "relevance" means.
```

**5. PAGE 56:17 TO 56:20  (RUNNING 00:00:14.607)**

```
17        Q.    Using any definition that you have used in
18   the past for "relevance," would you agree that the
19   AdWords system results in serving relevant ads to
20   Google's users?
```

**6. PAGE 56:22 TO 57:05  (RUNNING 00:00:21.680)**

```
22             THE WITNESS:  Speaking as someone without
23   a particularly solid definition of the word
24   "relevance," I would say that it is often the case
25   as a user of AdWords that I have seen ads that are
00057:01   relevant to the thing that I was searching for.
02   BY MR. CIMINO:
03        Q.    So you agree that the result of the
04   AdWords system would be to serve relevant ads to the
05   user?
```

**7. PAGE 57:07 TO 57:10  (RUNNING 00:00:09.277)**

```
07             THE WITNESS:  I would agree that the
08   results that the output of the AdWords system can be
09   to serve an ad that is relevant to what the user is
```

```
                 10   looking for.
```

**8. PAGE 63:02 TO 63:03  (RUNNING 00:00:03.745)**

```
                 02        Q.   Do you know whether revenue actually
                 03   increased after SmartASS was brought online?
```

**9. PAGE 63:05 TO 63:07  (RUNNING 00:00:04.487)**

```
                 05             THE WITNESS:  My understanding through
                 06   secondhand knowledge, because this predates my time
                 07   at Google, is that it did.
```

**10. PAGE 67:18 TO 67:22  (RUNNING 00:00:09.150)**

```
                 18        Q.   Okay.  Let's walk through the flow, and as
                 19   we go through this and move forward in time, just
                 20   your best recollection obviously is the best we can
                 21   do.
                 22        A.   Sure.
```

**11. PAGE 68:03 TO 69:19  (RUNNING 00:02:02.124)**

```
                 03        A.   All right.  So we talked about the auction
                 04   wherein we would rank ads by their, what we called
                 05   the eCPM, which is the expected cost per mille,
                 06   which is this predicted click-through rate times the
                 07   bid times 1,000.  It's never quite been clear to me
                 08   why we would always multiply things by a thousand,
                 09   but we did.
                 10             For promotion and disabling, we would --
                 11   to determine whether an ad was eligible for the
                 12   auction at all, we would do what's called a
                 13   disabling pass.  And in disabling, we would apply a
                 14   mathematical function to, essentially to the
                 15   combination of the predicted click-through rate and
                 16   the bid.  And that mathematical function would
                 17   either return true or false, and if it returned
                 18   true, then this ad would be eligible to be shown;
                 19   and if false, this ad would be ineligible to be
                 20   shown.  So the combination of pCTR and bid was used
                 21   to determine whether the ad was eligible for the
                 22   auction.
                 23             Then we would run the auction.  And then
                 24   for the first ad, the ad that won the auction, if
                 25   there are even any ads left, which there might not
            00069:01   be, it could be that all of the ads were disabled,
                 02   but --
                 03        Q.   Understood.  The ones that are left --
                 04        A.   Of the ones that were left, we would look
                 05   at the first one and we would subject it to a very
                 06   similar mathematical function to the disabling pass
                 07   called the promotion pass.  And this will be a more
                 08   strict function.  Fewer ads are eligible for
                 09   promotion than are eligible to participate in the
                 10   auction.
                 11             And if the first ad met that promotion
                 12   criterion, if the combination of pCTR and bid was
                 13   high enough, then we would show that ad on top.
                 14             And if the first ad passed the promotion
                 15   criterion, then we would go on to the second ad.
                 16   And if the second ad passed the promotion criterion,
                 17   I guess around 2004 we were only showing two top
                 18   ads, so that would have been it.  At some point, we
                 19   started showing a third, as well.
```

**12. PAGE 72:16 TO 72:22  (RUNNING 00:00:19.740)**

```
                 16             So the predicted click-through rate used
                 17   for disabling and promotion from 2004 to 2011 was
                 18   the same signal?
                 19        A.   By "the same signal," you mean something
                 20   produced by Smart Ads?
                 21        Q.   Correct.
```

```
        22        A.    Yes.
```

**13. PAGE 76:08 TO 76:09  (RUNNING 00:00:07.360)**

```
        08        Q.    And promotion is used to refer to
        09   placement of ads on the top of the page exclusively?
```

**14. PAGE 76:11 TO 76:16  (RUNNING 00:00:15.818)**

```
        11            THE WITNESS:  In the context of ads
        12   serving, it's easier to refer to the placement of
        13   ads in the top slot.
        14   BY MR. CIMINO:
        15        Q.    And that's a two-step process, so to
        16   speak?
```

**15. PAGE 76:18 TO 77:23  (RUNNING 00:01:16.028)**

```
        18            THE WITNESS:  I believe so, yes.  I'm not
        19   sure which two steps you're thinking of.  The two
        20   I'm thinking of would be the promotion pass to see
        21   whether an ad is eligible to be promoted, followed
        22   by the auction.
        23   BY MR. CIMINO:
        24        Q.    And the promotion pass would be a
        25   comparison with a threshold?
  00077:01        A.    That's right.  It's the threshold thing we
        02   talked about before.
        03        Q.    And disabling would also be the same two
        04   steps, but for the right-hand side?
        05        A.    That's correct.
        06            And I believe it was that -- I believe
        07   this happened with the reserve-based promotion
        08   launch, whereas before, we had run a single auction
        09   and then we would promote ads from the top of that
        10   auction.  Once reserve-based promotion came along,
        11   we would first run a top auction, and then put ads
        12   on top, and then take whatever ads were left over
        13   and run a right-hand side auction.
        14            No, actually, that wasn't with reserve-
        15   based promotion.  That was with something called out
        16   of order promotion, and my memory is that was
        17   launched actually at the same time as reserve-based
        18   promotion.
        19            I apologize if I'm being confusing.  There
        20   are a lot of little things that --
        21        Q.    Sure.
        22        A.    I'm doing my best to bring them all to
        23   you.
```

**16. PAGE 78:04 TO 78:08  (RUNNING 00:00:14.487)**

```
        04            Where does, in terms of the architecture
        05   for AdWords, where does disabling happen?
        06        A.    In the ad mixer.
        07        Q.    Where does promotion happen?
        08        A.    Also in the ad mixer.
```

**17. PAGE 78:25 TO 79:20  (RUNNING 00:01:20.242)**

