

EXHIBIT MM

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15 UNITED STATES DISTRICT COURT
16 NORTHERN DISTRICT OF CALIFORNIA
17 OAKLAND DIVISION

18 MATTHEW CAMPBELL, MICHAEL
19 HURLEY, and DAVID SHADPOUR,

20 Plaintiffs,

21 v.

22 FACEBOOK, INC.,

23 Defendant.

Case No. C 13-05996 PJH (MEJ)

PUTATIVE CLASS ACTION

**DEFENDANT FACEBOOK, INC.'S
SECOND SUPPLEMENTAL RESPONSES
AND OBJECTIONS TO PLAINTIFFS'
NARROWED SECOND SET OF
INTERROGATORIES**

24
25
26 HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY

27 SUBJECT TO PROTECTIVE ORDER

1 Defendant Facebook, Inc. (“Defendant” or “Facebook”), by and through its attorneys, and
2 pursuant to Rules 26 and 33 of the Federal Rules of Civil Procedure, the Local Civil Rules of the U.S.
3 District Court for the Northern District of California, the Court orders in this action, and the parties’
4 agreements, provides the following second supplemental responses and objections to Plaintiffs’
5 Narrowed Second Set of Interrogatories (the “Interrogatories”).

6 **PRELIMINARY STATEMENT**

7 1. Facebook’s responses to the Interrogatories are made to the best of Facebook’s current
8 knowledge, information, and belief. Facebook reserves the right to supplement or amend any of its
9 responses should future investigation indicate that such supplementation or amendment is necessary.

10 2. Facebook’s responses to the Interrogatories are made solely for the purpose of and in
11 relation to this action. Each response is given subject to all appropriate objections (including, but not
12 limited to, objections concerning privilege, competency, relevancy, materiality, propriety, and
13 admissibility). All objections are reserved and may be interposed at any time.

14 3. Facebook’s responses are premised on its understanding that Plaintiffs seek only that
15 information that is within Facebook’s possession, custody, and control.

16 4. Facebook incorporates by reference each and every general objection set forth below
17 into each and every specific response. From time to time, a specific response may repeat a general
18 objection for emphasis or some other reason. The failure to include any general objection in any
19 specific response shall not be interpreted as a waiver of any general objection to that response.

20 5. Nothing contained in these Responses and Objections or provided in response to the
21 Interrogatories consists of, or should be construed as, an admission relating to the accuracy,
22 relevance, existence, or nonexistence of any alleged facts or information referenced in any
23 Interrogatory.

24 **GENERAL OBJECTIONS**

25 1. Facebook objects to each Interrogatory, including the Definitions and Instructions, to
26 the extent that it purports to impose obligations beyond those imposed by the Federal Rules of Civil
27 Procedure, the Federal Rules of Evidence, the Local Civil Rules of the U.S. District Court for the
28 Northern District of California, and any agreements between the parties.

1 2. Facebook objects to each Interrogatory to the extent that it is not limited to the
2 relevant time period, thus making the Interrogatory overly broad, unduly burdensome, and not
3 relevant to the claims or defenses in this action. Unless otherwise specified in its responses, and
4 pursuant to the agreement of the parties, Facebook's responses will be limited to information
5 generated between April 1, 2010 and December 30, 2013.

6 3. Facebook objects to each Interrogatory to the extent that it seeks information unrelated
7 and irrelevant to the claims or defenses in this litigation and not reasonably calculated to lead to the
8 discovery of admissible evidence.

9 4. Facebook objects to each Interrogatory as overly broad and unduly burdensome,
10 particularly in view of Facebook's disproportionate cost necessary to investigate as weighed against
11 Plaintiffs' need for the information. The Interrogatories seek broad and vaguely defined categories of
12 materials that are not reasonably tailored to the subject matter of this action.

13 5. Facebook objects to each Interrogatory to the extent that it purports to request the
14 identification and disclosure of information or documents that were prepared in anticipation of
15 litigation, constitute attorney work product, reveal privileged attorney-client communications, or are
16 otherwise protected from disclosure under any applicable privileges, laws, or rules. Facebook hereby
17 asserts all such applicable privileges and protections, and excludes privileged and protected
18 information from its responses to each Interrogatory. *See generally* Fed. R. Evid. 502; Cal. Code
19 Evid. § 954. Inadvertent production of any information or documents that are privileged or otherwise
20 immune from discovery shall not constitute a waiver of any privilege or of any other ground for
21 objecting to the discovery with respect to such information or documents or the subject matter
22 thereof, or the right of Facebook to object to the use of any such information or documents or the
23 subject matter thereof during these or any other proceedings. In the event of inadvertent disclosure
24 of any information or inadvertent production or identification of documents or communications that
25 are privileged or otherwise immune from discovery, Plaintiffs will return the information and
26 documents to Facebook and will be precluded from disclosing or relying upon such information or
27 documents in any way.

28 6. Facebook objects to each and every Interrogatory to the extent that the information

1 sought by the Interrogatory is more appropriately pursued through another means of discovery, such
2 as a request for production or deposition.

