FINDING A PARTNER MODEL WITH BROADCASTERS AT TUNEIN.COM

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Introduction

Founded in 2002, TuneIn delivers free Internet radio from all over the world. The application streams radio stations from 50,000 local, international, and Internet stations spanning 140 countries and 55 different languages in over 150 products.1) It provides users with access to live radio content through a variety of media including websites, smartphones, home entertainment devices, and auto in-dash receivers. 2) The application also allows users to pause, rewind, and record live radio programs. Although there are numerous online applications that offer music streaming, TuneIn differentiates itself by focusing on radio programming. Users of mobile devices like the iPhone, iPad, and Android phones can choose between a free TuneIn Radio application and a $0.99 Pro version.

Based in Palo Alto, California, TuneIn has garnered significant success in the emerging mobile market, being consistently ranked one of the top ten paid iPhone and iPad apps (Exhibit 1). In fact, it became the first Internet radio application to turn the iPhone and iPod Touch into a Digital Video Recorder (DVR) for radio. TuneIn has also created broadcasting partnerships with well-known brands such as BMW's Mini, Roku, Sonos, Phillips, and Logitech. 3) According to BizInformation, TuneIn.com is valued at $5.54 million.4) Gizmodo, a technology weblog, noted, "TuneIn Radio, with stations and features galore, is pretty much the ultimate iOS radio app." 5)

However, despite the app's popularity, TuneIn CEO Bill Moore has expressed concern over low revenues in a highly competitive market.6) Furthermore, since the content of TuneIn is controlled by broadcasters, TuneIn must comply when broadcasters request to remove their stations from the guide. Broadcasters ask to be delisted because they want to maintain control of their local audience and maximize revenues. Each loss weakens TuneIn's guide and its value to customers. The challenge for TuneIn's management is to develop a mutually beneficial partnership model with broadcasters.

Overview of Online Broadcast Industry

INDUSTRY TRENDS

The consumer radio industry, virtually unchanged for a century, has been revolutionized in recent years with the advent of Internet and satellite radio, podcasting, high-definition radio, and mobile audio services. As the industry addresses these changes in the coming years with more mobile devices become Internet-connected, the emerging market of online radio is projected to experience exponential growth, according to a study by Edison Research and Arbitron. This study also notes that 75% of Americans expect they will

listen to just as much AM/FM radio in the future despite changes in technology1) (Exhibit 6). In a more recent Arbitron / Edison research report, an estimated 89 million Americans listened to online radio in April 2011, and 56% of the total online radio users listened to an online AM/FM or pure-play radio station. This number is up from the 69 million monthly listeners reported a year ago. In fact, the online audience has doubled every 5 years since 2001.2) According to the report, two top reasons for listening to online radio are variety and control. Other reasons listed by listeners include less DJ chatter, fewer commercials, much better signal reception, and the ability for diaspora to listen to radio stations from home.3)

Emerging markets are particularly responsible for the increase in mobile music access, specifically in large markets like China and India, where 3G network access is becoming more prominent.4) This explains the sharp rise in the number of people downloading or streaming music through their handsets.5)

Internet radio is also becoming more integrated into people's lives, as shown by recent studies from Coleman and RAJAR. An estimated 43 million Americans (one in six) listen to some form of Internet streaming audio at least once a week. Streaming offers a new form of radio delivered through the computer, mobile phone, iPad, and other Internet devices. Coleman's study shows that nearly 30% of U.S. mobile phone users own a radio-ready, app-friendly smartphone, up from 21% in 2010.6) RAJAR, a radio industry audience measurement system, found that 1.4 million people have downloaded at least one radio app to their mobile device, and 13% of listeners over the age of 15 have listened to radio on a mobile phone. Of those listeners, 15% run a station-specific app, while the majorities make their selection using a specific FM station. According to Bridge Ratings, "When given a choice between listening to music over the Internet or traditional radio stations, 54% prefer the Internet while 30% prefer radio." 7)

Media usage among teens and young adults is also shifting, according to a Radio News report.8) In 2000, 74% of young adults (ages 12-24) listened to traditional radios. Yet, in 2010, only 41% of young adults listened to traditional radio. The Internet has replaced many music and newspaper habits of young people; online usage among teens and young adults has increased from 16% in 2000 to 42% in 2010. The report states, "The same trend is observable in total time spent with various media. In 2000, teens and young adults were spending close to two hours and 45 minutes listening to the radio each day. By 2010, that time spent had fallen to an hour and a half. Time spent online had risen from an hour a day to almost three."

Findings from RAJAR in December 2010 show that 77% of podcast users listen to podcasts at home, and 50% listen in the car or on public transport. 9) Appropriate methods for providing music on suitable devices depend on when and where people listen to the radio.

THE FUTURE OF ONLINE RADIO REVENUE

While digital radio ad revenue is growing quickly, it is still only a small percentage of total radio revenue.10) However, streaming and mobile applications are essential for continued growth. Mobile apps are a big driver of this growth and are viewed as "the next big thing" by online broadcasters. Smartphone owners – now 45 million strong in the U.S.11) and 297 million strong worldwide12) – are expected to reach 1.4 billion by 2015.13) "The advent of the mobile industry has grown this industry and transformed the business model," said Robin Flynn, the associate director of media analysis firm SNL Kagan. The growth in smartphone users will also contribute to increased revenue, as advertisers pay a premium for targeted in-stream audio ads.

Radio's digital revenue is expected to double in the next few years, from $552 million in 2010 to $1 billion in 2015. That would make digital revenue account for 5.3% of radio's total revenue in 2015, up from 3.2% in 2010. 14)

While TuneIn provides its service on standard web browsers, trends indicate that users do not access TuneIn.com as much as the TuneIn Radio mobile app, indicating mobile device app development as an important growth avenue. As of April 2011, users only access TuneIn.com for an average of 5 minutes at a time, which is barely enough time for two songs (Exhibit 5).