```
        25        Q.    Okay.  So we talked about QBB a little bit
  00079:01   and said we would come back to that.  Do you recall
        02   where QBB would fit into this process?
        03        A.    Yes.
        04        Q.    Can you explain it.
        05        A.    QBB is a system that provides a very
        06   different pCTR from the one that the Smart Ads
        07   system provides.  Whereas Smart Ads provides
        08   predicted click-through rates associated with a
        09   particular query, the QBB prediction is made without
        10   the context of the query.  It's made ahead of time.
        11            The QBB prediction is made given only the
        12   keyword that the advertiser has specified.  And so
        13   for each keyword that an advertiser specifies, we
```

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14  will make a QBB prediction and say that on average
15  people, "on average" is perhaps too -- well, the
16  term, I guess, but it provides a, it provides a
17  predicted click-through rate given only the keyword,
18  not the query.  Because at the time when it's making
19  the prediction, there is no query.  It makes these
20  predictions ahead of time.

**18.  PAGE 87:02 TO 88:14  (RUNNING 00:02:28.927)**

02      Q.    -- occurred.  Can you explain what long
03  term value is and was?
04      A.    Yes.  So LTV included a change to our
05  auction and to the functional form of promotion and
06  disabling.
07          So QBB was, as I understand it, unaffected
08  by LTV.  So that part stayed as it was.
09      Q.    Makes it easy.
10      A.    Makes it easier.
11          Smart Ads is still providing pCTRs post
12  LTV, but the various pieces of the auction and
13  promotion and disabling now happen in different
14  ways.
15          The -- whereas before we would compute
16  this number that I referred to a eCPM, the bid times
17  the PCTR times a thousand, and rank according to
18  that, and we would choose which ads to promote and
19  choose which ads to disable by the very different
20  criterion.  LTV unified the auction with these
21  thresholds.
22          So what we have in LTV is a single
23  function for promotion, and a single function for
24  disabling.  And if the function's value is less than
25  zero for promotion, then an ad is ineligible to show
00088:01  on top.  If the value is less than zero for
02  disabling, then the ad is ineligible to show on the
03  right-hand side.  And we also rank the ads by that
04  same value.
05          So first we evaluate the top LTV score for
06  every ad, and we take -- we consider all of the ads
07  whose LTV score isn't at least zero -- excuse me, is
08  at least zero, and we take the top three of those
09  and promote them.  Then we take all of the ads that
10  are left, we evaluate the right-hand side LTV score
11  on those ads, and then we essentially throw away all
12  the ads whose score is less than zero.  And then we
13  take the first up to eight of what remains, and
14  again, we rank those by LTV score.

**19.  PAGE 89:24 TO 90:05  (RUNNING 00:00:18.332)**

24      Q.    Where does the QBB disabling pass take
25  place?
00090:01    A.    In what I've been calling the keyword
02  servers.
03      Q.    Okay.  Then the ads that survive the QBB
04  disabling pass go to the ad mixer.  Is that right?
05      A.    That's correct.

**20.  PAGE 90:06 TO 91:09  (RUNNING 00:01:26.472)**

06      Q.    And then --
07      A.    Sorry.  There is a little bit more that
08  can happen between that.  I think there are limits
09  to how many ads each.  And this has been true since
10  before LTV, but since we're going into this level of
11  detail.
12          We wouldn't, for example, return more than
13  a few ads from the same customer per keyword.  So if
14  the same customer has a hundred ads advertising on
15  the same keyword, then we would only select a few of
16  those to send back to the ad mixer.  Likewise, if
17  it's a very popular keyword like "hotels," we would

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```
        18   only -- we wouldn't send back every ad for every
        19   advertiser that advertised on "hotels."  We would
        20   only send back a few.
        21        Q.   How do you determine for the same customer
        22   or for popular keywords which ones to exclude?
        23        A.   My understanding is that it's something of
        24   a heuristic, meaning that we just sort of do our
        25   best to guess which would do the -- which of those
  00091:01   would do the best in the ad mixer.
        02           We also understand that advertisers
        03   sometimes prefer exact match ads to broad match ads,
        04   and so we have a preference for those, as well, but
        05   other than that, I believe it's just, it's
        06   essentially heuristic to try to guess what the ad
        07   mixer would pick as the ads to be shown.
        08        Q.   Is it based at all on QBB pCTR?
        09        A.   It might be, but I'm not sure.
```

### 21. PAGE 91:10 TO 91:18 (RUNNING 00:00:25.765)

```
        10        Q.   Back to the ad mixer.  The QBB disabling
        11   pass determines which are eligible, which ads are
        12   eligible to go to the ad mixer for promotion and
        13   disabling?
        14        A.   I wouldn't say for promotion and
        15   disabling; although these are things that happen,
        16   but, yes, the QBB disabling pass is part of what
        17   determines which ads are eligible to be sent to the
        18   ad mixer.
```

### 22. PAGE 91:19 TO 91:25 (RUNNING 00:00:33.360)

```
        19        Q.   And then what happens in the ad mixer?
        20        A.   A number of things happen in the ad mixer,
        21   but of what we've talked about so far, the auction
        22   as well as disabling -- excuse me, the auctions.
        23        Q.   Does anything else happen in the ad mixer
        24   we haven't discussed that would be relevant to ad
        25   selection?
```

### 23. PAGE 92:18 TO 93:19 (RUNNING 00:01:20.698)

```
        18           And then we would do promotion by
        19   comparing to a threshold of zero.  Is that right?
        20        A.   Comparing the LTV score to a threshold of
        21   zero.
        22        Q.   LTV score.  And then we would compare the
        23   LTV score to a threshold of zero for disabling.  Is
        24   that right?
        25        A.   That's correct.  After we had already
  00093:01   chosen the top ads, then what's left gets, the
        02   disabling pass gets applied.
        03        Q.   Does the LTV score change, then, when it's
        04   being considered for promotion versus disabling?
        05        A.   They are different functions.  Very
        06   similar functions, but with different values in
        07   them.
        08        Q.   After we do LTV compared to zero for
        09   promotion, then we run an auction for promotion?
        10        A.   That's correct.
        11        Q.   And then the same thing with disabling,
        12   you would take the leftover ads, compare them to the
        13   threshold, and the remaining ads you would run an
        14   auction?
        15        A.   Yes, and the threshold in this case is
        16   zero.
        17        Q.   And that's, that changed LTV in 2011,
        18   that's still how the system works today?
        19        A.   That's how the system works today.
```

### 24. PAGE 92:02 TO 92:17 (RUNNING 00:01:00.506)

```
        02           THE WITNESS:  I believe that UBAQ is -- I
        03   believe UBAQ comes in in the ad mixer, and so does
```

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```
04  eCTR.
05  BY MR. CIMINO:
06      Q.   Okay.
07      A.   I'm sorry.  In addition to the auction,
08  or, perhaps, post auction, we also do things like
09  what's called D-duping, short for D-duplication.  So
10  I mentioned before that we would try to winnow down
11  the number of ads that a particular advertiser sends
12  back the ad mixer.  We'll only ever show one ad from
13  one advertiser.  It might not be for one advertiser,
14  but at least one ad for one account or one visible
15  URL domain.  And so we do that winnowing step, as
16  well.
17      Q.   Okay.  Understood.
```

**25. PAGE 109:01 TO 109:05 (RUNNING 00:00:13.230)**

```
00109:01      Q.   So the LTV score will be a function of
02  SmartASS predicted click-through rate, and then as
03  part of CQ, also the QBB predicted click-through
04  rate?
05      A.   I think that's fair to say, yes.
```

**26. PAGE 113:12 TO 113:13 (RUNNING 00:00:03.200)**

```
12           What information does Smart Ads base its
13  predictions on?
```

**27. PAGE 113:15 TO 113:20 (RUNNING 00:00:22.775)**

```
15           THE WITNESS:  That is, that's a big
16  question.  Smart Ads bases its prediction on a
17  machine learning model that has been constructed at
18  Smart Ads training time.  Yeah, I guess that's my
19  answer to that part.  And maybe you want to know
20  more about that.
```

**28. PAGE 118:25 TO 119:19 (RUNNING 00:01:31.681)**

```
25      Q.   How does SmartASS compute a predicted
00119:01  click-through rate?
02      A.   So first the Smart Ads server receives a
03  request from the keyword server containing
04  information about the ad that it's supposed to
05  evaluate, and information about the query.  It then
06  looks at the configuration for the Smart Ads model
07  that it's using, and the configuration contains
08  information about what facts about the query ad pair
09  to combine with what other facts.
10           Once it has made those combinations, of
11  which there could be on the order of 50, it then
12  looks up in a big database whether -- or what the
13  multiplier associated with each of those facts is.
14           Once it's looked up all 50 or so -- I
15  mean, it could be anywhere between 20 and 100, say,
16  so once it's looked up all 50 or so multipliers, it
17  then multiplies them all together, and performs some
18  math on the result, and the -- the output of that is
19  a click-through, predicted click-through rate.
```

**29. PAGE 121:09 TO 122:24 (RUNNING 00:02:07.012)**

```
09      Q.   So drilling down a little bit on the
10  relation of some facts to other facts, what is a
11  feature?
12      A.   So I want to start off by being a little
13  careful about terminology here, because the
14  terminology surrounding SmartASS is not necessarily
15  consistent depending on whom you're talking to, and
16  not necessarily consistent depending on the sentence
17  the person is saying.  You will discover that I use
18  the term "attribute" and the term "key"
19  interchangeably.
20      Q.   "Key"?
```