3 7. Facebook objects to each and every Interrogatory, Definition, and Instruction to the
4 extent that it seeks information outside of Facebook's possession, custody, and control.

5 8. Facebook objects to each Interrogatory to the extent that it requests information
6 protected by the right of privacy of Facebook and/or third parties, or information that is confidential,
7 proprietary, or competitively sensitive.

8 9. Facebook objects to each Interrogatory to the extent that it seeks documents or
9 information already in Plaintiffs' possession or available in the public domain. Such information is
10 equally available to Plaintiffs.

11 10. Facebook objects to each Interrogatory on the ground and to the extent that it exceeds
12 the bounds of Federal Rule of Civil Procedure 33(a)(1), which provides that "a party may serve on
13 any other party no more than 25 written interrogatories, including all discrete subparts."

14 **OBJECTIONS TO DEFINITIONS**

15 1. Facebook objects to Plaintiffs' definition of "Association" to the extent that it is
16 vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects to the definition
17 to the extent that Plaintiffs purport to use this defined term to seek materials that are not relevant to
18 the claims and defenses in this action.

19 2. Facebook objects to Plaintiffs' definition of "Association Type" or "(atype)" to the
20 extent that it is vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects
21 to the definition to the extent that Plaintiffs purport to use this defined term to seek materials that are
22 not relevant to the claims and defenses in this action.

23 3. Facebook generally objects to Plaintiffs' definitions of "Communication,"
24 "Document(s)," "Electronic Media," "ESI," "Electronically Stored Information," "Identify," and
25 "Metadata" to the extent that Plaintiffs purport to use these defined terms to request the identification
26 and disclosure of documents that: (a) were prepared in anticipation of litigation; (b) constitute
27 attorney work product; (c) reveal privileged attorney-client communications; or (d) are otherwise
28 protected from disclosure under any applicable privileges, laws, and/or rules. Facebook further

1 objects to the extent that these definitions purport to impose obligations that go beyond the
2 requirements of the Federal and Local Rules.

3 4. Facebook objects to Plaintiffs' definition of "Destination Object" or "(id2)" to the
4 extent that it is vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects
5 to the definition to the extent that Plaintiffs purport to use this defined term to seek materials that are
6 not relevant to the claims and defenses in this action.

7 5. Facebook objects to Plaintiffs' definition of "(id)" to the extent that it is vague,
8 ambiguous, overly broad, and unduly burdensome. Facebook further objects to the definition to the
9 extent that Plaintiffs purport to use this defined term to seek materials that are not relevant to the
10 claims and defenses in this action.

11 6. Facebook objects to Plaintiffs' definition of "Key -> Value Pair" to the extent that it is
12 vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects to the definition
13 to the extent that Plaintiffs purport to use this defined term to seek materials that are not relevant to
14 the claims and defenses in this action.

15 7. Facebook objects to Plaintiffs' definition of "Object" to the extent that it is vague,
16 ambiguous, overly broad, and unduly burdensome. Facebook further objects to the definition to the
17 extent that Plaintiffs purport to use this defined term to seek materials that are not relevant to the
18 claims and defenses in this action.

19 8. Facebook objects to Plaintiffs' definition of "Object type" or "(otype)" to the extent
20 that it is vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects to the
21 definition to the extent that Plaintiffs purport to use this defined term to seek materials that are not
22 relevant to the claims and defenses in this action.

23 9. Facebook objects to Plaintiffs' definition and use of the term "Person" as vague,
24 ambiguous, overly broad, and unduly burdensome to the extent that Plaintiffs intend to use this term
25 to include "any natural person or any business, legal or governmental entity or association" over
26 which Facebook exercises no control.

27 10. Facebook objects to Plaintiffs' definition of "Process" to the extent that it is vague,
28 ambiguous, overly broad, and unduly burdensome. Facebook further objects to the definition to the

1 extent that Plaintiffs purport to use this defined term to seek materials that are not relevant to the
2 claims and defenses in this action.

3 11. Facebook objects to Plaintiffs' definition of "Private Message(s)" to the extent that it
4 is vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects to the
5 definition to the extent that Plaintiffs purport to use this defined term to seek materials that are not
6 relevant to the claims and defenses in this action.

7 12. Facebook objects to Plaintiffs' definitions of "Relate(s) to," "Related to" and
8 "Relating to" on the ground that the definitions make the Interrogatories overly broad and unduly
9 burdensome and impose obligations that go beyond the requirements of the Federal and Local Rules.
10 Facebook shall construe these terms as commonly and ordinarily understood.

11 13. Facebook objects to Plaintiffs' definition of "Source Object" or "(id1)" to the extent
12 that it is vague, ambiguous, overly broad, and unduly burdensome. Facebook further objects to the
13 definition to the extent that Plaintiffs purport to use this defined term to seek materials that are not
14 relevant to the claims and defenses in this action.