INDUSTRY PARTICIPANTS

The radio industry includes established radio stations, music artists, record labels and other content owners, and the digital technology and equipment which enable the radio ecosystem. With the increasing popularity of streaming radio, a large number of Internet radio sites have emerged in the past few years. The Internet radio ecosystem comprises listeners, broadcasters, advertisers, and platform providers. TuneIn positions itself as a platform provider, delivering radio streams to a variety of devices.

BROADCASTERS

The radio broadcasting industry consists of radio stations and networks that create content or acquire the right to broadcast prerecorded or live radio programs. Broadcast signals travel over the airwaves from a station's transmission tower to the antennas of radios. Anyone in the signal area with a radio can receive the programming. 15)

Radio broadcasters can be broken into at least two different groups: public service and commercial16). Public service broadcasters are funded in whole or in part through public

money. This may be through money received directly from the government, or, as in the UK, through a license fee. The license fee is typically protected by law and set by the government, and is required for any household which contains equipment that can be used to receive a TV signal. Commercial broadcasters are largely funded through the sales of advertising spots on their radio station. Commercial stations are often local, and may have some public service commitments within their permit.

According to Audio4cast, a website that analyzes the radio industry, an important aspect of radio's new mobile delivery system is the screen that many devices have that can deliver graphical displays and even video. In order to take advantage of these devices, broadcasters must develop alliances and strategies for offering visual content compatible with their audio content. There have also been recommendations that radio should begin to identify itself as a visual medium and develop visual content solutions that can entice listeners.

CONTENT PROVIDERS

- **Clear Channel Communications, Inc.** is a global media and entertainment company specializing in mobile and on-demand entertainment and information services for local communities, and premiere opportunities for advertisers. 18) It specializes in radio broadcasting, concert promotion and hosting, and fixed advertising in the United States through its subsidiaries. Clear Channel is the largest owner of full-power AM, FM, and shortwave radio stations, as well as the owner of twelve radio channels on XM Satellite Radio. Clear Channel is also the largest pure-play radio station owner and operator. 19

- **NBC/Westwood One** Formed in 1926 by the Radio Corporation of America (RCA), NBC was the first major broadcast network in the United States. In 1986, General Electric (GE) acquired RCA and the following year, GE sold NBC Radio's network operations to Westwood One.20)

  Since then, Westwood One has become one of the nation's largest providers of network radio programming in the U.S, providing more than 5,000 radio stations with over 150 news, sports, music, talk and entertainment programs, features, live events and digital content.21)

- **CBS Corporation** is a mass media company with constituent parts that reach back to the beginnings of the broadcast industry. It has operations in virtually every field of media and entertainment, including broadcast, cable, local television, radio, advertising, publishing, interactive media, and music (CBS Records).22)

  Formerly known as Infinity Broadcasting Corporation, CBS Radio is one of the largest ra-

dio stations in the United States. It owns around 130 radio stations across the country and is second in terms of revenue.23) CBS Interactive, which includes CBS.com, CNET.com, Radio.com, TV.com, Last.fm, CBS-powered AOL Radio and Yahoo! Launchcast, in addition to live simulcasts of terrestrial radio stations, reaches approximately 226 million unique users worldwide each month, of which 26.4 million are attributed to Last.fm.24

- **NPR** Founded in 1970, National Public Radio (NPR) is a privately and publicly funded non-profit membership media organization that serves as a national syndicator to 797 public radio stations. 25) NPR produces and distributes news and cultural programming nationwide. It manages the Public Radio Satellite System, which distributes NPR programs and other programming from independent producers and networks such as American Public Media and Public Radio International. In April 2009, NPR programming reached a record of 32.7 million listeners. 26)

ADVERTISERS

The advantage of radio advertising stems from its unique combination of high reach, high targetability, and low cost. Whereas the simplest, least expensive TV spot ad will easily cost well over $50,000 and take months to produce, a radio spot can be developed for less than $1,500. The reachability of internet radio is high: the 13,000 radio stations broadcasting across the United States together reach over 94% of the U.S. population over 12 years of age each week, according to an Arbitron report. The radio industry's grouping into formats is partially responsible for radio's ability to target customers efficiently (Exhibit 14).27)

Advertisers have taken note of the growing online broadcasting market. While the traditional radio network often has a higher targetability than other offline media (e.g. print media or television28)), online advertising services have even greater targeting potential. While most ads are placed in mobile apps and inside the audio stream, companies are exploring new ways to bring relevant ads to customers.29) Mobile ad networks have typically charged $10 to $20 CPMs (cost per mille, the advert cost per thousand views) for advertisers looking to reach consumers via ordinary mobile phones. Premium prices range from $30 to $40 for mobile video and for particularly desirable cohorts, like iPhone and smartphone owners. Super premiums of $50 are charged for popular publications, such as USA Today. 30)

For example, in the case of TargetSpot Inc., the nation's largest Internet and mobile radio advertising network, the company partnered with Aha Mobile Inc. to deliver audio advertising to the free Aha Radio mobile application. A key feature of the product partnership allows advertisers to geographically target listeners based on real-time GPS data and their

personal preferences and interests. This helps advertisers pinpoint the listener's location and deliver ads that reach them at the most appropriate time and place. 31)

DISTRIBUTORS

Radio distributors are an important connection between the content provider and the customer. Even though the Internet is still the primary platform, distribution methods have changed drastically with the advance of technology. Traditionally, the host radio station was responsible for the content distribution. Now, however, TuneIn aims to act as an independent distribution channel for multiple stations.