```
21        A.   Yes, "attribute" and "key"
22   interchangeably.  I try to use "attribute," but I'll
23   use "key" by mistake a few times.  So I will give
24   you my definitions, but I'll also tell you what
25   other people might call these things.
00122:01        Q.   So you could have different people using
02   these words different ways, and those people could
03   also be inside the same AdWords group?
04        A.   Yes.
05        Q.   Okay.
06        A.   So my definition of the term "feature" is
07   a single fact about the ad query pair.  For example,
08   one feature might be the visible URL domain of the
09   ad is hotjobs.com.
10        Q.   Okay.  And what would other people call
11   that?  I think you said --
12        A.   Right.  So some people might call that an
13   atomic feature.
14        Q.   Why, because it's the lowest?
15        A.   It's the lowest form of fact, I guess.
16             The reason for the confusion here is that
17   when we first started using the term "feature" on
18   the Smart Ads team, nobody had yet pointed out that
19   "feature" was actually a common machine learning
20   term for something else.
21        Q.   That would make it confusing, huh?
22        A.   It does.  It's sort of an East Coast/West
23   Coast thing going on.  Depending on which office
24   you're in, you might call it something different.
```

**30. PAGE 158:09 TO 159:03 (RUNNING 00:00:56.030)**

```
09        Q.   Can you turn to Furrow 1.
10        A.   Yes.
11        Q.   Do you recognize this document?
12        A.   I don't know that I've seen it in its
13   present iteration, or the one that you're showing
14   me, but I recognize what it's for.
15        Q.   Are you familiar with the content?
16        A.   Well, like I said, I haven't seen the
17   previous version before.  I mean, I'm looking --
18   I've looked through it just now.  I wouldn't call
19   myself deeply familiar with it, but I have a
20   reasonably good idea of what it contains.
21        Q.   Okay.  Fair enough.
22             At the top it says "Author:  Gary Holt"?
23        A.   Yes.
24        Q.   Who is Gary Holt?
25        A.   Gary Holt is a software engineer working
00159:01   on Smart Ads in the Pittsburgh office.
02        Q.   What -- how big of a group is in the
03   Pittsburgh office?
```

**31. PAGE 159:05 TO 160:05 (RUNNING 00:01:24.595)**

```
05             THE WITNESS:  The -- it's been a year
06   since I was on the Smart Ads team, so I don't have a
07   very good notion of whether people have moved
08   around.  At the time that I left, there were maybe
09   approximately ten people -- oh, no -- maybe more
10   like approximately 14 people working on Smart Ads
11   out of Pittsburgh.
12   BY MR. CIMINO:
13        Q.   If I remember from your earlier testimony,
14   that is more than half the Smart Ads group?
15        A.   I think that's correct, yes.
16        Q.   Do you know why Pittsburgh?
17        A.   The, the gentleman who serves as director
18   of the Pittsburgh office, Andrew Moore, is a
19   professor, or was, I don't know if it's "is" or
20   "was," a professor from Carnegie Mellon University.
21   My understanding, but I don't have first-hand
```

```
         22  knowledge of this, is that Carnegie Mellon has a
         23  great machine learning program, and Dr. Moore wanted
         24  to incorporate -- he wanted to be able to hire a lot
         25  of people from CMU's machine learning Ph.D. program,
00160:01  and having a big team working on a machine learning
         02  project out of the Pittsburgh office would seem to
         03  be a good way of getting that.  This is my
         04  speculation based on things that I've heard about.
         05  I mean, it sort of fits together, I suppose.
```

**32. PAGE 161:18 TO 162:02  (RUNNING 00:00:24.801)**

```
         18       Q.   Is this a file that was actually used by
         19  the AdWords system?
         20       A.   I'm guessing it is file that is currently
         21  used by the AdWords system.
         22       Q.   What gives you that indication?
         23       A.   There's a comment saying Google 24
         24  launched 9th of May 2012.  I don't believe there's
         25  been a model launch since then, which suggests to me
00162:01  that this document contains the currently launched
         02  Smart Ads model.
```

**33. PAGE 162:03 TO 162:17  (RUNNING 00:00:45.159)**

```
         03       Q.   What does "Google 24" stand for?
         04       A.   It stands for the 24th model that was
         05  launched on Google.  It may not be exactly the 24th.
         06  I know we've skipped version numbers before,
         07  but . . .
         08       Q.   Does that suggest there is that at most,
         09  23 other models?
         10       A.   I would say it suggests there are
         11  approximately 23 previous models.
         12       Q.   So in our earlier discussion about finding
         13  the attribute templates for SmartASS production
         14  models, we would be looking for potentially 23 other
         15  models?
         16       A.   I believe it would be approximately 23
         17  previous model configurations, yes.
```

**34. PAGE 163:25 TO 164:07  (RUNNING 00:00:26.791)**

```
         25       Q.   Is it fair to say that this set of
00164:01  attributes would be the model in the production
         02  SmartASS since May of 2012?
         03       A.   It would be fair to say that these are the
         04  attribute templates, I believe based on the comments
         05  in the file, that were used in this Smart Ads model
         06  that was launched 9th of May 2012, and I believe
         07  persists as the production model to this date.
```

**35. PAGE 202:21 TO 204:01  (RUNNING 00:01:57.046)**

```
         21       Q.   So, Mr. Furrow, you looked at Furrow 2
         22  when we first pulled out the first five exhibits.
         23  Feel free to take some more time and look at Furrow
         24  Exhibit 2.  My question's going to be, do you
         25  recognize this document?
00203:01       A.   It's possible that I haven't seen it in
         02  its current form.  However, I do, like the previous
         03  document, I recognize its purpose and was involved
         04  in writing part of it, at least the part at the top,
         05  anyway.
         06       Q.   That's you at the top where it says
         07  "Author"?
         08       A.   That is me.
         09       Q.   Can you describe what this document is?
         10       A.   Well, this document appears to be similar
         11  to Furrow Exhibit 1, which was a record of the
         12  current Google Smart Ads model, production model as
         13  attribute templates.  I believe that this is a file
         14  containing various Google QBB models -- actually
         15  maybe not even just Google.  I would say various QBB
```

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```
16   models attribute templates.
17        Q.   Does this document, Furrow Exhibit 2, have
18   the current QBB attribute model?
19        A.   I think what you mean to ask is whether it
20   has the attribute templates of the current
21   production QBB model?
22        Q.   Yes, thank you.
23        A.   I believe that the current production QBB
24   model is QBB 4, I am, however, not certain of that.
25   And QBB 4 would appear to be the first model in
00204:01   here.
```

**36.  PAGE 222:02 TO 222:11  (RUNNING 00:00:28.179)**

```
02             We talked earlier about the components,
03   the components for AdWords, and I think we talked
04   about keyword servers, ad mixers and SmartASS,
05   SmartASS server.
06        A.   I wouldn't have called those components.
07   I would call those servers, but go ahead.
08        Q.   Ad mixer, you would refer to as a server?
09        A.   I would refer to all of those as servers.
10        Q.   Are there any other major servers or
11   components in the AdWords system?
```

**37.  PAGE 222:16 TO 223:11  (RUNNING 00:01:25.365)**

```
16        Q.   Can you describe what they are?
17        A.   I wouldn't be able to give you an
18   exhaustive list.  One example would be the creative
19   server which may currently be called the H creative
20   server, I'm not sure.  I think there's something
21   called the URL server.
22             Previously -- I mentioned that the keyword
23   server used to go by different names in times of
24   days gone by.  Certainly other servers would have,
25   would have changed, as well.  The architecture could
00223:01   have changed in certain ways.  So there may be older
02   versions that either I do or don't know about.
03             But currently I think the creative server,
04   I believe there's a URL server.
05             There are a few other servers -- oh,
06   what's this one called.  I'm forgetting the name of
07   the server.  It's a server that does expanded match
08   work, but the name's eluding me at the moment.
09   Those are the ones that come to mind.
10             Oh, and, I believe there's something
11   called the product ad server.
```