15 14. Facebook objects to Plaintiffs' definition and use of the terms "You," "Your," or
16 "Facebook" as vague, ambiguous, overly broad, and unduly burdensome to the extent the terms are
17 meant to include "directors, officers, employees, partners, members, representatives, agents
18 (including attorneys, accountants, consultants, investment advisors or bankers), and any other person
19 purporting to act on [Facebook, Inc.'s] behalf. . . . parents, subsidiaries, affiliates, predecessor
20 entities, successor entities, divisions, departments, groups, acquired entities and/or related entities or
21 any other entity acting or purporting to act on its behalf" over which Facebook exercises no control,
22 and to the extent that Plaintiffs purport to use these terms to impose obligations that go beyond the
23 requirements of the Federal and Local Rules.

24 **OBJECTIONS TO "RULES OF CONSTRUCTION" AND INSTRUCTIONS**

25 1. Facebook objects to Plaintiffs' "Rules of Construction" and "Instructions" to the
26 extent they impose obligations that go beyond the requirements of the Federal and Local Rules.

27 2. Facebook objects to Plaintiffs' Instruction No. 2 to the extent that it is not limited to
28 the relevant time period, thus making the Instruction overly broad, unduly burdensome, and not

1 relevant to the claims or defenses in this action. Unless otherwise specified in its responses, and
2 pursuant to the agreement of the parties, Facebook’s response will be limited to information
3 generated between April 1, 2010 and December 30, 2013.

4 3. Facebook objects to Plaintiffs’ Instruction No. 6 as ambiguous and unduly
5 burdensome. Facebook further objects to the instruction to the extent it exceeds the requirements of
6 the Federal and Local Rules.

7 **OBJECTION TO PURPORTED “RELEVANT TIME PERIOD”**

8 Facebook objects to Plaintiffs’ proposed “Relevant Time Period” (September 26, 2006
9 through the present) because it substantially exceeds the proposed class period identified in Plaintiffs’
10 Consolidated Amended Complaint, does not reflect the time period that is relevant to Plaintiffs’
11 claims in this action, and renders the Interrogatories overly broad, unduly burdensome, and irrelevant.
12 Unless otherwise specified, and pursuant to the agreement of the parties, Facebook’s Responses to
13 these Interrogatories will be limited to information generated between April 1, 2010 and December
14 30, 2013. Facebook otherwise objects to the remainder of Plaintiffs’ statement regarding the
15 “Relevant Time Period” to the extent that it purports to impose obligations beyond those imposed by
16 the Federal and Local Rules.

17 **SPECIFIC RESPONSES AND OBJECTIONS**

18 **INTERROGATORY NO. 8:**

19 Identify all facts relating to the Processing of each Private Message sent or received by
20 Plaintiffs containing a URL¹, including, for each Private Message:

- 21 (A) all Objects that were created during the Processing of the Private Message, including
22 the (id) and the Object Type for each Object, as well as any Key -> Value Pair(s)
23 contained in each Object;

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27 ¹ Each such Private Message has been identified by each Plaintiff in Exhibit 1 to his respective Objections and
28 Responses to Defendant’s First Set of Interrogatories.

- 1 (B) all Objects that were created specifically when the embedded URL was shared,
2 including the (id) and the Object Type for each Object, as well as any Key -> Value
3 Pair(s) contained in each Object;
- 4 (C) all Associations related to each Private Message, identified by the Source Object,
5 Association Type, and Destination Object, as well as any Key -> Value Pair(s)
6 contained in each Association;
- 7 (D) the database names and table names in which each Association and Object is stored;
- 8 (E) each application or feature in Facebook that uses the Objects or Associations created
9 for each Private Message; and
- 10 (F) how each Object associated with the Private Message was used by Facebook.

11 **RESPONSE TO INTERROGATORY NO. 8:**

12 Facebook restates and incorporates its Preliminary Statement, General Objections, Objections
13 to “Rules of Construction,” Instructions, and Purported “Relevant Time Period” as though fully set
14 forth in this Response. Facebook further objects to this Interrogatory on the following additional
15 grounds:

16 (A) The Interrogatory is vague and ambiguous in its use of the terms and phrases
17 “Processing”; “Private Message”; “Objects”; “(id)”; “Object Type”; “Key -> Value Pair(s)”; “Objects
18 that were created specifically when the embedded URL was shared”; “Associations”; “Source
19 Object”; “Association Type”; “Destination Object”; “database names and table names”; and
20 “application or feature.”

21 (B) The Interrogatory is compound.

22 (C) The Interrogatory seeks information that is not relevant to the claims or defenses in
23 this action to the extent it concerns practices other than those challenged in this action (the alleged
24 increase in the Facebook “Like” count on a website when the URL for that website was contained in
25 a message transmitted through Facebook’s Messages product during the class period).

26 (D) The Interrogatory is vague, unduly burdensome, and overly broad in that it purports to
27 seek “all facts relating to the Processing of each Private Message sent or received by Plaintiffs
28 containing a URL.”

1 (E) The Interrogatory seeks information that reflects trade secrets, confidential, and/or
2 proprietary company information.

