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HARVARD | BUSINESS | SCHOOL

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WILLY SHIH
HALLE TECCO

Pandora Radio: Fire Unprofitable Customers?

You guys have to get your costs down, you have to break even, no matter what it takes. These users are unprofitable. You have to fire your unprofitable users!

—Junior partner at a major Silicon Valley venture capital firm

As Tim Westergren and Joe Kennedy left the offices of one of the best-known venture capitalists in Silicon Valley, these words kept playing out in their heads. It was the first quarter of 2009, and tech stocks, along with the broader stock market, were in free fall. The economic downturn that began with the crash of Lehman Brothers, AIG, Fannie Mae, Freddie Mac and others had put a deep chill into the venture capital business as well. Sequoia Capital's 56-slide "Presentation of Doom" was circulating widely. In it, the venture firm advised its portfolio companies that venture survival was predicated on a must-have product and an established revenue model.

Westergren's company, Pandora Radio, was a very popular Internet radio broadcaster. Consumers used Pandora by logging on to Pandora.com and creating "stations" by inputting favorite songs or artists into their user profile.[1] Pandora then located the artist or song in its music library and streamed "musical neighbors" that were rhythmically or artistically similar. Westergren explained, "Most people don't have the time or inclination to really go looking. They want to push a button, turn up the volume, and do nothing else. They want to listen to stuff they know and stuff they don't know but that they'll probably like—and that will be the killer app of Internet radio."

Unlike a music search engine, Pandora did not play any one song on demand, but rather played songs that users were likely to enjoy based on other musical selections they already liked. Listeners were not able to request a particular song, nor were they able to record songs played via Pandora. This enabled Pandora to pay a lower royalty rate than competing services that might play a request on demand. If a user wanted to listen to a particular song again, she could purchase it via referral to an online store such as iTunes or Amazon.com, and Pandora would earn an affiliate fee. Pandora encouraged these purchases by allowing listeners to click on a song while it was being played, which opened up another window to make the purchase. The company commissioned a survey that showed that 40% of users were purchasing "a lot more" or "somewhat more" songs than they had before they used Pandora. However, affiliate fees were not likely to become a dominant source of revenue.

[1] In traditional terrestrial radio, a "station" referred to a specific frequency or band of frequencies assigned to a regular or special broadcaster.

Professor Willy Shih and Halle Tecco (MBA 2011) prepared this case. This case is an extensive revision and update of a previous case, "Opening Pandora's Box," HBS No. 607-135, prepared by Professor Willy Shih, Senior Lecturer Stephen Kaufman, Melissa Blakeley (MBA 2007), and Marissa Dent (MBA 2007). HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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Westergren's mind flashed back to some of the lean years before a 2004 funding round when the company had stopped paying employees for more than a year. Yet he and Kennedy had managed to keep Pandora going. Pandora had a large base of loyal users, though it had not yet eked out a profitable quarter.

The year 2009 promised to be challenging. On the operational side, a pivotal part of Pandora's model revolved around managing costs. The company had an ongoing battle with the Copyright Royalty Board, a panel of three judges that set the license fee the company had to pay every time it streamed a song to a user. Webcasters like Pandora had to pay royalties for each song played, unlike over-the-air radio stations that had a much more favorable deal. Pandora and National Public Radio (NPR) were part of an agitative group of webcasters that had filed an appeal. Without an acceptable rate, the future of Pandora was in jeopardy.

Westergren and Kennedy also knew the company needed to raise another round of funding. As they got back in the car, Kennedy asked Westergren, "Do you think we'll get money from these guys?" Westergren thought about it for a moment and responded, "We need the money, but do you think we need theirs?"

The Music Genome Project

Westergren had learned the difficulty of making a living as a musician while touring as a keyboard player with an acoustic rock band. He gave that up in the late 1990s and became a film composer in Los Angeles. It was during that time that he came up with the original idea for his company. He recounted: "The idea for the Music Genome Project was really born when I was a film composer. . . . The job of a film composer is to figure out somebody else's musical tastes and translate that into musical elements so you can compose something they'll like. I had been doing that as a professional for a long time. The Music Genome Project was really just an effort to codify that."

Westergren and two friends set up shop in San Francisco and began building a music discovery engine to help connect listeners with artists. This engine, dubbed the Music Genome Project, required that analysts dissect each song placed in the library. They spent approximately 20 to 30 minutes codifying as many as 400 different attributes to determine a song's "musical DNA." The coded output could then be used to identify a song's "musical neighbors," enabling a user to find similar songs. Once a song was coded, it was placed in the project database. This music library grew to a collection of over 600,000 songs that a team of analysts with training in music theory had studied and coded. In order to build the library, Westergren and his team added approximately 10,000 songs each month from both well-known and lesser-known artists.