Success factors for an online radio distribution platform include cost-effectiveness and having a broad spectrum available to achieve coverage and service targets. Digital radio needs a simple and cheap consumer offering: free-to-air broadcasts with mobile reception and with the possibility of easy-to-use, compact, and cheap receivers. It must also provide a set of multimedia capabilities, including pictures, enhanced text services, rich media, and electronic program guides. Broadcasters should also retain the ability to transmit traffic and travel information.32)

Online radio distributors, such as StreamTheWorld, provide services converting analog content to a digital medium, distributing content over the Internet, inserting ads, and monitoring and profiling listeners.33)

COMPETITORS

Direct competitors to TuneIn fall into two categories. Online streaming music services such as Last.fm and Pandora compete with the music radio stations that TuneIn provides, while online radio directories compete with TuneIn's service to connect users to stations.

Online Radio Directories

- **SHOUTcast** is cross-platform proprietary software for streaming media over the Internet. SHOUTcast Radio is a related website which provides a directory of SHOUTcast servers. The software, developed by Nullsoft, allows digital audio content to be broadcast to and from media player software, enabling the creation of Internet radio "stations."

  The SHOUTcast software has been developed to merge audio data with metadata such as song titles and the station name. Additionally, it is available for multiple operating systems,

and customers can install the application directly on their cell phones. SHOUTcast is available for Windows Mobile, Android, BlackBerry, Palm, and iPhone.

- **iTunes** is a software platform and mobile app store for Apple's iOS devices. Apple's iTunes software not only offers music management features and an online shop for purchasing music and videos, but also the means to listen to Internet radio and podcasts. The iTunes radio service features 1795 radio stations. Programming covers many genres of music and talk, including streams from both internet-only sources as well as traditional radio stations

- **Sirius XM Radio** Founded in 1990, Sirius XM Radio provides both satellite radio and Internet radio services in the U.S. and Canada on a subscription-fee basis. It has a strong presence in the automotive market where its receivers and players are integrated into many new and used models from leading automakers, including BMW, Ford, and Toyota. Compared to its competitors in Internet radio, it only has roughly 180 channels. However, many of them are exclusive. Sirius XM signs contracts with popular talk show personalities like Howard Stern, whose show is not available on TuneIn. It also offers exclusive sports programming such as NFL, NASCAR, and MLB. Its Internet radio service does not require a stand-alone receiver and charges a subscription fee of $12.95 per month. 34) Sirius XM made $2.8 billion in revenue in 2010.35) Faced with intense competition, the company recorded an operating expense of $2.4 billion in 2010, of which 18% was spent on subscriber acquisition.

- **AOL Radio** is an online radio service launched as Radio@AOL in 2001. Listeners can access AOL Radio through the web, or through the iPhone or iPad app. Its local radio stations are limited to CBS affiliates.36)

Online Radio Directories

- **Pandora** Pandora Radio is a U.S.-only, automated, personalized radio service powered by the Music Genome Project, a mathematical algorithm to organize music and predict a person's musical taste based on a small musical sampling. Pandora was founded in 1999 by Tim Westergren, Will Glaser, and Jon Kraft. The service is based on a "freemium" model, offering basic music streaming and recommendations free of charge, but charging a premium for advanced features and functionality. Pandora began as a music recommendation service for businesses but switched focus to consumers in 2007 after the dot-com bubble burst. It offers its users the ability to listen to music tailored to their tastes, effectively removing the radio-show host. Moreover, unlike many AM/FM radio stations, Pandora pays for the music it broadcasts. However, while the company found a strong following of con-

sumers, revenues did not follow. Pandora revised its revenue strategy to include online ads, new streaming deals, and a paid streaming model. It even hired a lobbyist in Washington and recruited its listeners to lobby for lower royalty fees. In 2008, Pandora launched an iPhone app to stream music in mobile devices and almost immediately, 35,000 new users a day joined Pandora from their cell phones, doubling the number of daily signups. Pandora finally posted its first quarter of profits in late 2009,37) indicating that an alternative small business model can be successful in an industry with large established players.38)

As of March 2010, Pandora had 800,00039) tracks in its library and 48 million users who listened for 11.6 hours per month on average. 40)On February 11, 2011, Pandora officially filed for a $100 million IPO.41)

TuneIn does not view Pandora as a direct competitor. "Radio is best as a live shared experience, with people, often local," Bill Moore says. "Our focus is what makes radio different and better than a personalized music experience. If you want personalized music, there are lots of options. We are not chasing those. We have added listener features to make radio competitive by, for example, showing live song/program and album artwork." 42)

- **Grooveshark** is an internationally-available online music search engine, music streaming service and music recommendation web application. Its revenue comes mainly from advertisements and subscriptions from paying users43).

  Grooveshark streams over 50 million songs per month from a reputed library of over 20 million tracks to more than 10,000,000 registered users. In April 2009, its audience grew at a rate of 2–3% per day, with its website having 20 million unique visitors each month.44)

- **Last.fm** is a music website founded in the United Kingdom in 2002. It claims over 40 million active users from more than 190 countries. On May 30, 2007, CBS Interactive acquired Last.fm for $280 million USD.

  In 2005, Last.fm integrated the Audioscrobbler music recommendation system. Audioscrobbler enables Last.fm to build a detailed profile of each user's musical taste by recording details of the songs the user listens to, either from Internet radio stations, the user's computer, or other portable music devices. This information is transferred to Last.fm's database either via the music player itself or via a plugin installed on the user's music player. The profile data is then displayed on the user's profile page.

  Initially, users were able to create custom radio stations and playlists with any audio track

in Last.fm's music library. However, the ability to listen to custom radio stations was with-drawn on November 17, 2010.