3 (F) The Interrogatory exceeds the bounds of Federal Rule of Civil Procedure 33(a)(1),
4 which provides that “a party may serve on any other party no more than 25 written interrogatories,
5 including all discrete subparts.”

6 Subject to and without waiving the foregoing general and specific objections, and subject to
7 the ongoing nature of discovery in this action, Facebook responds as follows:

8 Facebook refers Plaintiffs to Facebook’s Responses and Objections to Plaintiffs’ Interrogatory
9 Nos. 2, 3, and 4. Facebook also will meet and confer with Plaintiffs’ counsel to determine the proper
10 scope of this overly broad and ambiguous Interrogatory.

11 **SUPPLEMENTAL RESPONSE TO INTERROGATORY NO. 8:**

12 Facebook restates and incorporates its Preliminary Statement, General Objections, Objections
13 to “Rules of Construction,” Instructions, and Purported “Relevant Time Period” as though fully set
14 forth in this Response. Facebook further objects to this Interrogatory on the following additional
15 grounds:

16 (A) The Interrogatory is vague and ambiguous in its use of the terms and phrases
17 “Processing”; “Private Message”; “Objects”; “(id)”; “Object Type”; “Key -> Value Pair(s)”; “Objects
18 that were created specifically when the embedded URL was shared”; “Associations”; “Source
19 Object”; “Association Type”; “Destination Object”; “database names and table names”; and
20 “application or feature.”

21 (B) The Interrogatory is compound.

22 (C) The Interrogatory seeks information that is not relevant to the claims or defenses in
23 this action to the extent it concerns practices other than those challenged in this action (the alleged
24 increase in the Facebook “Like” count on a website when the URL for that website was contained in
25 a message transmitted through Facebook’s Messages product during the class period).

26 (D) The Interrogatory is vague, unduly burdensome, and overly broad in that it purports to
27 seek “all facts relating to the Processing of each Private Message sent or received by Plaintiffs
28 containing a URL.”

1 (E) The Interrogatory seeks information that reflects trade secrets, confidential, and/or
2 proprietary company information.

3 (F) The Interrogatory exceeds the bounds of Federal Rule of Civil Procedure 33(a)(1),
4 which provides that “a party may serve on any other party no more than 25 written interrogatories,
5 including all discrete subparts.”

6 Subject to and without waiving the foregoing general and specific objections, and subject to
7 the ongoing nature of discovery in this action, Facebook responds as follows:

8 Facebook refers Plaintiffs to Facebook’s Responses and Objections to Plaintiffs’ Interrogatory
9 Nos. 2, 3, and 4. Additionally, and pursuant to Rule 33(d) of the Federal Rules of Civil Procedure,
10 Facebook refers Plaintiffs to documents bearing production numbers FB000005502 through
11 FB000006175, which contain information responsive to this Interrogatory for the messages identified
12 in Plaintiffs’ letter of July 24, 2015 that could be located after a reasonable search and diligent
13 inquiry. The chart attached as Exhibit 1 identifies the production numbers of the documents that
14 correspond to the messages identified in Plaintiffs’ July 24, 2015 letter.

15 **SECOND SUPPLEMENTAL RESPONSE TO INTERROGATORY NO. 8:**

16 Facebook restates and incorporates its Preliminary Statement, General Objections, Objections
17 to “Rules of Construction,” Instructions, and Purported “Relevant Time Period” as though fully set
18 forth in this Response. Facebook further objects to this Interrogatory on the following additional
19 grounds:

20 (A) The Interrogatory is vague and ambiguous in its use of the terms and phrases
21 “Processing”; “Private Message”; “Objects”; “(id)”; “Object Type”; “Key -> Value Pair(s)”; “Objects
22 that were created specifically when the embedded URL was shared”; “Associations”; “Source
23 Object”; “Association Type”; “Destination Object”; “database names and table names”; and
24 “application or feature.”

25 (B) The Interrogatory is compound.

26 (C) The Interrogatory seeks information that is not relevant to the claims or defenses in
27 this action to the extent it concerns practices other than those challenged in this action (the alleged
28

1 increase in the Facebook “Like” count on a website when the URL for that website was contained in
2 a message transmitted through Facebook’s Messages product during the class period).

3 (D) The Interrogatory is vague, unduly burdensome, and overly broad in that it purports to
4 seek “all facts relating to the Processing of each Private Message sent or received by Plaintiffs
5 containing a URL.”

6 (E) The Interrogatory seeks information that reflects trade secrets, confidential, and/or
7 proprietary company information.

8 (F) The Interrogatory exceeds the bounds of Federal Rule of Civil Procedure 33(a)(1),
9 which provides that “a party may serve on any other party no more than 25 written interrogatories,
10 including all discrete subparts.”