Initially, Westergren sold his music discovery concept to both online and offline music stores. The Music Genome was the back end to the online music experiences of America Online (AOL) and Barnes & Noble, and it also powered kiosks in offline record stores like Tower Records, Best Buy, and Borders. But the fee revenue from licensing was insufficient to keep the business afloat. Westergren realized there were not many companies that would be interested in purchasing the kiosks, beyond the customers he had already partnered with. The shortage of capital forced him to lay off a number of employees, and many others continued to work for the company without compensation.

In March 2004, Westergren was able to raise a Series B round led by Walden Venture Capital in San Francisco. Larry Marcus, managing director of Walden, was an avid musician in his own right. "When not focusing on the latest venture-capital investment, he plays the drums in a rock band with venture investor Roger McNamee [who] has jammed with members of the Grateful Dead and has

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played for President Clinton," reported the *Wall Street Journal*.[2] Marcus took a seat on the board. Labrador Ventures in Palo Alto and Selby Venture Partners in Menlo Park, California, joined Walden. Westergren reflected on the investment:

> It's kind of a gut thing. When you go for a negotiation with a fund, you get a sense about how they think about you, how they think about their role with you, their relationship to you. It starts to take shape as they negotiate different elements, everything from your employment contract, the option pool they want for you, the option pool they want for all the employees, [to] how they talk about strategic decisions with you—are they consultative, are they collaborative, are they dictatorial? You get a sense of what they are going to be like to work with.

In the course of the investment round, Westergren and his board agreed that it would be a good idea to bring in a new CEO. They hired Kennedy (Harvard Business School, 1985), a consumer-oriented executive. Kennedy had the management and direct-to-consumer product experience that Westergren lacked. He was the former president and chief operating officer of E-Loan, Inc., and also had been vice president of sales, service, and marketing for the Saturn division of General Motors. Although Kennedy was not looking for a job at the time, the position of Pandora CEO caught his attention. Kennedy recalled: "I love consumer categories where people's passions are involved. Digital music makes everything possible, but leaves one major problem: how do you help consumers find the music they love? The problem is universal and never goes away. Here is a company that has been working on *just* that problem with a fundamental and definitive—you might also say 'crazy'—approach."

Kennedy proposed that the company change its strategy to become a direct-to-consumer Internet radio service. From this idea, Pandora.com was born.

Testing a Subscription Model

We launched thinking that we were building a subscription business, and it was going to be three bucks a month. And the initial plan was you would get 10 hours for free, and then you would have to give a credit card and subscribe. That lasted three weeks or something. Literally, we exploded out of the gate, everybody was using it . . . using it 10 hours, and then poof . . . nothing!

—Tim Westergren

The company's foray into direct-to-consumer services started off well enough. Hundreds of thousands of users signed up, used 10 free hours, and then left. Wincing, Westergren recalled, "It was pretty clear right away that we were either going to define ourselves as a tiny niche 'power user' service, or we were going to have to make some kind of a change." At the suggestion of one of the company's board members, in the fourth quarter of 2005, the company switched over to a free model, halfheartedly offering a subscription version as well. Reflecting on that critical decision, Westergren recounted: "We kept the subscription, but essentially adopted the belief that this was going to have to be advertising supported. We offered the subscriptions, but we didn't generate any. That firmly burned into our brain this sort of skepticism in the subscription business, period."

Pandora added "free" users quickly. The Music Genome gave Pandora.com a unique capability. In comparison to other sites that based recommendations on user ratings or purchase behavior—a

[2] Kara Scannell, "Deals & Deal Makers: Brothers Provide Sibling Street Saga—Paths Diverged in Old, New Media," *Wall Street Journal*, July 24, 2000, via Factiva, December 22, 2007.

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technique known as "collaborative filtering"—Pandora could introduce consumers to new music based on song attributes. Explained Westergren:

> There are two major advantages to using a musicological approach: one is that you can really personalize with almost no data . . . just one song, you don't need any history. Drop one song in and you're off to the races. And because we are not based on statistics and history, we are uniquely able to surface the stuff you've never heard before. One of the catch-22s for the band like the one I was in was that we would never show up on Amazon. . . . We didn't have a purchase history; you *need* one to *get* one before you can sell much.