**38.  PAGE 223:12 TO 224:02  (RUNNING 00:00:44.002)**

```
12        Q.   For -- let's, I guess, start with the
13   keyword server, ad mixer server and Smart Ads
14   server.
15        A.   Sure.
16        Q.   Is there a single server, or are they
17   distributed?
18        A.   Any of the servers that I've just
19   described to you, including the ad mixer and the
20   SmartASS server and the keyword server, are all
21   servers of which there would be more than one
22   instance.
23        Q.   How are they connected?
24        A.   They will be connected via network
25   cabling, so a network of some sort.
00224:01        Q.   And the creative server and the URL server
02   also, they would be part of the network?
```

**39.  PAGE 224:04 TO 224:13  (RUNNING 00:00:17.923)**

```
04             THE WITNESS:  Yes.
05   BY MR. CIMINO:
06        Q.   Would they also be more than one server
07   that would be distributing?
```

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```
08         A.    The creative server and URL server, there
09  would be more than one of each of those, yes,
10  assuming that I've correctly remembered what these
11  servers are.
12         Q.    Are you aware of any patents that cover
13  SmartASS?
```

**40.  PAGE 224:15 TO 224:15  (RUNNING 00:00:00.772)**

```
15              THE WITNESS:  No.
```

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📁 **Holt, Gary (Vol. 01) - 08/23/2012**                    **1 CLIP  (RUNNING 00:39:52.470)**

🎬 Could you please state your full name, your ...

**HOLT**                    **107 SEGMENTS  (RUNNING 00:39:52.470)**                ▐▌║▌║▐║▌║▐▌║▐║▌▐

**1. PAGE 6:12 TO 6:15  (RUNNING 00:00:09.440)**

```
12   Q.   Could you please state your full name, your
13        current title and employer for the record.
14   A.   Gary Holt.  My employer is Google, and I'm a
15        software engineer at Google.
```

**2. PAGE 45:15 TO 46:09  (RUNNING 00:00:56.350)**

```
       15   Q.   Have you read the patents involved in this
       16        lawsuit?
       17   A.   I had not read them until the deposition
       18        preparation, and I still have not read all of
       19        them.
       20   Q.   Have you read the claims of the patents?
       21   A.   I read one of the claims in the deposition
       22        preparation.
00046:01   Q.   Have you looked into whether Google infringes
       02        the claims of those patents?
       03   A.   No.
       04   Q.   Has Google made any changes to its system as a
       05        direct result of this lawsuit?
       06   A.   No, not that I know of.
       07   Q.   Would you expect that if Google found,
       08        determined it was infringing the claims, that
       09        it would make changes?
```

**3. PAGE 46:14 TO 47:07  (RUNNING 00:01:11.515)**

```
       14   A.   It would depend on the nature of the, of what
       15        was discovered.  It would really depend a lot
       16        on what was discovered.
       17   Q.   And what do you mean by the nature of what was
       18        discovered?
       19   A.   Well, it depends -- it would depend on whether
       20        it was a minor detail or a major problem or
       21        a -- you know, that sort of thing.  And it
       22        also depends on what specific systems are
00047:01        determined, if any systems were determined to
       02        be a problem, it would depend on which
       03        specific systems were determined to be a
       04        problem, because there's many, many different
       05        systems involved.
       06   Q.   Do you have a sense of whether the claims in
       07        this case relate to a minor detail or not?
```

**4. PAGE 47:12 TO 47:14  (RUNNING 00:00:07.272)**

```
12   A.   I don't know.
13   Q.   In your own reviewing of the claims, did you
14        come to any conclusions on your own?
```

**5. PAGE 47:17 TO 48:03  (RUNNING 00:00:26.054)**

```
       17   A.   I am not sure what I -- since all of my
       18        reviewing of these was entirely within the
       19        deposition preparation, and I never heard of
       20        this before then, I don't know that there's
       21        anything that I can say about that.
       22   Q.   Well, aside from anything you discussed with
00048:01        your attorneys, in your own mind, did you come
       02        up with any conclusions that you didn't
       03        discuss with your attorneys?
```

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**6. PAGE 48:06 TO 48:11 (RUNNING 00:00:32.251)**

```
06  A.    I don't think I did.
07  Q.    Are you aware of any times in the past that
08        Google has changed its system as a result of
09        making a determination that it infringed bad
10        claims?
11  A.    No, no, I'm not aware of any.
```

**7. PAGE 48:22 TO 49:02 (RUNNING 00:00:07.218)**

```
   22   Q.   Does Google have any patents of its own on the
00049:01        Smart Ad system?
   02   A.   I don't know what patents we actually have.
```

**8. PAGE 49:03 TO 49:07 (RUNNING 00:00:09.679)**

```
03  Q.    Have you participated in the preparation of
04        any patents for Google Smart Ads system?
05  A.    No.
06  Q.    Are you personally aware of any patents on the
07        Smart Ads system?
```

**9. PAGE 49:09 TO 49:11 (RUNNING 00:00:05.469)**

```
09  A.    No, I am not aware.
10  Q.    Are you aware of any patents on the AdWords
11        system?
```

**10. PAGE 49:13 TO 49:13 (RUNNING 00:00:03.293)**

```
13  A.    I don't know of any.
```

**11. PAGE 61:16 TO 61:17 (RUNNING 00:00:04.406)**

```
16  Q.    Are you presently aware of any inaccuracies on
17        the help center documentation?
```

**12. PAGE 61:19 TO 61:22 (RUNNING 00:00:09.550)**

```
19  A.    In the deposition -- I had never read the
20        documentation until this case came up and we
21        were talking about some of this in the
22        deposition preparation.
```

**13. PAGE 62:05 TO 62:07 (RUNNING 00:00:08.100)**

```
05  Q.    So, sitting here today, are you -- you can
06        just answer yes or no, are you aware of any
07        inaccuracies on the help center documentation?
```

**14. PAGE 62:09 TO 62:10 (RUNNING 00:00:03.734)**

```
09  A.    I am -- I'm only aware of some of the things
10        that we --
```

**15. PAGE 62:12 TO 62:13 (RUNNING 00:00:05.127)**

```
12  A.    I guess I can't answer without talking about
13        exactly what we talked about, so.
```

**16. PAGE 63:22 TO 64:02 (RUNNING 00:00:05.702)**

```
   22        Sitting here today, are you aware of any
00064:01        inaccuracies in the Google help center
   02        documentation?
```

**17. PAGE 64:05 TO 64:11 (RUNNING 00:00:26.766)**

```
05  A.    I had not read the documentation up until the
06        deposition preparation, so I was not aware of
07        any.
08  Q.    Today are you aware of any inaccuracies in the
09        help center documentation?
10  A.    That relates to what we talked about in the
11        deposition preparation --
```

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**18. PAGE 64:19 TO 65:03 (RUNNING 00:00:22.931)**

```
      19  A.    I don't have any knowledge of the marketing
      20        documents outside of the deposition
      21        preparation.
      22  Q.    Have you done anything at Google to correct
00065:01        any inaccuracies in the help center
      02        documentation?
      03  A.    No, I never have.
```

**19. PAGE 65:04 TO 65:06 (RUNNING 00:00:05.699)**

```
      04  Q.    If you knew about inaccuracies, would you take
      05        any action to try to correct them on the help
      06        center documentation?
```

**20. PAGE 65:08 TO 65:12 (RUNNING 00:00:11.721)**

```
      08  A.    Well, again, it depends on the nature of the
      09        inaccuracy and the imprecision, or whatever it
      10        is.
      11  Q.    Does that mean there are certain inaccuracies
      12        you would allow to stay on the web page?
```

**21. PAGE 65:14 TO 65:17 (RUNNING 00:00:08.888)**