11 Subject to and without waiving the foregoing general and specific objections, and subject to
12 the ongoing nature of discovery in this action, Facebook responds as follows:

13 Facebook has conducted a reasonable inquiry for all “Objects” (as defined by Plaintiffs,
14 explained further below) created at the time that Facebook received information resulting from the
15 drafting or sending of the 19 messages (the “Subject Messages”) identified by Plaintiffs in their letter
16 dated July 24, 2015 agreeing to narrow this Interrogatory. Below, Facebook identifies the responsive
17 Objects, as well as other objects (more broadly defined), identified in the course of its inquiry. As
18 will be explained further below, these objects were created *after* the URL or message information
19 was received by and stored on a Facebook server, either before the sender sent the Subject Message
20 or after it was sent to and received by Facebook.

21 **Responsive TAO Objects and Associations**

22 Plaintiffs’ Interrogatory relies on defined terms, including “Object” and “Association.”
23 Generally, in computer science, “object” refers to data and software code grouped together to make
24 the process of writing and running source code efficient and effective. The concepts of “objects” and
25 “associations” are basic elements of what is widely referred to as “object-oriented code,” wherein
26 data is organized (or “modeled”) into certain data types (“classes”) before being processed by code
27 logic. If certain types of data can be configured into a limited number of classes in this way, the code
28 that actually processes that data can be written more narrowly to handle those specific data models,

1 instead of a more complicated and inefficient code that is capable of handling more varied data types.
2 In other words, in object-oriented code, the pieces of data are cleaned up and made uniform in certain
3 ways so that the code that processes that data can be simpler and more efficient, which has a number
4 of benefits (including more efficient storage, faster processing, fewer bugs, and a generally better
5 user experience).

6 Here, the Interrogatory specifically defines “Object” and “Association” and several other
7 terms as having “the same meaning as described in the following paper: Bronson, et al, TAO:
8 Facebook’s Distributed Data Store for the Social Graph, USENIX ATC’13 Proceedings of the 2013
9 USENIX conference on Annual Technical Conference, § 3.1 (June, 2013) (available at
10 [https://research.facebook.com/publications/161988287341248/tao-facebook-s-distributed-data-store-
11 for-the-social-graph/](https://research.facebook.com/publications/161988287341248/tao-facebook-s-distributed-data-store-for-the-social-graph/).” The referenced article was authored by several Facebook employees, and
12 describes a specific implementation (“TAO”) of a data model for accessing Facebook’s vast social
13 graph (the data stored when Facebook users record their relationships, share their interests, upload
14 content, and take certain other actions). The article briefly references Facebook’s previous methods
15 for storing the data in the social graph. Before TAO, Facebook used MySQL, which is a relational
16 database that could be queried using PHP, a programming language. Over time, Facebook developed
17 what software engineers and computer scientists refer to as an “abstraction,” which is a combination
18 of the underlying data and software code that is presented to programmers who will use the data for
19 particular functions that do not require interacting with all of the underlying complexity in the
20 MySQL database. The PHP abstraction allowed programmers to access groups of data and code
21 (referred to as “objects” or “nodes,” in the article) and the relationships between them (referred to as
22 “associations” or “edges” in the article) that exist in the database. For a number of reasons, Facebook
23 constructed TAO to directly implement the objects and associations model (which then replaced the
24 PHP abstraction of the MySQL database). Section 3.1 of the article, to which Plaintiffs specifically
25 refer for the definitions of “Object” and “Association” and other terms in their Interrogatory,
26 discusses “TAO *objects*” and “TAO *associations*,” and as a result, only these TAO Objects and TAO
27 Associations are responsive to Plaintiffs’ Interrogatory.

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1 As explained further in Facebook’s Supplemental Responses and Objections to Interrogatory
2 Nos. 2-4 and in the Declaration of Dale Harrison (Dkt. No. 125-2), TAO Objects are not created
3 every time a URL is included in the text of a Facebook message. During the relevant time period, if a
4 URL was included in a draft message typed into the message text field on the Facebook website, and
5 a URL preview attachment was successfully created and not deleted, and the messages information
6 (including the URL preview attachment) was successfully received by a Facebook server, a Share
7 Object reflecting information about the URL preview attachment may have been created in TAO.
8 The Share Object includes a number of pieces of underlying data that, together, represent the event of
9 that URL being shared in that way on that occasion.

10 Searches in Facebook’s system revealed 12 TAO Share Objects related to the Subject
11 Messages. Facebook possesses no TAO Share Object related to seven of the Subject Messages.
12 Pursuant to Rule 33(d) of the Federal Rules of Civil Procedure, Facebook refers Plaintiffs to
13 produced documents bearing the beginning production numbers indicated in Exhibit A for the
14 attributes and database locations of the 12 TAO Share Objects, which were produced as “EntShares,”
15 further explained in the Declaration of Dale Harrison (Dkt. No. 125-2). These documents include a
16 field for the identifier for the database wherein the Object is stored (“DBID”).

17 No TAO Associations (or “edges”) are created from the TAO Share Objects for URL message
18 attachments to the sender or recipient of the message or any Object representing the message itself.
19 In an effort to identify any other TAO Associations created at the time of receipt of the Subject
20 Messages, Facebook constructed a query for Associations whose source object is the TAO Share
21 Object and whose timestamp matches that of the Subject Message.² No such Associations were
22 identified.