- **Rdio** is a social music service that can play streaming music or cache songs for offline playback. It is available through the browser, on the desktop, on Android, BlackBerry, Windows 7 Phone and iPhone smartphones, and on Sonos and Roku. Established in August 2010, Rdio allows users to build and share their online music collections, and see the listening activity, collections, and playlists of those they follow. Subscribers can also see what's in heavy rotation in their network and the Rdio community, top charts, and newly released albums.45) Rdio's catalogue has more than 8 million songs, obtained from the four major record labels (Sony Music Entertainment, EMI Group, Warner Music Group, and Universal Music Group). It offers two subscription-based pricing models: Rdio Unlimited costs $9.99/month, and supports web, desktop, mobile and supported media player use; Rdio Web costs $4.99/month, and supports web and Rdio Desktop use only. 46)

TuneIn Background

RADIOTIME

Bill Moore founded RadioTime in 2002 in Dallas, Texas. For $39 a year, RadioTime provided a TiVo-like program guide of local radio broadcasts that users could tune into on their computers using a radio tuner. RadioTime also offered a free basic membership with-out the scheduled-recording capability. Its program grid, which also worked with Internet radio streams, showed what was on the air in real-time and allowed users to search for shows by keyword, style, genre, and location.

RadioTime was considered a leading radio tuner that powered internet services and devices by connecting them to radio broadcast DJs, talk personalities, and sports programming. Lis-teners could easily access free, live, local, and global radio programming through the Radio-Time service. The service claimed to enhance other products and services by powering them with thousands of radio channels and programming.1) RadioTime established partnerships with Yahoo, Logitech, and Microsoft in 2006. By 2007, it had 1 million monthly visitors.2) To strengthen its leadership in listings, RadioTime acquired RadioSherpa in September 2008. RadioSherpa provided a real-time program guide for all HD radio stations in major U.S. markets such as New York, Boston, and San Francisco.

Although RadioTime had relatively good reviews from industry watchers, users complained about its sluggish software updates. In addition to downloading RadioTime, users had to install current versions of Windows Media Player and RealPlayer since RadioTime did not

include playback software of its own.3) This dependency on third-party software indicated a lack of all-in-one integration that frustrated and isolated users.

TUNEIN RADIO

Created by independent iPhone developer Ben Alexander, TuneIn is the first Internet radio application to turn the iPhone or iPod Touch into a DVR (Digital Video Recorder) for radio. Users can pause, rewind and record live radio programs, and search for music and programs by the names of artists or on-air personalities, specific songs, station call letters and genre. Other features that integrate other technologies include using the iPhone's GPS or WiFi capabilities to automatically detect local stations. Its support for international radio stations enables users to get connected to instant radios no matter where users travel.

The application provided streaming radio to iPhone users by leveraging online radio services such as RadioTime. It quickly gained popularity and became one of the top applications on both the iPhone and the iPad. Subsequently, RadioTime acquired TuneIn Radio in December 2010 and hired Ben Alexander to further develop mobile applications for the company. "Adding the TuneIn application to the line-up of our own and partners' mobile apps, along with the expertise Ben brings to our team, brings our customers and partners a significant competitive advantage," RadioTime CEO Moore commented. 4) TuneIn Radio's popularity led RadioTime to rename itself TuneIn in April 2011.5)6)

In less than a year after the app's release, more than 700,000 iPhone and iPod Touch owners had purchased the $1.99 TuneIn app, which included a directory of AM/FM and online-only radio stations airing in 140 countries and in 55 different languages. The app grossed close to $1 million in less than 12 months (taking into account the 30% commission fee on sales that went to Apple).7)

In December 2010, TuneIn released the "Song Search" feature that uses information about a listener's favorite songs or artists to recommend radio stations. "Song Search is the first technology that allows users to search for historical and real-time radio — both terrestrial and Internet-only stations," Moore explained.8) In April 2011, TuneIn announced that it added the ability to pause, rewind, and record live radio to its TuneIn Radio Pro Android app. The company also released a free version of its popular app for the iPhone, iPad, and iPod Touch. This allowed Android and iPhone users to choose between a free app that simply provided streaming radio stations, or a $2.99 Pro edition, which had additional capabilities such as allowing streams to be paused, rewound, or recorded.9) "With a free option for iOS plus pause and recording for our Android users, we can address two key customer requests," said Moore. At the same time, TuneIn unveiled the new TuneIn.com website, effectively replacing the RadioTime brand. According to Moore, "[...] the new TuneIn.com pro-

vides the same selection as our apps, so users can listen with a browser, manage their presets and find more information about their favorite stations, on-air personalities, sports teams and artists. Now TuneIn is the most complete radio solution for browser, mobile, home, and auto."

TuneIn also recently released a free app for the Windows 7 Mobile platform. A unique feature of the TuneIn Windows Phone app is its ability to switch to the mobile device's FM receiver if a station is available, saving battery and bandwidth. "TuneIn Radio is a great example of the dynamic applications that people will find on Windows Phone Marketplace to get the most out of their phones," said Todd Brix, senior director of Windows Phone Marketplace at Microsoft.10) A free Blackberry app has also been made available, and a Blackberry Pro app with pause and recording capabilities is in development. 11)

During the same period, TuneIn and the Carolina Mudcats Baseball Club, the Southern League (AA) affiliate of the Cincinnati Reds, announced that the team will stream its live game-day radio broadcasts to a dedicated station on TuneIn Radio, enabling fans to listen on their connected home and mobile devices. The Mudcats are the first professional baseball team to create an Internet radio stream exclusively for TuneIn Radio to complement its terrestrial radio broadcast. "Baseball and radio have a long history together, and we believe this partnership will mark a significant milestone in that history," said Moore. "Generations of baseball fans have followed their teams by listening to the great radio broadcasters like Vin Scully, Jack Buck, and John Sterling. We expect teams across all professional sports to follow Mudcats' lead."12)

The TuneIn app has received praise from both users and industry watchers. The iPad version of TuneIn Radio Pro received the "Editor's Choice award" from PC Magazine, which raved, "[TuneIn is] designed for radio fans with varied tastes ... the sheer number of stations that await your ear is staggering ... it easily ranks as one of the best iPad apps available."13)

Business Model

TuneIn generates revenue by selling apps and advertisement placements, licensing services to third parties like Sonos (ZonePlayer) and Logitech (Squeezebox), and selling aggregated audience statistics. However, Moore says the company is still looking for ways to grow revenues: "Despite wide adoption, we don't have much revenue, and won't until we can be part of a solution where Internet radio becomes profitable."