Since Pandora's library included songs by famous as well as up-and-coming artists, users were able to hear a wide variety of music that matched a mood or musical preference. Approximately 54% of songs played on Pandora were from albums with no major-label affiliation. Users were encouraged to give each song played by Pandora a thumbs-up or thumbs-down to further customize the listening experience. As of early 2007, Pandora had received more than 500 million instances of feedback through the thumbs-up–thumbs-down feature. (**Exhibit 1** shows a Pandora screenshot.)

Pandora's Evolving Business Model: "People Really Don't Understand How Valuable This Is!"[3]

We now have over 16 million registered users, which grows daily; 1 million people per day come to the site and spend two to three hours per session. During their session, users interact seven to eight times per hour; each interaction generates a new advertising opportunity. We now have 65 million stations created, but that goes up by 10,000 a day.

Our advertisers get exclusivity with this highly engaged user experience. The only time the ads change is upon a user's interactivity with the site, like fast-forwarding or voting on a song. On the main page, advertisers can take up almost 50 percent of the canvas, which allows them to tell a good story. Most of our ads are custom solutions. We can create stunning skins[4]*, but there are currently more than 40 different ad products. Ads still can be served and tracked, and we can accommodate standard IAB [Interactive Advertising Bureau] units.*

—Cheryl Lucanegro, VP of Advertising Sales[5]

Just a year into Cheryl Lucanegro's job as head of ad sales, Pandora had yet to make a profit, but the management team was optimistic about the model. The company could offer precision targeting to advertisers because the registration process gave them the age, gender, and zip code of its users. Then Pandora could track listeners' music preferences, streaming history, and click-through rate (CTR), which was 0.3%, higher than average for a website. Pandora earned an effective CPM (cost per thousand) impressions[6] in the $7 range, a relatively high rate. An average listener interacted with Pandora seven to eight times per hour—when using the thumbs-up or thumbs-down feature, when fast-forwarding through a song they did not like, or when looking at the screen to determine the artist playing. Though Pandora was beginning to attract a larger number of advertisers, it was still only selling about 60% of the available ad space.

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[3] Tim Westergren.

[4] "Skin" refers to the graphic overlay displayed on a screen.

[5] Hollis Thomases, "Pandora: Music and Advertising Happily Married, *ClickZ*, September 9, 2008, http://www.clickz.Com/3630767, accessed March 12, 2010.

[6] CPM or cost per thousand impressions (M is the Roman numeral for 1,000) is a regularly quoted number for advertising rates. A higher CPM indicates more valuable targeting for the advertising. Rates span a wide range, as low as $5 and as high as $40 to $100.

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In March 2007, the Copyright Royalty Board released a new fee schedule for Internet radio that gravely threatened the viability of Pandora's model. After massive lobbying by organizations like NPR and Pandora's letter-writing mobilization of its user base (which resulted in a deluge of mail and faxes to Capitol Hill), Congress passed the Webcaster Settlement Act in 2008, which gave webcasters like Pandora a year to come to an agreement with SoundExchange, the recording industry's royalty-collection organization. They also received a reprieve through the end of 2008, paying royalties based on average listening hours. Pandora, NPR, and others had an appeal scheduled before the U.S. Court of Appeals for the District of Columbia.[7] Westergren and Kennedy's goal was to get those costs down to a fraction of a cent per hour, perhaps by tying them to company revenues instead of being a straight fee per song played.

When Pandora finally reached an agreement with SoundExchange in July, Westergren and Pandora fans breathed a collective sigh of relief. The "experimental" agreement, which was to run through 2015, called for large commercial webcasters to pay the greater of 25% of revenue or $0.00093 per performance (see **Exhibit 2** for excerpts from the agreement). Separately, the company would also pay 4% of revenue to the American Society of Composers, Authors and Publishers (ASCAP) and Broadcast Music, Inc. (BMI) to compensate the songwriter or composer. Though some complained that the costs were high, the agreement gave the management team certainty about costs. "2015 is not an experimental period of time," quipped Westergren; Pandora would have time to lock in its business model.

Kennedy calculated that on the cost side, streaming costs were approximately 0.3 cents per hour, royalty rates under the new agreement would aggregate to 1.54 cents per hour, and other costs were 0.74 cents per hour. The remainder of costs, such as technology, overhead, and Music Genome operation, were largely fixed. (Pandora's variable and fixed costs are summarized in **Exhibit 3**.)

Pandora did not spend any money on marketing and allowed the user base to grow virally, via word of mouth. However, it was clear that the more Pandora could spread existing fixed costs over a larger user base, the more the economics would improve. A larger user base could also increase Pandora's CPM rate. Ad revenue was by far the largest contributor, making up 93% of the total. Amazon.com and iTunes had affiliate agreements with Pandora that allowed users to purchase a song or album through a link.