23 **Supplemental Information Regarding TAO Objects and Associations**

24 As explained further in Facebook’s Supplemental Responses and Objections to Interrogatory
25 Nos. 2-4 and in the Declaration of Dale Harrison (Dkt. No. 125-2), certain information related to
26

27 ² Association timestamps do not necessarily reflect their creation time, and could theoretically be assigned at a
28 different time. However, there is no superior source for creation time for TAO Associations.

1 shared URLs may also be stored in a Global Share Object, which includes the component data for
2 rendering a preview of that URL in certain circumstances. Global Share Objects are often created in
3 connection with the first time a URL is shared. However, the Object is actually created before the
4 URL is shared, and may be created even if the URL is not ultimately shared. During the relevant
5 time period, if a user typed a URL into the message text field on the Facebook website, a request may
6 have been sent to a Facebook server to generate a preview of that URL. If a Global Share Object
7 existed for that URL, Facebook may have generated a URL preview from the components in the
8 Global Share Object. If no Global Share Object existed, one may have been created at that time
9 through a series of processes to obtain information from the third-party website at that URL. If a
10 URL Share Object was successfully created once a message with a URL attachment had reached a
11 Facebook server, the “LocationField” key in the EntShare for that Share Object would refer to the
12 location of the Global Share Object for that URL.

13 Searches in Facebook’s system revealed 12 TAO Global Share Objects at the destinations
14 indicated in the “LocationField” key in the EntShares reflecting the 12 URL Share Objects (discussed
15 above) related to the Subject Messages. Pursuant to Rule 33(d) of the Federal Rules of Civil
16 Procedure, Facebook refers Plaintiffs to produced documents bearing the beginning production
17 numbers indicated in Exhibit A for the attributes and database locations of the 12 TAO Global Share
18 Objects, as well as any related TAO Associations, which were produced as “EntGlobalShares,”
19 further explained in the Declaration of Dale Harrison (Dkt. No. 125-2). These documents include a
20 field for the identifier for the database wherein the Object is stored (“DBID”).

21 These EntGlobalShares also reflect all TAO Associations for which the Global Share Objects
22 are a source object. However, no TAO Association is created between the Global Share Object and
23 the sender or recipient of a message containing that URL or any Object representing such messages
24 or any URL Share Objects created in connection with URL message attachments. Therefore, the
25 TAO Associations listed in the produced EntGlobalShares do not reflect any Associations to the
26 Subject Messages. It is possible that a Plaintiff took some other action to generate an Association to
27 the Global Share Object. For example, an Association was created from one of the Global Share
28 Objects very close in time to the processing of the EntMessage with beginning production number

1 FB000006650. It is possible that some other action taken by the Plaintiff-sender resulted in this
2 Association being created, but there is nothing about the Association stored in the EntGlobalShare
3 from which to determine whether that action was related to any Plaintiff in any way. In other words,
4 it could have been created by an action by a different user around the same time.

5 The EntGlobalShare includes a field for “creator,” which sometimes includes a reference to
6 the Facebook user whose action resulted in the creation of the Global Share Object. However, the
7 field is often empty or null. Only one of the 12 produced EntGlobalShares (which are the Global
8 Shares referenced in the 12 EntShares identified for the Subject Messages) references the sender of
9 one of the Subject Messages as a creator. See document with beginning production number
10 FB000005935. The fact that the sender of one of the Subject Messages is referenced as the creator of
11 the Global Share Object suggests that the Global Share Object was created in connection with
12 generating a URL preview for the sender of that message, which occurs before the message is sent.
13 The other 11 EntGlobalShares produced for the Subject Messages either indicate a creator other than
14 the sender of the relevant Subject Message or do not include creator information. However, a review
15 of the creation time for each of the other 11 Global Share Objects reveals that the EntGlobalShares
16 produced with beginning production numbers FB000005579, FB000013459, and FB000012512 were
17 created very close in time to the creation of the EntShare for the Subject Messages containing the
18 related URL, which were produced with beginning production numbers FB000005958,
19 FB000012851, and FB000012543, respectively. It is therefore likely that these four Global Share
20 Objects were created before the message was sent in order to generate a URL preview displayed to
21 the sender of that Subject Message when he or she initially typed the URL into the message text field
22 before sending the message. However, none of the EntGlobalShares have a TAO Association to any
23 of the Plaintiffs, any of the Subject Messages, or any of the URL Share Objects at the time of the
24 Subject Messages.















25 **Databases and Tables Storing TAO Objects**

26 As noted above, the representations of each of the TAO Objects for the Subject Messages that
27 Facebook produced (EntShares) include a Key and Value for the database in which that Object is
28 stored. Facebook also utilizes a number of databases for research and analysis, typically of

1 aggregated data for a sample period of time. An inquiry into these databases did not reveal any
2 information relating to the Subject Messages or their URL Share Objects.