```
      14  A.    Yes.  As I said before, it depends on the
      15        nature of the inaccuracy, if it was an
      16        oversimplification or just an imprecise
      17        statement, that sort of thing.
```

**22. PAGE 68:14 TO 68:15 (RUNNING 00:00:02.744)**

```
      14  Q.    How does Google document its systems
      15        internally?
```

**23. PAGE 68:17 TO 69:03 (RUNNING 00:00:25.579)**

```
      17  A.    There's a variety of different ways that we
      18        document things.
      19  Q.    What are the variety of ways?
      20  A.    Some of them are on the -- some of them are on
      21        our internal Google docs documents, some of
      22        them are on wiki pages, some of them are on
00069:01        various HTML pages, scattered various
      02        different places.  There's a variety of
      03        different forms of documentation.
```

**24. PAGE 72:14 TO 72:16 (RUNNING 00:00:12.252)**

```
      14  Q.    When documents are collected for the internal
      15        search engine, does that involve use of the
      16        internal network?
```

**25. PAGE 72:18 TO 73:05 (RUNNING 00:00:29.536)**

```
      18  A.    Yes, it involves our internal corporate
      19        network.
      20  Q.    You also mentioned wiki pages.  Is there a
      21        name for the wiki pages?
      22  A.    Well, we usually just call it the wiki.
00073:01  Q.    Have you seen the name Goowiki used?
      02  A.    Yes, I have.
      03  Q.    Is that the wiki pages you mentioned for
      04        documenting the system?
      05  A.    Mostly, yes.
```

**26. PAGE 75:01 TO 75:17 (RUNNING 00:01:01.405)**

```
00075:01  Q.    So, we've talked about the internal Google
      02        docs, the wiki pages and the HTML pages as
      03        ways to document the system.
      04                  Are there any other ways the system
      05        is documented?
      06  A.    Sometimes in the code or in little text files
      07        interspersed in the code.
```

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```
08  Q.    Are there any other ways?
09  A.    Not that I can think of at the moment.
10  Q.    And why does Google document its systems using
11        these methods?
12  A.    So that engineers who come on to the project
13        can figure out what's going on, or so their
14        related teams can understand what's important
15        for them to know.
16  Q.    Is it important for the system documentation
17        that's used by engineers to be accurate?
```

**27. PAGE 75:19 TO 75:22  (RUNNING 00:00:09.700)**

```
19  A.    Well, it sure helps.
20  Q.    When preparing -- have you prepared system
21        documentation?
22  A.    Some, yes.
```

**28. PAGE 76:01 TO 76:06  (RUNNING 00:00:14.894)**

```
00076:01  Q.    And when you've prepared system documentation,
02        have you tried to be as accurate as possible?
03  A.    Yes.
04  Q.    Do engineers sometimes use the system
05        documentation to get up to speed on how a
06        system works?
```

**29. PAGE 76:08 TO 76:08  (RUNNING 00:00:00.637)**

```
08  A.    Yes.
```

**30. PAGE 76:09 TO 76:14  (RUNNING 00:00:12.680)**

```
09  Q.    What else might they use it for?
10  A.    Well, if they don't work in that area but they
11        need to know something about it because of --
12        well, a variety of reasons, sometimes it helps
13        them to understand what other teams do and how
14        they work.
```

**31. PAGE 76:15 TO 76:18  (RUNNING 00:00:07.000)**

```
15  Q.    Does Google have technical writers?
16  A.    Yes.
17  Q.    What is the job of a technical writer at
18        Google?
```

**32. PAGE 76:20 TO 77:01  (RUNNING 00:00:11.953)**

```
20  A.    It is to produce some of these technical
21        documents and sometimes to digest poorly
22        written documents into better written ones and
00077:01        that sort of thing.
```

**33. PAGE 77:02 TO 77:03  (RUNNING 00:00:02.900)**

```
02  Q.    Do technical writers have a technical
03        background?
```

**34. PAGE 77:05 TO 77:05  (RUNNING 00:00:01.585)**

```
05  A.    I don't know actually.
```

**35. PAGE 77:06 TO 77:07  (RUNNING 00:00:06.614)**

```
06  Q.    Is it important for technical writers to
07        document the systems accurately?
```

**36. PAGE 77:09 TO 77:09  (RUNNING 00:00:03.256)**

```
09  A.    As important as it is for anybody else.
```

**37. PAGE 77:10 TO 77:15  (RUNNING 00:00:14.782)**

```
10  Q.    Do you know Daniel Gilly?
11  A.    I don't know him personally.
12  Q.    Are you familiar with any of his work?
13  A.    Some.
```

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```
14  Q.    Have you found his work to be generally
15        accurate?
```

**38. PAGE 77:17 TO 77:21 (RUNNING 00:00:11.706)**

```
17  A.    I have actually rarely used his work, because
18        it was about stuff that -- the stuff that I
19        was familiar with was about stuff that I
20        already knew about.  So, I haven't really
21        referred to it.
```

**39. PAGE 100:07 TO 100:11 (RUNNING 00:00:12.405)**

```
07  Q.    So, I want to try to understand the purpose of
08        the disabling steps and why Google wouldn't
09        just rank all of the items and show the top
10        number of items.  What would be the purpose of
11        the disabling steps?
```

**40. PAGE 100:13 TO 101:11 (RUNNING 00:01:27.599)**

```
13      A.    We want to protect ourselves -- I believe that
14            the idea here is that we want to protect
15            ourselves against ads blindness.  So, there
16            are many cases where we would prefer not to
17            show any ads at all rather than to show some
18            ads that have a low expected rate of return.
19            As far as I understand, that is the main
20            purpose.
21      Q.    And that wouldn't be accomplished by merely
22            ranking the ads and showing the top ones; is
00101:01      that right?
02      A.    Generally speaking, we have -- I mean,
03            advertisers will often tell us to show their
04            ad on all kinds of irrelevant things, and
05            they're not only irrelevant, but just bad
06            areas where we should show them.  So, we can
07            often -- not always, but we can often find
08            more ads than we, than are -- we can often
09            find more ads than we show.  So, if we didn't
10            have these disabling steps, we would show a
11            lot more ads, yes.
```

**41. PAGE 106:02 TO 106:12 (RUNNING 00:00:45.943)**

```
02  Q.    Are you familiar with the term quality score?
03  A.    Well, I have seen the term and it's a pretty
04        vague term.
05  Q.    Where have you seen it?
06  A.    In, probably the main place I would have seen
07        it is in some of our internal documentation.
08        As I said, it's a pretty vague word, so we
09        tend to avoid using it.
10  Q.    By internal documentation, do you mean
11        documentation used by engineers?
12  A.    Yes.
```

**42. PAGE 106:13 TO 107:03 (RUNNING 00:00:47.659)**

```
13      Q.    In what sense have you seen it used?
14      A.    Well, the quality score, there's a whole --
15            the reason why it's vague is there's a bunch
16            of different quality scores involved.  There's
17            the QBB score based on the QBB model.
18            Sometimes the Smart Ads pCTR model is thought
19            of as a quality score.  Sometimes the landing
20            page quality, sometimes we have some other
21            things called the creative quality.  There's
22            some other quality scores involved.
00107:01  Q.    And so any of those that you just discussed
02            might be referred to just as quality score; is
03            that right?
```

**43. PAGE 107:05 TO 107:14 (RUNNING 00:00:40.041)**

```
05  A.    Well, it depends on the context.
06  Q.    Are you aware of any usages of quality score
07        that wouldn't involve at least a pCTR computed
08        by Smart Ads?
09  A.    Well, the landing page quality things I do not
10        believe have anything to do with Smart Ads.
11        And then there's another creative quality
12        score, which I don't know much about, which I
13        believe has nothing to do with Smart Ads as
14        well.
```

**44. PAGE 114:05 TO 114:15 (RUNNING 00:00:38.856)**