The TuneIn app is available in the iTunes App Store and Android Market for free without playback and record features, or $0.99 for the Pro version. The limited free version is also available in the Windows Mobile Marketplace. There is no subscription fee, compared to

many other online radio competitors with monthly or yearly subscription fees. The TuneIn application for other platforms, such as Blackberry and GoogleTV, is also free.

In addition to the revenue generated by app sales and advertising, TuneIn also provides a broadcast service for third parties. TuneIn licenses its platform and services to third parties in return for a fee and appropriate branding.1) The per-performance fee for larger pure-play webcasters was 0.097 cents per streamed song in 2010 and is expected to climb to 0.14 cents per song in 2015.2)

TuneIn also sells aggregated information about its listeners to its broadcast partners. In 2009, TuneIn teamed up with Ando Media, an analytic provider in the Internet radio market, to generate real-time audience measurement and ad management reports. Broadcasters then use this information to adjust their monetizing effort and strategy.

TARGET MARKET

TuneIn's target market is internet-enabled television and mobile device users (Exhibit 9). Additionally, TuneIn is also working on in-car radios3) since an estimated 76% of employed adults listen to the radio during their commute.4) TuneIn plans to provide commuters with a selection of thousands of radio channels. Its competitors have already made agreements with automakers to pursue this venue, such as the partnership between Grooveshark and Livio 5). TuneIn is also targeting new partnerships with automakers to increase its market penetration and create more revenue opportunities. As a result, the company is hiring business development personnel for creating partnerships with automakers.6)

Conclusions

Reflecting on TuneIn's growth, CEO Bill Moore states, "We've always focused on a consumer experience by organizing all radios, but have been waiting for radio in smartphones and connected devices to become a mass market. That's finally happened. Now over 300,000 new TuneIn users are activated every day. It's one of the top five free and one of the top five paid apps in more than 40 countries across all major handsets.1)" (Exhibit 1)

TuneIn has achieved initial success by giving its users access to a wide selection of radio stations from mobile devices at a low price. Its business defined as "audio entertainment", TuneIn leaves behind preconceived notions of what "radio" is. Having established its brand recognition, TuneIn is now in a position to decide how to grow its revenue, particularly in an ecosystem of strong forces from broadcasters and content providers.

TuneIn can pursue several avenues for growth. First, TuneIn can continue to expand its smartphone user base by striking deals with car radio and software providers. In addition,

TuneIn may partner with content providers or cellular carriers in order to deliver high-value, high-bandwidth content to its users. The company could create a value-adding partnership model with broadcasters to prevent them from removing their stations. TuneIn could also seek to offer its product on multiple platforms. Whether as a downloadable application or as an integral part of a product's feature list, TuneIn could take advantage of the growing mobile device market. In order to meet with the demands of expanding operations, TuneIn might also consider collaborating with others or hiring more talent to meet their needs, as the current small team may be overwhelmed by the number of platforms and products to support.

With competitors crowding the Internet radio market and growing threats of increased content cost, TuneIn must overcome many challenges in order to create a long-term profitable business. Can the Internet radio industry survive the imposition of royalty charges? How can TuneIn build a mutually-beneficial relationship with broadcasters? How can TuneIn improve its monetization model? Is Internet radio a viable business? The budding Internet radio industry and TuneIn's management must address these questions in the coming years in order to increase revenues and ensure lasting success.

Discussion

POTENTIAL BUSINESS MODELS

Diversify Revenue Streams

Revenue for online radio services can grow from several sources, including advertising, one-time or subscription pay services, and targeting new markets and customer bases such as the automotive industry. For example, Pandora, one of TuneIn's biggest competitors, has been paying attention to changes in consumer behavior and digital payment structures. Pandora's new revenue streams — including online ads, deals with content providers, and a paid streaming model — have been proved to be successful. Pandora finally turned profitable, reporting a revenue of $50 million in 2010, after struggling for 10 years. To help win new subscribers through streaming Pandora directly into vehicles, Pandora also hired George Lynch, an executive from Sirius XM Satellite Radio. 1)

In light of Pandora's move and Sirius XM Radio's strong presence, TuneIn faces stiff competition. To step in the automotive radio market, one strategy is to partner with automobile device makers to offer different radio listening experiences from traditional radios in vehicles. Potential research is on easily connecting the handset devices to existing electronics in the vehicles.

Another revenue source in automotive radio market is to mine TuneIn's massive listener base and traffic statistics for commercial interests. This aggregated data can then be sold to advertisers.

<u>Create Partnerships with Radio Stations and Other Content Providers</u>

Developing a cost structure that pays stations and other content partners based on per-play usage could be beneficial for TuneIn in terms of creating loyalty with its partners, and encouraging its partners to invest in the growth of TuneIn and hence the growth of their own revenues. Such partnerships will increase costs, and TuneIn would have to weigh it against the long term benefits of increased marketing and shared interests with other players in the internet radio ecosystem.

<u>Revenue Sharing with Overseas Broadcasters and Local Advertisers</u>

Ads on the radio are local and thus relevant to a limited set of radio listeners. TuneIn can broker revenue sharing deals between local advertisers and oversea broadcasters. The local advertisers will replace the original ads in radio with locally specific ads, while the oversea broadcasters are willing to give up partial ownership rights in exchange for additional revenue from replaced ads.