3 **Uses of TAO URL Share Objects**

4 As explained further in Facebook’s Supplemental Responses and Objections to Interrogatory
5 Nos. 2-4, TAO URL Share Objects are used for efficiently storing records of the share event and
6 message URL attachment information, as well as for rendering attachments in messages (when the
7 sender or recipient views the message in his or her inbox). They are also available to Facebook teams
8 for various site-improving purposes, including monitoring site integrity and preventing abuse. Global
9 Share Objects also provide efficiencies for programming as well as for reducing traffic across the
10 Internet by storing all the components for generating URL previews for a given URL on a Facebook
11 server, eliminating the need to repeatedly scrape the website at the same URL for preview
12 information.

13 In particular, Key and Value information from the Share Object are run through Facebook’s
14 system for detecting abuse (“ which  .
15 run policies that detect certain behavior or characteristics that may identify the URL attachment as
16 spam or dangerous in some way. .
17 . If the  system, or one of the systems that it calls, 
18 . The system may also 
19 . 
20  and is used to improve Facebook’s abuse detection systems. If any objects
21 were created at the time the Subject Messages were received, 
22 .

23 As explained further in the June 1, 2015 Declaration of Alex Himel, Facebook also stores an
24 aggregate and anonymous counter (“internal share counter”³) for each URL represented by a URL
25 Global Share Object. During the relevant period, the internal share counter was incremented under

26 _____
27 ³ “Share count” or “share counter” or “share_count” referred to several different counters at Facebook during the
28 relevant time period. References to “share count” in historical Facebook documentation cannot necessarily be
assumed to refer to the counter referenced herein.

1 certain circumstances when users took certain actions, including but not limited to when a user's
2 actions led to the creation of a URL Share Object, which may have resulted from creation of a URL
3 preview attachment to a Facebook message. The internal share counter did not dynamically calculate
4 a count from then-existing records. It was a static record of a count that was incremented under
5 certain circumstances, without retaining any information about the user that shared the URL that
6 incremented the counter, or any other facts or circumstances related to that increase in the count.
7 Moreover, as noted in Facebook's Response to Interrogatory Nos. 2-4, there are a number of reasons
8 why creation of a given URL Share Object may not have incremented the URL share counter.
9 Frequent circumstances where a successfully created URL Share Object would not increment a URL
10 share counter include: various failures in the software or hardware executing Facebook's code (e.g.,
11 bugs, database failures, database contention), conditions that the software cannot successfully process
12 such as race conditions (e.g., multiple people sharing the same URL at the same time resulting in
13 undercounting shares), incorrect mapping of shared URLs to Global Shares (i.e., the shared link does
14 not match the Global Share URL perfectly for any of a number of reasons). Facebook possesses no
15 historical data linking increments in the anonymous, aggregate internal share counters to specific
16 URL Share Objects or users, nor does Facebook possess any data from which such information could
17 be ascertained. There is therefore no way to determine whether any given URL Share Object from a
18 URL in a message actually resulted in an increment in the aggregate, anonymous internal share
19 counter during the relevant time period. In addition, there is no way to determine whether the 12
20 Share Objects from the Subject Messages actually resulted in any increases to the anonymous,
21 aggregate internal share counters for the corresponding URLs.

22 As explained further in Facebook's Supplemental Responses and Objections to Interrogatory
23 Nos. 2-4 and in the June 1, 2015 Declaration of Alex Himel, for the period from May 4, 2010,
24 through December 20, 2012, certain implementations of the Like Count social plugin (a counter that
25 can be displayed with the Like Button social plugin) on third-party websites included Facebook's
26 anonymous, aggregate internal share counters (among other things), which may have been
27 incremented, under certain circumstances, by the creation of Share Objects that were sometimes
28 created from share attachments that were sometimes generated from URLs in messages. However, it

1 was not until approximately August 16, 2010—with the introduction of the “preview feature” for
2 Facebook Messages—that Share Objects could have been created from messages drafted on the
3 Facebook website. After December 20, 2012, no implementations of the Like Count social plugin
4 included the internal share counters.

5 Nine of the Subject Messages were sent before August 16, 2010 or after December 20, 2012,
6 and therefore the inclusion of URLs in those messages could not have resulted in any increment to
7 any Like Count on any third-party website. Of the other 10 Subject Messages, only seven resulted in
8 the creation of a Share Object, and only one of those seven included a URL to a third-party webpage
9 that appears to currently display a Count next to the Like Button. If the webpages at the URLs in
10 those Subject Messages never displayed a Like Count, then the inclusion of URLs in those messages
11 also could not have resulted in any increment to any Like Count on any third-party website.

12 Facebook does not possess information that would allow it to ascertain whether those webpages
13 displayed a Like Count during the relevant period. If indeed those Subject Messages did not display
14 a Like Count, there would be only one Subject Message for which the inclusion of a URL could even
15 possibly have resulted in an increase in a Like Count on a third-party website. See document with
16 beginning production number FB000006682. However, Facebook does not possess information that
17 would allow it to ascertain whether that webpage displayed a Like Count during the relevant time
18 period. Moreover, even if that webpage did display a Like Count during the relevant time period,
19 Facebook does not possess any information that would allow it to ascertain whether the creation of
20 the related Share Object actually resulted in an increment in the aggregate, anonymous Like Count on
21 that third-party website.