By the end of 2008, revenues were beginning to catch up with Pandora's run-rate costs for employee salaries and licensing fees. Pandora employed 100 individuals, about half of whom were part-time music analysts. Although the company was not yet cash-flow positive, the economics were improving as Pandora built up its user base.

The iPhone App

When Apple first launched the iPhone, it built and controlled all of the applications. However, the second-generation iPhone allowed third-party developers to distribute applications via the Apple App Store. Pandora's engineering team went to work immediately and built the Pandora mobile app that *Wired* magazine called "the best version of Pandora yet. . . . The resulting Pandora App is a pleasure to use. Navigation is effortless, and feels nearly exactly like using the iPhone's native iPod

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[7] Eric Bangeman, "Internet radio dealt severe blow as Copyright Board rejects Appeal," *ARS Technica*, April 16, 2007, http://arstechnica.com/tech-policy/news/2007/04/internet-radio-dealt-severe-blow-as-copyright-board-rejects-appeal.ars, accessed March 12, 2010.

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application, with album covers that slide from left to right as one song switches to the next and the same stations and 500,000-song catalog available on Pandora via the web." [8]

The Pandora mobile app grew to be the second-most popular application on the iPhone, right after Facebook.[9] The mobile app—eventually available on the iPhone, RIM's BlackBerry smartphones, Google Android-powered phones, and about 50 other handsets—changed consumers' perceptions of Pandora. No longer just a computer radio, Pandora was now a transportable, personalized product. The mobile app also allowed customers to play Pandora in their cars, completely replacing traditional FM radio. Westergren acknowledged, "The iPhone launch was the biggest turning point for us."

Pandora Users

Pandora served users spanning ages 13 to 90; however, more than 65% of listeners were in the "sweet spot" demographic of 18 to 34 years of age. The audience was skewed slightly toward males (54%), which was especially attractive for advertising categories such as automobiles, alcoholic beverages, and technology products. Pandora collected basic information about listeners—including age, gender, and zip code—before music streaming began, so it offered advertisers an opportunity to create targeted messages to different demographic groups. Advertisers could further customize for their target market by sending messages to listeners of certain music genres.

Perfected over the years, the product had proliferated to become a coveted tool for music discovery and listening. Westergren often spotted people using Pandora on their iPhones at the gym and on their laptops at Starbucks.

Westergren also knew that his users had saved Pandora millions of dollars in marketing expenditures. Pandora had grown organically, on the strength of word-of-mouth publicity. Knowing that bad opinions spread as fast—if not faster—than positive ones, Pandora made customer service and communication a priority. From attending town hall meetings to responding to every e-mail, Westergren and his team spent a considerable amount of time connecting to users. In fact, Pandora considered these fans as part of their marketing team.

While Pandora had evangelist users to thank for explosive growth, these same users were also the most costly. Westergren acknowledged, "We realized that we actually had a problem here, because we've got about 9% of our listeners who listen a ton and who cost us a lot more than we are ever going to make on them. And we need to solve that problem somehow." (The usage distribution for Pandora users is shown in **Exhibit 4**.)

Furthermore, Westergren and Kennedy knew they also had to address the "leaky faucet" problem. Because users were not paying for the service, they often left Pandora radio on all day, even while away from their computers. While this streaming cost users nothing, Pandora was required to pay SoundExchange for each song played. They had to figure out how to get users to be more economical with their music streaming. Meanwhile, the number of users coming to Pandora had grown to 1.8 million a day.

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[8] Eliot Van Buskirk, "Sweet: Pandora's Streaming Radio App for iPhone," *Wired*, July 10, 2008, http://www.wired.com/listening_post/2008/07/sweet-pandora-o/, accessed March 12, 2010.

[9] Jason Kincaid, "Pandora Usage Stats Prove it's the iPhone's Killer App," *TechCrunch*, July 15, 2008, http://techcrunch.com/2008/07/15/pandora-usage-stats-prove-its-iphones-killer-app/, accessed February 15, 2010.

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"Leave a Buck in the Tip Jar"

The era where creating an application first, then two years later thinking how to make money from it, is bygone now, and companies will need to think how to make money sooner than later if they aim for it—This is where innovation comes in and usually wins.