To entice both overseas broadcasters and local advertisers, TuneIn can split the ad revenue with the larger portion going to the other two parties initially. TuneIn can rework this revenue distribution after it establishes market dominance. Its sales team can leverage TuneIn's existing user base and traffic in negotiating with broadcasters to concede partial ownership rights on content, particularly ads. TuneIn can start focusing the most popular overseas broadcasters on its listing and advertisers in the major U.S. markets where these listeners reside.

<u>Revenue Sharing with Record Labels</u>

Traditional radio promotes sale of CDs. In internet radio, TuneIn should establish itself as an ally to the record labels that leads to sale of digital music. TuneIn can engage its listeners by offering a "Like" or "Save" functionality in the program guide or app that allows the listeners to purchase the music they just heard. TuneIn can negotiate with the record labels for a share of the revenue resulted from the sale.

POTENTIAL RISKS

TuneIn fails to distinguish its products and services from competitors. Due to the low barrier of entry, TuneIn could find itself being less and less relevant for users and may lose significant market share.

Supporting TuneIn across multiple platforms will overburden the engineering team and impede product development. Due to the low barrier of entry, TuneIn could find itself being less and less relevant for users and may lose significant market share.

In relying on mobile carrier networks, the wireless broadband infrastructure might fail to keep up with the increases in capacity demand. Several operators in the U.S., including AT&T and Verizon3), have steadily increased their mobile data fees due to growing bandwidth demands. It remains to be seen if the emergence of 4G access technologies such as LTE and WiMAX will be able to offset the explosive growth in bandwidth demands of mobile users. Also, flat rate data plans for mobile devices where a user can download unlimited data for a fixed monthly fee, are being phased out by carriers. AT&T removed its flat rate plan in June 20104) and Fran Shammo, president and chief executive officer of Verizon Telecom and Business, has also hinted at abandoning the flat rate plan.5) The enthusiasm of users for high bandwidth services (which includes TuneIn) may wane if it increases their monthly bill.

The viability of webcasting as an industry is questionable. The Copyright Royalty Board announced a decision on Internet radio royalty rates rejecting all of the arguments made by Webcasters, and instead, adopting the "per play" rate proposal put forth by SoundExchange.6) The manifestation of the willing buyer/willing seller standard has the Internet radio industry operating under the threat of a debilitating royalty increase.

Quality of streaming signals require further development and could frustrate and turn away potential users. Streaming signals to cars is still challenging. Whether drivers are plugging their smartphone into their car's auxiliary jack or streaming via Bluetooth, they still do not have the convenience factor that AM/FM brings to the table. In a recent study by KnowDigital, a consumer research company dedicated to new media, technology, and the digital space, some respondents stated that hooking up streaming capabilities is a hassle for short trips and would prefer to listen to over-the-air radio instead of spending time configuring their smartphones and finding their favorite online station. Some also reported that using mobile devices to stream music while driving could potentially be a safety hazard. Whatever the case may be, most users of in-car streaming radio continue to use over-the-air radio extensively. About 90% of radio streamers still use terrestrial radio on a daily basis.7)

TuneIn's content may shrink or not grow fast enough to provide variety and attract an adequate number of users. As a new radio medium, Internet broadcasting is viewed as a disruptive technology by the well-established radio broadcasting industry. Occasionally TuneIn gets requests from broadcasters to remove their stations from the guide. TuneIn complies but each loss weakens the guide. Broadcasters ask to be delisted because they want to maintain control of their listeners and maximize revenues. Management is focusing on developing a business model that can add value for broadcasters and make them partners.

Integrating the product into cars is out of TuneIn's area of expertise. The company has a strong background in developing apps for Internet mobile and television devices, but it has no experience with cars. Users quickly moving from cell to cell may experience performance degradation, or the user may be driving through a region of sporadic or nonexistent cell phone coverage. Such negative user experiences may adversely affect the TuneIn brand.

New laws or legislation can adversely affect TuneIn's business. In a nationwide public opinion poll conducted by the Harris Interactive company in October 2010, over three-quarters of respondents indicate they would "strongly" or "probably" consider paying a 30-cent fee for a built-in FM radio chip on their smartphone 8). In response, the National Association of Broadcasters (NAB) perceived the absence of radio chips in smartphones as "denying" consumers access to over-the-air radio and endorsed a proposal that will push for "Congressionally-mandated radio-activated chips" in smartphones, "with an acceptable phase-in period and inclusion of HD Radio chips when economically feasible." Currently, the FM-chip mandate is stalled in the Congress and received furious response from the Consumer Electronics Association (CEA), which represents the smartphone makers 9). If passed in the future, this FM-chip mandate gives broadcasters the incentive and means to keep their local audience locked-in, and therefore poses a potential threat to TuneIn's business as well as the whole internet broadcasting industry.

For any music played on the radio, broadcasters only need to compensate the song writers, and not the performers, under current U.S. law. The "Performance Rights Act," sponsored by the RIAA, was introduced in the Senate (S.379) in February 2009, with the goal to force broadcasters to also compensate performing artists. 10) If this bill passes, it would severely impact the broadcasters' cost structure, as they would have to cover increased royalty costs on both terrestrial and broadband radio. Combining with the trend of rising royalty rates, the compounded effects would put the radio industry into danger as radio stations will probably abandon online streaming as it will cost more than regular broadcasts.11)

Finally, the law regarding radio music and advertising may be very different in other countries. TuneIn will need international legal expertise to compile with country specific laws as it launches throughout the world.