```
05  Q.    What was used prior to the introduction of
06        Smart Ads?
07  A.    It was something called Criteria Stats.
08  Q.    How did that work?
09  A.    Well, I'm somewhat vague on the details
10        because I've never seen the code.  But it
11        tried to get some sort of an estimate of the
12        click probabilities normalized for where the
13        ad occurred, and I don't know how they did
14        that part.
15  Q.    Is Smart Ads an improvement on Criteria Stats?
```

**45. PAGE 114:17 TO 114:18 (RUNNING 00:00:04.315)**

```
17  A.    We believed that it was by the metrics we
18        looked at.
```

**46. PAGE 114:19 TO 115:03 (RUNNING 00:00:19.463)**

```
        19  Q.    What metrics were you looking at?
        20  A.    Well, I wasn't there.
        21  Q.    What metrics was Google looking at to
        22        determine that?
00115:01  A.    I'm not entirely sure.  I actually don't know,
        02        that would be discussed in the -- I don't
        03        know.
```

**47. PAGE 187:15 TO 188:08 (RUNNING 00:01:53.021)**

```
        15  Q.    Mr. Holt, are you familiar with this document?
        16  A.    I had not seen this whole -- I don't know if I
        17        have seen the final form of this document at
        18        all until the -- I was not familiar with the
        19        final form of this document, although I think
        20        I've seen pieces of it.
        21  Q.    When have you seen pieces of it?
        22  A.    I think at one point I corresponded with
00188:01        Daniel Gilly about some of this stuff, and to
        02        be honest, I don't actually remember the
        03        details of those conversations at this point,
        04        or correspondence.
        05  Q.    And when have you seen the final form of this
        06        document?
        07  A.    I had not seen the final form of this document
        08        until deposition preparation.
```

**48. PAGE 188:14 TO 189:02 (RUNNING 00:00:27.323)**

```
        14  Q.    Why would you have worked with Daniel Gilly on
        15        parts of this document?
        16  A.    This was awhile ago, so I don't remember
        17        exactly.  But I think he had asked me some
        18        questions while he was trying to put this
        19        together, and I don't remember what the
        20        questions were.
        21  Q.    Do you recall answering his questions?
        22  A.    I did answer them, yes.
00189:01  Q.    Did you answer them as accurately as you
        02        could?
```

**49. PAGE 189:04 TO 189:04 (RUNNING 00:00:03.307)**

```
04  A.     Yes, I would say that I did.
```

**50. PAGE 189:05 TO 189:12 (RUNNING 00:00:19.472)**

```
05  Q.     If you'll take a look at the second page of
06         this document that's marked G-IPE-223567.
07         There's a series of steps listed here.  If we
08         look down at step 4, it says:  We apply
09         targeting to find ads that match the use of
10         query.
11                   Is that the targeting we discussed
12         earlier?
```

**51. PAGE 189:14 TO 190:02 (RUNNING 00:00:34.903)**

```
14  A.     He is -- well, I'm not -- these are the terms
15         that we use to describe that, these are some
16         of the terms that we use to describe that
17         targeting, with expanded match.
18  Q.     In the next paragraph, it says:  Once we have
19         a set of matching ads for targeting, we apply
20         the first round of disabling.  This is
21         sometimes called shard disabling or disabling
22         1.
00190:01                 You understand this is the QBB
   02         disabling we discussed earlier?
```

**52. PAGE 190:04 TO 190:09 (RUNNING 00:00:15.371)**

```
04  A.     That is what he says here.
05  Q.     It says:  In the disabling phase, we filter
06         out inferior ads based on quality score, a
07         score that's calculated to and by the quality-
08         based bidding team.
09                   Is that a fair statement?
```

**53. PAGE 190:11 TO 190:20 (RUNNING 00:00:32.448)**

```
11  A.     I don't think it's actually right, for one
12         thing, I might be wrong about this, but I
13         don't think the ads are ever even present in
14         the shard if they've been disabled by QBB.
15         So, I had thought that the removal of these
16         disabled ads was a little bit earlier.  But
17         also of course it's based on the, you know,
18         combination of the -- QBB sets the minimum
19         bid, and the ad is still there if the bid is
20         high enough.
```

**54. PAGE 190:21 TO 190:22 (RUNNING 00:00:04.375)**

```
21  Q.     But the filtering is at least based in part on
22         quality score; is that right?
```

**55. PAGE 191:02 TO 191:08 (RUNNING 00:00:23.670)**

```
02  A.     We remove ads based on whether they're --
03         well, ads are eliminated from consideration if
04         their QBB score -- if the minimum bid set by
05         the QBB score is greater than the bid the
06         advertiser made.
07  Q.     Is there a difference to you between removing
08         ads and filtering ads?
```

**56. PAGE 191:10 TO 191:19 (RUNNING 00:00:36.055)**

```
10  A.     They denote the same thing, but sometimes they
11         connote something different.
12  Q.     What do you mean by that?
13  A.     Well, like, what he's saying here -- sorry.
14         We don't just remove -- I mean, I think --
15         this is not simply like a filter based on
16         quality because it's all confounded with the
17         bid.  The bid can compensate for deficiencies
```

```
         18          in quality by these estimates.
         19   Q.     So, is it a filter based on quality and bid?
```

**57. PAGE 191:21 TO 191:22 (RUNNING 00:00:05.634)**

```
         21   A.     I think that would be a -- I believe that's a
         22          fair statement.
```

**58. PAGE 195:17 TO 196:02 (RUNNING 00:00:32.091)**

```
         17   Q.     If you'll turn to page G-IPE-223573.  If
         18          you'll take a look at the bottom of the page,
         19          could you read what it says under
         20          introduction.
         21   A.     Smart Ads is one of the most important systems
         22          for maintaining and improving the quality of
    00196:01          ads we serve.
         02   Q.     Would you say that's a fair statement?
```

**59. PAGE 196:04 TO 196:05 (RUNNING 00:00:07.832)**

```
         04   A.     I think it is fair to say that Smart Ads is an
         05          important system.
```

**60. PAGE 209:22 TO 210:07 (RUNNING 00:00:22.538)**

```
         22                    Who is the audience for this
    00210:01          document?
         02   A.     I believe that he wrote this document to help
         03          ads quality, like, newer ads quality engineers
         04          who hadn't absorbed it all, and perhaps people
         05          on the outside of ads quality who occasionally
         06          have to interact with ads quality so they know
         07          it is that we do.
```

**61. PAGE 210:12 TO 210:13 (RUNNING 00:00:06.747)**

```
         12   Q.     Would engineers use this to get up to speed on
         13          how the system works?
```

**62. PAGE 210:15 TO 210:16 (RUNNING 00:00:04.909)**

```
         15   A.     This would probably be part of what they would
         16          use to get up to speed, it might be.
```

**63. PAGE 210:17 TO 210:18 (RUNNING 00:00:05.718)**

```
         17   Q.     In the portions we reviewed, did you notice
         18          any inaccuracies as we reviewed it today?
```

**64. PAGE 210:20 TO 211:04 (RUNNING 00:00:51.674)**

```
         20   A.     Well, there's a number of things in here that
         21          are now obsolete, obsolete, and some of the
         22          stuff is slightly -- I mean, this is also a
    00211:01          fairly high -- there's a lot of details that
         02          are not in here.  Let's see, what else did we
         03          talk about?  Nothing else brings to mind right
         04          now.
```

**65. PAGE 213:15 TO 214:07 (RUNNING 00:01:10.536)**