—Orli Yakuel[10]

The Pandora team had spent years perfecting the product and building a critical user base. But they knew the future of the company depended on developing a sustainable business model. Ideally, they would like a lot of users in the light- to middle-usage range, who would click on ads, evangelize the product, and cost very little in bandwidth and royalties. But this group of ideal users would be too small to cover even fixed costs. The team needed a plan that would scale gracefully and allow Pandora to become a profitable enterprise.

One option was to add more advertising. Because each user gave Pandora a zip code, age, and gender upon registration, the company could target ads or even provide local marketing. But the Sequoia presentation brought up a scary reality: advertising markets were "cracking." And even if Pandora could find ample ad revenue, would more advertising turn users away from the product? Currently, Pandora ads were nonintrusive, an attribute that users loved. The company had shied away from actually inserting audio ads for that reason.

Westergren and Kennedy also pondered the option of a hot Web 2.0 concept: the "freemium" model. Pandora could provide a limited but free service to all users, and also offer a premium-priced value-added membership for "super-users." According to the *New York Times*, freemium was becoming the "most popular business model among Web start-ups." [11] (See **Exhibit 5** for the 10 commandments of a successful freemium app.)

A third option was to implement a subscription model for all users. Spreading the amount among millions of users would make each payment negligible. Plus, wasn't it only fair to charge users for the actual costs of music streaming? One of the board members had suggested $3 per month per member, which would have a huge positive impact on profit margins. Westergren observed in the *New York Times*: "This is the ultimate debate: What is the nexus of what users want and what the economics will allow? . . . Certain services offered too much and couldn't afford it, and others charged too much for features people weren't willing to pay for. There has to be a middle ground, and we're still looking for it."[12]

Finally, the team considered capping the listening hours and charging only those who went over the limit. Kennedy brainstormed:

> All right, what we will do is we'll ask the people who go over 40 hours to pay 99 cents. The beautiful thing about that is you can't complain about being asked to pay 99 cents. After you listened to 40 hours, after you go through the 600 tracks of music, we ask you to pay the price of *one* download. And that doesn't mean everyone will take it, or everyone will necessarily like it, but you can't argue, you can't turn to a friend and say, "These guys are ripping me off. They are charging me 99 cents after I listened for 40 hours!" You're not likely to get their sympathy.

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[10] Orli Yakuel, "Your Guide to Music on the Web," *Techcrunch*, September 26, 2009, http://www.techcrunch.com/2009 /09/26 /your-guide-to-music-on-the-web-part-ii/, accessed March 12, 2010.

[11] Claire Cain Miller, "Ad Revenue on the Web? No Sure Bet," *New York Times*, May 24, 2009, http://www.nytimes.com /2009/05/25/technology/start-ups/25startup.html?_r=3, accessed March 12, 2010.

[12] Ibid.

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Westergren smiled thoughtfully and shot back, “We just have to get them to leave a buck in the tip jar!” With plenty of options on the table, Westergren knew they had to make a decision. And make it quickly. The future of Internet radio depended on them.

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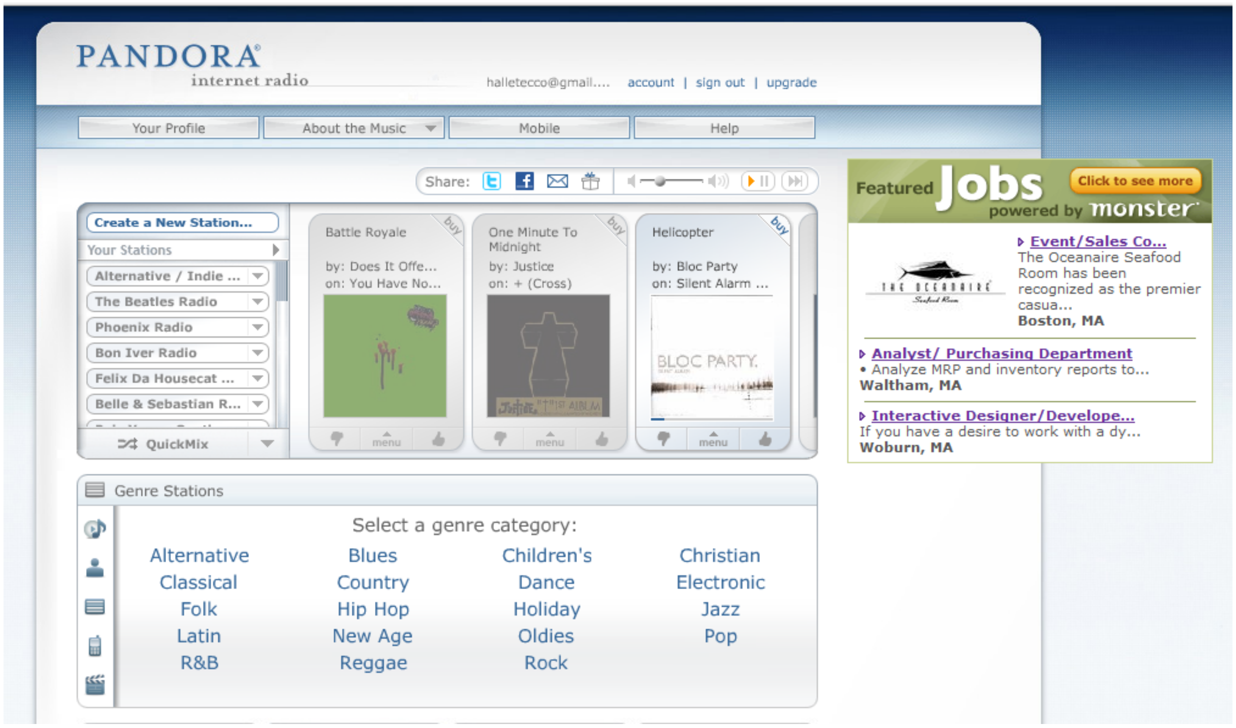
Exhibit 1 Pandora Screen Shot