22 The evidence listed above comprises the message-by-message inquiry necessary to determine
23 whether it is even possible that the inclusion of a URL in the Subject Messages may have resulted in
24 an increment of an anonymous, aggregate Like Count on a third-party webpage. In sum, because
25 nine of the messages were sent outside the relevant period and only six of the remaining messages
26 created Share Objects for URLs to third-party websites, only those six of the 19 Subject Messages
27 could possibly have incremented an anonymous, aggregate Like Count on a third-party webpage.
28 Again, if the five URLs that do not currently display a Like Count also did not display a Like Count

1 during the relevant period, then only one of the 19 messages could possibly have incremented an
2 anonymous, aggregate Like Count on a third-party website. Facebook does not possess information
3 from which to determine whether that Subject Message did in fact result in incrementing an
4 anonymous, aggregate Like Count on a third-party website.

5 **Supplemental Information and Other Objects**

6 In the course of conducting an inquiry for the TAO Objects described above, Facebook also
7 identified certain additional information stored in connection with the receipt of the Subject
8 Messages. As explained further in the Declaration of Dale Harrison (Dkt. No. 125-2), Facebook has
9 identified and produced representations of the data stored for messages, referred to as "Titan
10 Information," and representations of and objects created in connection with the processing of
11 messages, referred to as "EntMessages." Facebook has now also produced objects representing
12 message threads, referred to as "EntMessageThreads," that were created when the Subject Messages
13 were processed (which usually occurs if the Subject Message was the first in a thread). See Exhibit
14 A. This information is not part of Facebook's social graph and is not stored in the TAO data model
15 implementation described in the article that Plaintiffs reference in the definitions accompanying
16 Interrogatory No. 8.

17
18 DATED: October 28, 2015

GIBSON, DUNN & CRUTCHER LLP

19 By: /s/ Joshua A. Jessen
20 Joshua A. Jessen

21 Attorneys for Defendant FACEBOOK, INC.
22
23
24
25
26
27
28

1 **PROOF OF SERVICE**

2 I, Jeana Bisnar Maute, declare as follows:

3 I am employed in the County of Santa Clara, State of California, I am over the age of eighteen
4 years and am not a party to this action; my business address is 1881 Page Mill Road, Palo Alto, CA
94304-1211, in said County and State. On October 28, 2015, I served the following document(s):

5 **DEFENDANT FACEBOOK, INC.’S SECOND SUPPLEMENTAL RESPONSES**
6 **AND OBJECTIONS TO PLAINTIFFS’ NARROWED SECOND SET OF**
7 **INTERROGATORIES**

8 on the parties stated below, by the following means of service:

9 David F. Slade
10 dslade@cbplaw.com
11 James Allen Carney
12 acarney@cbplaw.com
13 Joseph Henry Bates, III
14 Carney Bates & Pulliam, PLLC
15 hbates@cbplaw.com

16 Melissa Ann Gardner
17 mgardner@lchb.com
18 Nicholas Diamand
19 ndiamand@lchb.com
20 Rachel Geman
21 rgeman@lchb.com
22 Michael W. Sobol
23 Lief Cabraser Heimann & Bernstein, LLP
24 msobol@lchb.com

- 25 **BY ELECTRONIC SERVICE:** On the above-mentioned date, based on a court order or
26 an agreement of the parties to accept service by electronic transmission, I caused the
27 documents to be sent to the persons at the electronic notification addresses as shown
28 above.
- 29 I am employed in the office of Joshua A. Jessen and am a member of the bar of this court.
- 30 I declare under penalty of perjury that the foregoing is true and correct.

31 Executed on October 28, 2015.

32 _____
33 /s/ Jeana Bisnar Maute
34 Jeana Bisnar Maute

EXHIBIT A

Message	EntMessage	Titan Info	EntShare	EntGlobalShare	EntMessageThread
1	FB000006666	FB000005575	FB000005528	FB000005502	
2	FB000006691	FB000005577			
3	FB000006595	FB000005647	FB000005601	FB000005579	FB000012425
4	FB000006658	FB000005720	FB000005673	FB000005649	FB000011841
5	FB000006610	FB000005798	FB000005750	FB000005722	
6	FB000006642	FB000005800			
7	FB000006650	FB000005880	FB000005827	FB000005802	
10		FB000011876	FB000012993	FB000013201	FB000013572
68	FB000006707	FB000005882			
89	FB000006674	FB000005933	FB000005887	FB000005884	
93	FB000006634	FB000006005	FB000005958	FB000005935	
99	FB000006603	FB000006007			
113	FB000006682	FB000006085	FB000006038	FB000006009	
115		FB000012006			
123	FB000006618	FB000006088			
200	FB000006699	FB000006170	FB000006120	FB000006090	
410		FB000012557			
654	FB000006587	FB000006172	FB000012851	FB000013459	
482	FB000006626	FB000006174	FB000012543	FB000012512	