Discussion Questions

1. What business is TuneIn in? Who are the customers of TuneIn?

2. Can TuneIn's initial success be leveraged to create a sustainable long-term business?

3. What disruptive technologies exist in the traditional and Internet radio industries?

4. Who are TuneIn's competitors? What are their respective business models? How does TuneIn differentiate itself?

5. What are the competitive forces operating in this industry's ecosystem?

6. What should TuneIn's marketing strategy be?

7. Can TuneIn pursue any alternative revenue and profit opportunities?

8. Should TuneIn raise venture capital? Which business model will be most attractive to investors?

9. What should TuneIn do to retain its customers and broadcasters in the future?

10. Can Internet radio companies sustain their business model following the imposition of new royalty charges?

11. Should TuneIn return to a subscription model, similar to the one Bill Moore had back in 2002?

EXHIBITS

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EXHIBIT 1: TOP iPHONE AND iPAD PAID APPS OF ALL-TIME

RANK	iPHONE	iPAD
1	Angry Birds	TuneIn Radio
2	Doodle Jump	Labyrinth
3	WhatsApp Messenger	Flick Kick Football
4	Tap Tap Revenge 3	Internet Radio Box
5	Pocket God	Backbreaker Football
6	TuneIn Radio	StickWars
7	Flight Control	Pocket Universe: Virtual Sky Astronomy
8	Bejeweled 2 + Blitz	IM+ Pro
9	Traffic Rush	SoundHound
10	Tap Tap Revenge 2.6	Slice It!

EXHIBIT 2: TUNEIN FEATURES

According to the Apple App Store. 1)

- Record any station for playback later (on demand or with record timer)

- Alarm Clock

- Play MP3 and AAC stations in the background in Safari on non-multitasking capable devices

- RadioTime directory featuring 40,000+ radio stations and thousands of radio shows

- Simple, quick, and easy-to-use interface

- Browse or search for your favorite shows and find out what stations they're currently available on

- Browse local stations with GPS or WiFi location

- Search for stations by keyword

- Browse stations by genre or location

- Pause live streams for up to 30 minutes

- Rewind and fast forward within last 30 minutes streamed

- Listen to podcasts of radio shows when available

- Bookmark your favorite stations, categories or shows

- Sleep timer

- Search for stations playing your favorite song or artist

- Bookmarks list displays current song or show for each station when available

- Show or station logo displayed when available

- Album art displayed when available

- Current song or show information displayed when available

- View station schedules when available

- Choose an alternate stream or bit rate when available

- View related and recommended streams, shows and genres

- View station website and twitter page

- Listen to artist station in Last.fm app

- Buy currently playing song on iTunes

- Automatic restart of last playing station on startup

- Automatic reconnect on loss of connection

- Enter custom stream URLs

EXHIBIT 3: TUNEIN INTERFACE

For a video demo of TuneIn, see Youtube - Tunein Radio App Review.

Icon:

Smartphone Interface:

Web and Google TV Interface:

EXHIBIT 4: TUNEIN TEAM

As of May 2011, TuneIn has 17 employees, five in high-level management (i.e. director or above). Other positions include developers, sales, UI design, HR, and product manager.

Bill Moore
CEO

Carl Rohling
VP Sales

Thomas Hutchings
VP Development

Ben Alexander
iPhone Developer

David McIntosh
Sr. Developer

Sebastian Gallese
Technical Sales

Kristin Perkins
Product Manager

Scott Fleischer
Director of Content Management

Boone Spooner
UI/UX Designer

Josh Mendelsohn
Director, Business Operations

Dina Kwan
Manager - Content & Support

Derek Southworth
Content Support

Kimberly Coleman
Human Resources

Chris Robertson
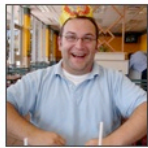Technical Operations Architect

Koustubha Deshpande
Software Engineer

Cory Wilkerson
Sr. Software Engineer

Mike McGeary
Social Media Coordinator

Executive Team:

Bill Moore - CEO: Bill founded RadioTime in 2002 because it was too hard to tune radio on connected products. Before RadioTime, Bill led two profitable self-funded software businesses from scratch through acquisition. His 20 years of technology experience includes management, marketing, sales and development.

Prior to RadioTime, Bill was vice president and general manager of the access software business unit for Efficient Networks, which sold over eight million copies of consumer client software through broadband providers around the globe. His career includes VP for sales, marketing, product management and business strategy for the IP management software startup Network TeleSystems in Sunnyvale, California. He has also held senior management roles in sales, marketing and support in his nine years with UB Networks in Santa Clara and Dallas. Bill has a BBA/MIS degree from Texas State University. 2)

Carl Rohling - VP Business Development: Carl Rohling has a legal (general corporate, M & A) and sales and marketing background with managerial experience in digital media and consumer electronics, business development, and strategic alliances. He specializes in revenue growth through alliances which compliment core products as well as vertical channel development. 3)

Carl joined RadioTime as an advisor in 2005 while working for Creative Labs, Inc. managing business development. Prior to Creative, Carl served as director of business development for SONICblue's Rio digital audio and Go Video divisions. He has been a New York corporate associate focused on public and private acquisitions for Fried, Frank, Harris, Shriver & Jacobson, and an international litigation associate for Paul, Weiss, Rifkind, Wharton & Garrison. 4)

Thomas Hutchings - VP Development: A seasoned technologist with over a decade of experience building sophisticated consumer web platforms, Thomas joined RadioTime in early 2006 after a successful turn as enterprise architect with Hotels.com. Before that, he led development at Carefinder.com, a national directory of child and adult care services. Thomas graduated summa cum laude from the University of Texas at Dallas.5)