Source: Casewriter.

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Exhibit 2 Notification of Agreements under the Webcaster Settlement Act of 2008, published in the *Federal Register*

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and Terms, SoundExchange does not acknowledge that the transmitting entity qualifies as a Commercial Webcaster, Small Pureplay Webcaster or that it has complied with the requirements of the statutory licenses under Sections 112(e) and 114 of the Copyright Act (including these Rates and Terms). It is the responsibility of each transmitting entity to ensure that it is in full compliance with applicable requirements of the statutory licenses under Sections 112(e) and 114 of the Copyright Act. SoundExchange is not in a position to, and does not, make determinations as to whether each of the many services that rely on the statutory licenses is eligible for statutory licensing or any particular royalty payment classification, nor does it continuously verify that such services are in full compliance with all applicable requirements. Accordingly, a Commercial Webcaster agrees that SoundExchange's acceptance of its election, payment or reporting does not give or imply any acknowledgment that it is in compliance with the requirements of the statutory licenses (including these Rates and Terms) and shall not be used as evidence that it is in compliance with the requirements of the statutory licenses (including these Rates and Terms). SoundExchange and copyright owners reserve all their rights to take enforcement action against a transmitting entity that is not in compliance with all applicable requirements.

ARTICLE 3 – SCOPE

3.1*In General.* In consideration for the payment of royalties pursuant to Article 4 and such other consideration specified herein, Commercial Webcasters that have made a timely election to be subject to these Rates and Terms as provided in Section 2.2 are entitled to publicly perform sound recordings within the scope of the statutory license provided by Section 114 by means of Eligible Transmissions, and to make related ephemeral recordings for use solely for purposes of such Eligible Transmissions within the scope of Section 112(e), in accordance with and subject to the limitations set forth in these Rates and Terms and in strict conformity with the provisions of 17 U.S.C. § § 112(e) and 114 and their implementing regulations (except as otherwise specifically provided herein), in lieu of other rates and terms from time to time applicable under 17 U.S.C. § 112(e) and 114, for each calendar year during the period beginning on January 1, 2006, and ending on December 31, 2015, during which they have made such an election.

3.2*Applicability to All Eligible Services Operated by or for a Commercial Webcaster.* If a Commercial Webcaster has made a timely election to be subject to these Rates and Terms as provided in Section 2.2, these Rates and Terms shall apply to all Eligible Transmissions made by or for the Commercial Webcaster that qualify as a Performance under 37 C.F.R. § 380.2(i), and related ephemeral recordings.

3.3*No Implied Rights.* These Rates and Terms extend only to electing Commercial Webcasters and grant no rights, including by implication or estoppel, to any other person or except as specifically provided herein. Without limiting the generality of the foregoing, these Rates and Terms do not grant (i) any copyright ownership interest in any sound recording; (ii) any trademark or trade dress rights; (iii) any rights outside the United States (as defined in 17 U.S.C. § 101); (iv) any rights of publicity or rights to any endorsement by SoundExchange or any other person; or (v) any rights with respect to performances or reproductions outside the scope of these Rates and Terms or the statutory licenses under 17 U.S.C. § § 112(e) and 114.