```
         15   Q.     You can set that document aside and we'll turn
         16          to the next document.  This will be marked
         17          Exhibit 7.
         18                 (Deposition Exhibit No. 7 was
         19            marked for identification.)
         20   Q.     Do you recognize this document?
         21   A.     This appears to be slides from a machine
         22          learning class, presentation of an idea.
    00214:01   Q.     Do you recall giving this presentation?
         02   A.     I've given this presentation or something
         03          quite similar to it several times.
         04   Q.     Who was the audience for the presentation
         05          those several times?
         06   A.     People taking the machine learning class at
```

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```
        07         Google.
```

**66. PAGE 214:19 TO 215:05 (RUNNING 00:00:38.534)**

```
        19    Q.   Did you personally prepare this presentation?
        20    A.   This one I pulled together the slides from
        21         another machine learning presentation, and I
        22         added some of my own.  So, in that sense, I
   00215:01         personally prepared it.
        02    Q.   Would you have tried to be as accurate as
        03         possible in this presentation?
        04    A.   As accurately as I knew.
        05    Q.   Can we trust this document to be correct?
```

**67. PAGE 215:07 TO 215:09 (RUNNING 00:00:10.839)**

```
        07    A.   It depends on what you're trusting it for.
        08    Q.   Can we trust this document to give a correct
        09         description of the system?
```

**68. PAGE 215:11 TO 215:13 (RUNNING 00:00:11.276)**

```
        11    A.   Well, as much as I knew at the time and with
        12         the usual caveats about simplifying things and
        13         sometimes speaking imprecisely.
```

**69. PAGE 218:06 TO 218:16 (RUNNING 00:00:37.721)**

```
        06    Q.   If you would turn to page G-IPE-0426040.  I
        07         believe you just mentioned this slide.
        08    A.   Uh-huh.
        09    Q.   This slide talks about Criteria Stats.  Is
        10         that the same Criteria Stats system we
        11         discussed earlier?
        12    A.   Yes.
        13    Q.   Here it says:  Turning Smart Ads on gave an
        14         immediate 20 percent gain in revenue and
        15         clicks.  Do you understand that to be
        16         accurate?
```

**70. PAGE 218:18 TO 218:22 (RUNNING 00:00:20.460)**

```
        18    A.   As we discussed earlier, I had that number --
        19         I thought I had heard that number from another
        20         engineer, and I have no personal knowledge of
        21         it.
        22    Q.   And how would Google arrive at that number?
```

**71. PAGE 219:02 TO 219:12 (RUNNING 00:00:37.356)**

```
        02    A.   At the time when we launched Smart Ads, we
        03         must have done some experiments.  It is always
        04         extremely difficult to trip with experimental
        05         results, because sometimes there's short-term
        06         changes that don't last into the long term and
        07         so on.  So, it's very hard to -- so, even if
        08         we had experimental results at the time, it's
        09         hard necessarily to say that that would be a
        10         sustained gain or loss.  But they must have
        11         done some experiments at the time, which I
        12         have not actually seen myself.
```

**72. PAGE 219:13 TO 219:17 (RUNNING 00:00:10.627)**

```
        13    Q.   Below that, there's a bullet point that says:
        14         Now the difference is probably greater than 40
        15         percent when Smart Ads fails.  How would you
        16         know that?
        17    A.   Well --
```

**73. PAGE 219:19 TO 220:08 (RUNNING 00:00:37.610)**

```
        19    A.   Well, first of all, now I don't think that's
        20         actually true, in terms of revenue, because
        21         now I actually have looked at the numbers when
        22         Smart Ads fails, and it's not 40 percent.  I
```

```
00220:01        don't know what it is in terms of clicks or
      02        CTR or anything like that.  But we can and
      03        sometimes do measure what happens when the
      04        SmartASS isn't there, and we fall back to
      05        whatever we fall back to.  We don't actually
      06        have Criteria Stats anymore, it does not exist
      07        in our code anymore, so we can't actually
      08        experiment with that anymore.
```

**74.  PAGE 220:14 TO 221:12 (RUNNING 00:01:01.622)**

```
      14   Q.   If it's not greater than 40 percent today, do
      15        you have new numbers?
      16             MR. PERLSON:  Objection, form.
      17   A.   Well, as I said earlier, we have done these
      18        experiments where we turned SmartASS off or we
      19        just looked at the numbers when SmartASS has
      20        failed.  I have not looked at these numbers
      21        too recently, but my impression is that the
      22        revenue difference is not that large.
00221:01   Q.   By not that large, what would your estimate
      02        be?
      03             MR. PERLSON:  Objection, form.
      04   A.   We might even make more money if we turn
      05        SmartASS off in the short term, I don't know.
      06        We've certainly seen cases like that.  It
      07        depends on a lot of factors about how the,
      08        whatever we fall back to is adjusted and how
      09        it's tuned and stuff.  And I am not sure what
      10        the -- some people have done experiments on
      11        this more recently, and I do not remember the
      12        results.
```

**75.  PAGE 223:15 TO 224:14 (RUNNING 00:01:17.031)**

```
      15   Q.   If you'll turn to page GG-IPE-0426045.
      16   A.   Okay.
      17   Q.   What is this referring to when it says
      18        generation of features from the logs?
      19   A.   This is talking about how we -- well, we had
      20        these features that we used to combine into
      21        the attributes.  Unless it's talking about how
      22        we -- those features are stored independently,
00224:01        and this is talking about how we do that.
      02   Q.   And what does it mean to generate it from the
      03        logs?
      04   A.   Well, it means to look at the information
      05        that's present in the logs and transform it
      06        along with perhaps sight information into the
      07        actual feature value and then store that on
      08        the disk.
      09   Q.   And those logs would include the user clicks;
      10        is that correct?
      11   A.   It's the query logs and the click logs.
      12   Q.   So, it would include both the query that a
      13        person ran and whether they clicked an ad or
      14        not; is that correct?
```

**76.  PAGE 224:16 TO 224:16 (RUNNING 00:00:00.244)**

```
      16   A.   Yes.
```

**77.  PAGE 236:01 TO 236:01 (RUNNING 00:00:02.303)**

```
00236:01   Q.   How would you define searching?
```

**78.  PAGE 236:03 TO 236:08 (RUNNING 00:00:24.749)**

```
      03   A.   Well, my initial definition would be something
      04        like where you're scanning systematically
      05        through things, and that is not the way that
      06        AdWords, it doesn't -- we don't do any sort of
      07        systematic scans when we're actually serving
      08        the stuff.
```

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**79. PAGE 236:09 TO 236:11 (RUNNING 00:00:06.804)**

```
09  Q.   Does the AdWords system, in the targeting
10       step, is that looking for ads related to the
11       query?
```

**80. PAGE 236:13 TO 236:20 (RUNNING 00:00:32.349)**

```
13  A.   Yeah, but it's looking -- well, it's looking
14       for ads for which the query can be transformed
15       into the keyword, to be precise.  Once again,
16       that's a database lookup, mostly, that's
17       probably the way it would be mostly
18       described.  It's certainly not scanning.
19  Q.   And that database lookup, that's looking on
20       the up chards; is that correct?
```

**81. PAGE 236:22 TO 237:01 (RUNNING 00:00:02.906)**

```
      22  A.   Yes, the chards are the way that we implement
00237:01       that.
```

**82. PAGE 237:15 TO 237:15 (RUNNING 00:00:03.381)**

```
15  Q.   Does the AdWords system filter advertisements?
```

**83. PAGE 237:17 TO 238:01 (RUNNING 00:00:31.607)**

```
17  A.   Well, again, the AdWords system certainly
18       throws things out of the auction, and it
19       throws them out based on bid.  If you want to
20       call that filtering -- well, filtering usually
21       connotes, at least the way it's mostly used --
      22       well, it certainly removes stuff from the
00238:01       auction.
```

**84. PAGE 238:04 TO 238:06 (RUNNING 00:00:08.683)**

```
04  Q.   In the context of maybe data systems and
05       filtering information, what would you consider
06       filtering to be?
```

**85. PAGE 238:08 TO 238:11 (RUNNING 00:00:22.426)**

```
08  A.   It is emitting certain things based on --
09       well, based on what is usually a very simple
10       criteria.
11  Q.   Does the AdWords system do that?
```

