

Exhibit 6

9/4/2019

Network-1 Technologies, v. Google LLC and Youtube LLC
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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

<hr/>)
NETWORK-1 TECHNOLOGIES, INC.,))
))
Plaintiff,))
))
vs.)	No. 14 Civ. 2396
)	14 Civ. 9558
)	(PGG)
GOOGLE LLC and YOUTUBE, LLC,))
))
Defendants.))
<hr/>)

CONFIDENTIAL ATTORNEYS' EYES ONLY
VIDEOTAPED DEPOSITION OF AUDIBLE MAGIC 30(b)(6)
ERLING WOLD
September 4, 2019 at 10:01 a.m.
Three Embarcadero Center, 26th Floor
San Francisco, California

REPORTED BY: LANA L. LOPER,
RMR, CRR, CCP, CME, CLR, CSR No. 9667

DIGITAL EVIDENCE GROUP
1730 M Street, NW, Suite 812
Washington, D.C. 20036
(202) 232-0646

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1 C-l-a-n-g-o?

2 A Yes.

3 Q And in general terms, what was Clango?

4 A Clango was intended for people to be listening
5 to, say, an Internet radio station. And when they were
6 listening to an Internet radio station, they can run
7 this other operation called Clango on their desktop.

8 And if they heard a tune that they liked, they
9 could press a button, I think, and they would identify
10 that tune that was playing and then allow you to, you
11 know, purchase it, for example, if you were interested.

12 It showed you the metadata, and then it gave
13 you a URL to an e-commerce site.

14 Q Is it fair to say that Clango identified songs
15 by their content?

16 A Yes.

17 Q Why try to identify songs by -- by their
18 content?

19 A Well, at the time there wasn't -- there wasn't
20 always metadata. So if -- if someone was just listening
21 to a radio station on the Internet, it might just be a
22 stream from a terrestrial radio station, and so it

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1 simple idea.

2 It's basically, at the time we were using
3 10 MFCCs per segment of sound. And a segment of sound,
4 you know, could be 25 milliseconds, or it could be a
5 second, for example, something in that -- but it's
6 something short, in that range.

7 And the -- the way those -- so they're just
8 floating by numbers.

9 Let me think.

10 The way that they are computed is, you do some
11 kind of spectral analysis of the sound. So that's,
12 like, what the ear does. You look for low frequencies,
13 high frequencies, so on. And then you rectify that.
14 And then you take another spectral analysis of that.

15 And -- and what you end up with is a set of
16 features that really describes the spectral shape of the
17 sound. The lower-order features are kind of the gross
18 shape of the spectrum, and the higher-order features are
19 more the detail, the -- yeah, the higher features on the
20 spectrum, and over time.

21 Q And once the Clango application had extracted
22 those features, what would it do next in the process of

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1 identifying a song?

2 MR. LEDAHL: Lacks foundation.

3 THE WITNESS: So in the actual application, as
4 it was released in mid-2000, there would be the Clango
5 application, itself, would just extract the features.
6 And so it would -- when the person pressed the button,
7 there would be, say, a circular buffer of the last -- or
8 not necessarily a circular buffer. There would be a
9 buffer containing the last so many seconds of the sound
10 of what they had been listening to.

11 That would all be fingerprinted at the Clango
12 application. So this set of MFCCs would be extracted.

13 Then that would -- that package would be sent
14 over the network to a server at -- under Audible Magic's
15 control. I think they actually had it in a third-party
16 site at the time. I'm not sure.

17 And at that -- and on -- on that end, there
18 would be a reference database of fingerprints. And then
19 some kind of lookup algorithm would be done to compare
20 the fingerprint coming in with that set of references
21 and -- to see if any of them were close enough that we
22 would report a match.

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