ARTICLE 4 – ROYALTIES

4.1 *Minimum Fee.* Each Commercial Webcaster will pay an annual, nonrefundable minimum fee of $25,000. Upon payment of the minimum fee, the Commercial Webcaster will receive a credit in the amount of the minimum fee paid against any royalties payable by it under these Rates and Terms for the same calendar year.

4.2 *Royalty Rates in General.* Royalties for Eligible Transmissions made pursuant to 17 U.S.C. § 114, and the making of related ephemeral recordings pursuant to 17 U.S.C. § 112(e), shall be payable as provided in this Section 4.2, except as provided in Section 4.3.

(a) A Commercial Webcaster that makes Eligible Transmissions through a Bundled Service, Syndicated Service or Subscription Service, shall pay royalties for such Eligible Transmissions on a per performance basis, as follows:

YEAR	RATE PER PERFORMANCE
2006	$0.0008
2007	$0.0011
2008	$0.0014
2009	$0.0015
2010	$0.0016
2011	$0.0017
2012	$0.0020
2013	$0.0022
2014	$0.0023
2015	$0.0025

(b) To the extent a Commercial Webcaster is not required to pay royalties under Section 4.2(a), it shall pay royalties equal to the greater of the following (on an annual basis, as provided in Section 4.5):

(i) A usage–based royalty computed on a per–performance basis, or in the years where specified on an aggregate tuning hour basis, as follows:

YEAR	PER PERFORMANCE	PER AGGREGATE TUNING HOUR
2006	$0.00080	1.2¢
2007	$0.00084	1.26¢
2008	$0.00088	1.32¢
2009	$0.00093	
2010	$0.00097	
2011	$0.00102	
2012	$0.00110	
2013	$0.00120	
2014	$0.00130	
2015	$0.00140	

(ii) 25% of Gross Revenues from activities in the United States (as defined in 17 U.S.C. § 101).

4.3 Royalty Rates for Small Pureplay Webcasters Through 2014. For Eligible Transmissions made pursuant to 17 U.S.C. § 114, and the making of related ephemeral recordings pursuant to 17 U.S.C. § 112(e), during the period 2006–2014, electing Small Pureplay Webcasters shall pay royalties equal to the greater of the following (on an annual basis, as provided in Section 4.5):

(i) A percentage of Gross Revenues, as follows:

YEAR	PERCENTAGE
2006–2008	10% of the first $250,000 in Gross Revenues from activities in the United States (as defined in 17 U.S.C. § 101), and 12% of any Gross Revenues in excess of $250,000 from activities in the United States, during the applicable year

Source: Federal Register, vol. 74, no. 136, July 17, 2009.

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Exhibit 3 Pandora Radio: Summary of Key Performance Metrics

Revenue	
CPM rate	$7.00
Average number of ads per listener per hour	7
Percent of inventory sold in typical month	60%
Average ad revenue per listener per hour	$0.0294
Fixed cost	
Head count	$12,000,000
Other fixed costs	$10,000,000
Variable costs per hour of music streamed	
Royalties	$0.0154
Revenue-based commissions and other costs	0.0074
Streaming costs	0.0030
Total variable costs	$0.0258
Variable cost of streaming 40 hours of music	$1.0308
Variable cost of streaming 150 hours of music	$3.8655
Hours played per day	
Number of users who use Pandora during a given day	1,800,000
Average hours per user per day	2.5
Total played hours per day	4,500,000

Source: Company data.

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Exhibit 4 Distribution of Pandora Listeners