**86. PAGE 238:13 TO 239:01 (RUNNING 00:01:09.153)**

```
13  A.   I think if you talk to most computer
14       scientists, technically -- any way to remove
15       stuff can be reduced to a filter, but what we
16       usually mean by that -- how do I want to say
17       this?
18  Q.   Maybe I'll simplify the question.  You said if
19       you talk to most computer scientists, any way
20       to remove stuff can be referred to as a
21       filter.
      22            Does AdWords have a way to remove
00239:01       advertisements?
```

**87. PAGE 239:03 TO 239:11 (RUNNING 00:00:30.912)**

```
03  A.   It certainly does, and so you can certainly
04       stretch the definition of filter to cover
05       that.  I guess what I'm trying to say is, I
06       don't know if that's the natural language to
07       describe it, and I don't know how much further
08       I --
09  Q.   Why do you say it would be stretching the
10       definition, if that's the definition most
11       computer scientists would give?
```

**88. PAGE 239:13 TO 239:19 (RUNNING 00:00:58.487)**

```
13  A.    I guess it's sort of unnatural to think of --
14        I'm sorry, I'm tired.  I think that -- I'm not
15        sure.  It just seems like an odd way to
16        describe a search engine, but I don't know if
17        I can give you an intuitive explanation for
18        why that would be an odd way to describe
19        things.
```

**89. PAGE 241:16 TO 241:20 (RUNNING 00:00:18.940)**

```
16  Q.    So, if we use the computer science definition
17        that we discussed before, using that
18        definition, would you say Google AdWords
19        filters in part based on the content of the
20        query and the advertisement?
```

**90. PAGE 241:22 TO 242:14 (RUNNING 00:00:50.075)**

```
      22  A.    What does content of the query mean?
00242:01  Q.    What would you consider content of the query
      02        to mean?
      03  A.    Query is a string, what kind of content does
      04        it have?
      05  Q.    The words in the query for example.
      06  A.    Okay.  Well, usually when we talk about
      07        content, we're talking about like a document
      08        which is a container for a bunch of words.  A
      09        query is a bunch of words.  I mean, I guess
      10        you can define a query to be a container for
      11        words, in which case, then yes.  What we do is
      12        we throw out stuff based on the words in the
      13        query and some of the information we get from
      14        the creative and other aspects of the ad.
```

**91. PAGE 245:16 TO 245:17 (RUNNING 00:00:06.233)**

```
16  Q.    Does AdWords throw out ads based in part on
17        clicks from users?
```

**92. PAGE 245:19 TO 246:04 (RUNNING 00:00:32.178)**

```
      19  A.    We throw them out based on pCTR, which as we
      20        said, is an accumulation of data from any
      21        previous events, any previous impressions that
      22        shared attributes with the impression under
00246:01        consideration.
      02  Q.    So, given that, is it fair to say AdWords
      03        throws out ads based in part on clicks from
      04        users?
```

**93. PAGE 246:06 TO 246:10 (RUNNING 00:00:10.433)**

```
06  A.    We certainly use the click information to
07        compute all of this stuff.
08  Q.    And you would use that information to compute
09        the value that is used to throw out ads; is
10        that correct?
```

**94. PAGE 246:12 TO 246:18 (RUNNING 00:00:20.543)**

```
12  A.    Yes, we use that to compute the pCTR, which is
13        part of the -- which is one component of the
14        disabling function.  We use the clicks on ads
15        or any ads that share any of the attributes in
16        common.
17  Q.    Does AdWords receive feedback data from its
18        users on advertisements that the users view?
```

**95. PAGE 246:20 TO 246:21 (RUNNING 00:00:02.240)**

```
20  A.    Well, what kind of feedback are you thinking
21        of?
```

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**96. PAGE 246:22 TO 246:22 (RUNNING 00:00:01.592)**

```
22   Q.   Any kind of feedback data.
```

**97. PAGE 247:02 TO 247:05 (RUNNING 00:00:09.018)**

```
02   A.   Whether the users thought this was great or
03        not, is that the sort of the feedback you're
04        talking about?  The users don't, for the most
05        part, have a mechanism of telling us that.
```

**98. PAGE 247:06 TO 247:09 (RUNNING 00:00:07.027)**

```
06   Q.   How about the click data?
07   A.   Yes, we have the clicks.
08   Q.   Wouldn't you consider that feedback from your
09        users?
```

**99. PAGE 247:11 TO 247:12 (RUNNING 00:00:07.971)**

```
11   A.   It's a form of the users giving us information
12        about what they thought was useful.
```

**100. PAGE 247:13 TO 247:13 (RUNNING 00:00:02.462)**

```
13   Q.   Would you call it passive feedback maybe?
```

**101. PAGE 247:15 TO 248:01 (RUNNING 00:00:39.134)**

```
15   A.   I'm not sure what passive feedback means.
16        It's not feedback that's directory related
17        to -- it's not, like, a rate that's on a scale
18        from 1 to 10, that's not that kind of
19        feedback, it's more -- it's a different sort
20        of -- I mean, yes, we get -- the clicks are
21        the only signal -- well, not the only signal,
22        but the main signal that we use in the pCTR
00248:01  for adjustments of our pCTR.
```

**102. PAGE 248:02 TO 248:02 (RUNNING 00:00:02.304)**

```
02   Q.   So, it's a form of feedback?
```

**103. PAGE 248:04 TO 248:09 (RUNNING 00:00:20.631)**

```
04   A.   It's a response from the users.
05   Q.   Is that a form of feedback?
06   A.   Certainly you could call it that I suppose.
07   Q.   And pCTR is a rating; is that correct?
08   A.   A rating?
09   Q.   Yes.
```

**104. PAGE 248:11 TO 248:12 (RUNNING 00:00:05.956)**

```
11   A.   Well, we never use that word internally.  It
12        depends on what you mean by rating.
```

**105. PAGE 248:13 TO 249:19 (RUNNING 00:01:34.768)**

```
13   Q.   What do you understand a rating to be?
14   A.   Well, like internally, we have, sometimes we
15        actually have people go and look at the ads
16        and rank them on a scale from 1 to 10,
17        whatever, like, this is a good, this is a good
18        ad, this is a bad ad.  That's a rating.  And
19        basically the humans that are doing this kind
20        of rating see the query, then they see this
21        ad, and there's a rating saying yes, I think
22        this is the -- this is or is not a good ad for
00249:01  this particular thing.  That's what internally
02        we would call a rating.  We don't use that
03        stuff.
04   Q.   So, ratings could be on a scale from 1 to 10;
05        right?
06   A.   Well, that's an example, yeah.
07   Q.   What is the scale for pCTR, what is the range
08        of scores?
```

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```
09   A.    0 to 1.
10   Q.    And what does the 0 to 1 indicate?
11   A.    It indicates the, our estimate of the
12         probability that someone will click if the ad
13         were shown on the first search results page
14         and the first ad on the right-hand side.
15   Q.    Is it reasonable to say that's a form of a
16         rating?
17   A.    I suppose in some context, you could call
18         that, I guess.  I don't know.  It's not what
19         we call it internally.
```

**106.  PAGE 249:22 TO 250:01  (RUNNING 00:00:05.072)**

```
      22   Q.    Is there a difference between filtering items
 00250:01         and ranking items?
```

**107.  PAGE 250:03 TO 250:10  (RUNNING 00:00:34.520)**

```
03   A.    Well, usually ranking means changing the
04         order.  Filtering doesn't have anything to do
05         with the order.
06   Q.    What does filtering have to do with it?
07   A.    Whether it's present or not.
08   Q.    So, you would consider filtering to be
09         different than rank?
10   A.    In most cases, I suppose.
```

**TOTAL: 5 CLIPS FROM 4 DEPOSITIONS (RUNNING 02:28:50.202)**