Hours per Month	% of Listeners	% of Hours	Hours listened per month	% of Listeners	% of Hours	Hours listened per month	% of Listeners	% of Hours	Hours listened per month	% of Listeners	% of Hours
<1	11.0%	0.3%	40	0.3%	0.9%	80	0.1%	0.5%	120	0.0%	0.3%
1	13.9%	0.9%	41	0.3%	0.8%	81	0.1%	0.5%	121	0.0%	0.3%
2	9.2%	1.1%	42	0.3%	0.8%	82	0.1%	0.5%	122	0.0%	0.3%
3	6.7%	1.3%	43	0.3%	0.8%	83	0.1%	0.5%	123	0.0%	0.3%
4	5.3%	1.3%	44	0.3%	0.8%	84	0.1%	0.5%	124	0.0%	0.3%
5	4.3%	1.3%	45	0.3%	0.8%	85	0.1%	0.5%	125	0.0%	0.2%
6	3.6%	1.3%	46	0.3%	0.8%	86	0.1%	0.5%	126	0.0%	0.3%
7	3.1%	1.3%	47	0.3%	0.8%	87	0.1%	0.5%	127	0.0%	0.2%
8	2.7%	1.3%	48	0.3%	0.8%	88	0.1%	0.5%	128	0.0%	0.2%
9	2.4%	1.3%	49	0.2%	0.7%	89	0.1%	0.4%	129	0.0%	0.2%
10	2.1%	1.3%	50	0.2%	0.7%	90	0.1%	0.4%	130	0.0%	0.2%
11	1.9%	1.3%	51	0.2%	0.7%	91	0.1%	0.4%	131	0.0%	0.2%
12	1.7%	1.3%	52	0.2%	0.7%	92	0.1%	0.4%	132	0.0%	0.2%
13	1.6%	1.3%	53	0.2%	0.7%	93	0.1%	0.4%	133	0.0%	0.2%
14	1.5%	1.3%	54	0.2%	0.7%	94	0.1%	0.4%	134	0.0%	0.2%
15	1.3%	1.2%	55	0.2%	0.7%	95	0.1%	0.4%	135	0.0%	0.2%
16	1.2%	1.2%	56	0.2%	0.7%	96	0.1%	0.4%	136	0.0%	0.2%
17	1.1%	1.2%	57	0.2%	0.7%	97	0.1%	0.4%	137	0.0%	0.2%
18	1.1%	1.2%	58	0.2%	0.7%	98	0.1%	0.4%	138	0.0%	0.2%
19	1.0%	1.2%	59	0.2%	0.7%	99	0.1%	0.4%	139	0.0%	0.2%
20	0.9%	1.2%	60	0.2%	0.7%	100	0.1%	0.4%	140	0.0%	0.2%
21	0.9%	1.1%	61	0.2%	0.6%	101	0.1%	0.4%	141	0.0%	0.2%
22	0.8%	1.1%	62	0.2%	0.6%	102	0.1%	0.4%	142	0.0%	0.2%
23	0.8%	1.1%	63	0.2%	0.6%	103	0.1%	0.4%	143	0.0%	0.2%
24	0.7%	1.1%	64	0.2%	0.6%	104	0.1%	0.4%	144	0.0%	0.2%
25	0.7%	1.1%	65	0.2%	0.6%	105	0.1%	0.4%	145	0.0%	0.2%
26	0.7%	1.1%	66	0.1%	0.6%	106	0.1%	0.3%	146	0.0%	0.2%
27	0.6%	1.0%	67	0.1%	0.6%	107	0.1%	0.3%	147	0.0%	0.2%
28	0.6%	1.0%	68	0.1%	0.6%	108	0.1%	0.3%	148	0.0%	0.1%
29	0.6%	1.0%	69	0.1%	0.6%	109	0.0%	0.3%	149	0.0%	0.1%
30	0.5%	1.0%	70	0.1%	0.6%	110	0.0%	0.3%	>=150	0.6%	7.7%
31	0.5%	1.0%	71	0.1%	0.6%	111	0.0%	0.3%			
32	0.5%	1.0%	72	0.1%	0.6%	112	0.0%	0.3%			
33	0.5%	0.9%	73	0.1%	0.5%	113	0.0%	0.3%			
34	0.4%	0.9%	74	0.1%	0.5%	114	0.0%	0.3%			
35	0.4%	0.9%	75	0.1%	0.5%	115	0.0%	0.3%			
36	0.4%	0.9%	76	0.1%	0.5%	116	0.0%	0.3%			
37	0.4%	0.9%	77	0.1%	0.5%	117	0.0%	0.3%			
38	0.4%	0.9%	78	0.1%	0.5%	118	0.0%	0.3%			
39	0.4%	0.9%	79	0.1%	0.5%	119	0.0%	0.3%			

Source: Company data.

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Exhibit 5 10 Commandments of a Successful Freemium App

1. Make sure that the usefulness and engagement of the app are in perfect sync.
2. Make your user value proposition a simple one.
3. Focus deeply on one single domain.
4. Clearly define what is free and what is paid.
5. Build a subscription service into your application.
6. Encourage your customers to use your application often, for the more they use the application, [the] more likely they are to establish a relationship with your company and that means you can sell them something new (or an upgrade) in the future.
7. Data is the ultimate lock-in. The more data that is stored inside the application, [the] more difficult it is for customer to switch, because of the extra effort involved.
8. Free is free marketing. Instead of advertising, the service should sell itself.
9. Make sure what you started offering for free remains free.
10. Ensure your app works across all platforms, including devices (such as the iPhone) preferred by your likely customers.

Source: GigaOm, http://gigaom.com/2009/09/01/how-freemium-can-work-for-your-startup/, accessed March 2010.

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