EXHIBIT 5: TUNEIN'S WEBSITE METRICS

5a. Site Visits from Search Traffic

Search Traffic

The percentage of site visits from search engines.
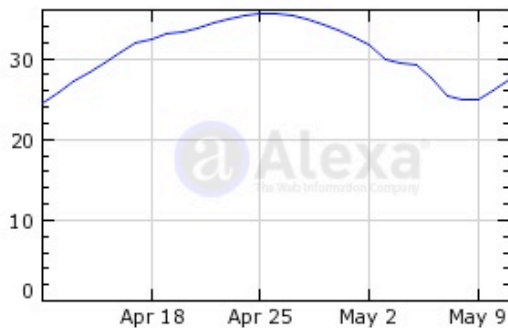
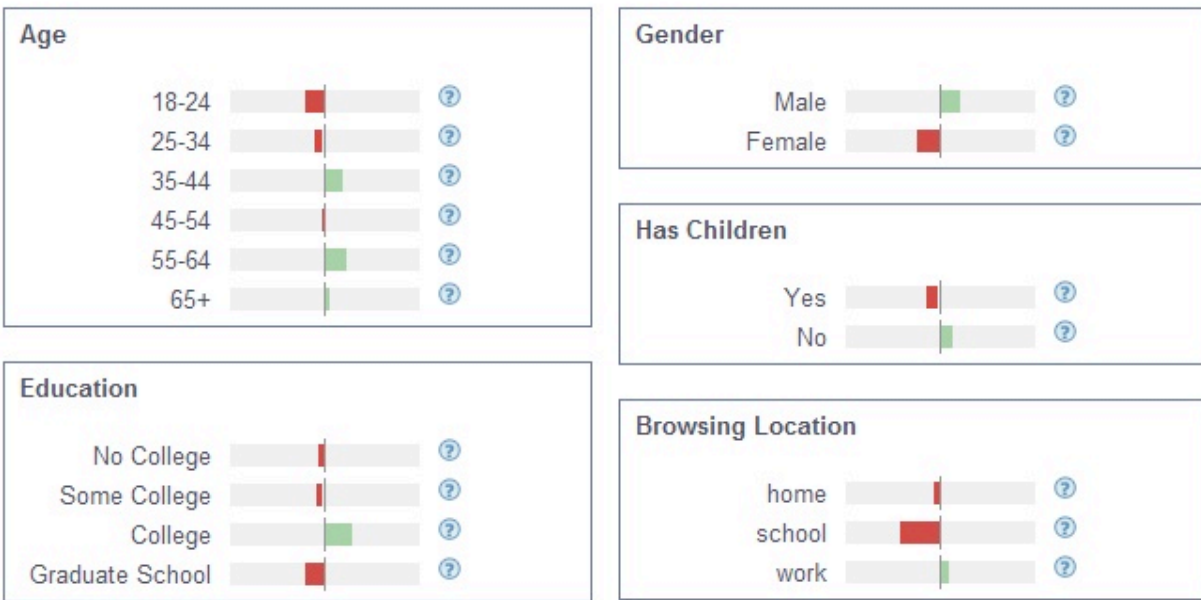| Period	Percent of Site Traffic
Last 30 days	29.1%
Last 7 days	29.1%
Yesterday	22%

Top Queries from Search Traffic

The top queries driving traffic to tunein.com from search engines. Updated monthly.

	Query	Percent of Search Traffic
1	tunein radio	41.38%
2	tune in radio	21.53%
3	tunein	14.26%
4	tune in	5.39%
5	tuneIn radio	1.44%
6	tuneinradio	1.41%
7	tunein radio for pc	1.36%
8	tunin radio	0.91%
9	tune-in radio	0.90%
10	tune radio	0.46%

5b. Audience Demographics

Audience Demographics for Tunein.com

Relative to **the general internet population** how popular is tunein.com with each audience below?

Age

18-24	
25-34	
35-44	
45-54	
55-64	
65+	

Gender

Male	
Female	

Has Children

Yes	
No	

Education

No College	
Some College	
College	
Graduate School	

Browsing Location

home	
school	
work	

5c. Average Time on Site

Time on Site (minutes)
tunein.com

Daily time on site for tunein.com:

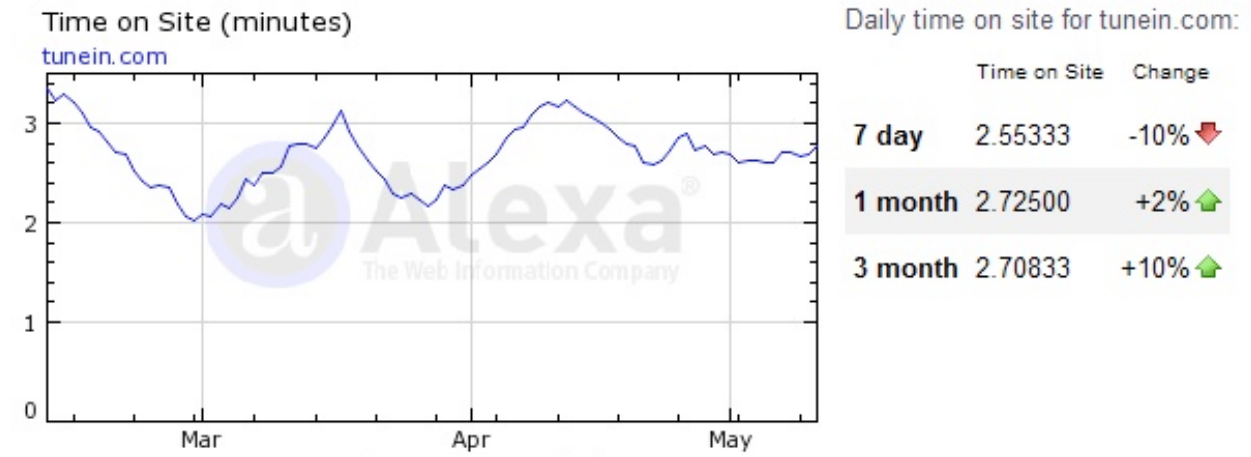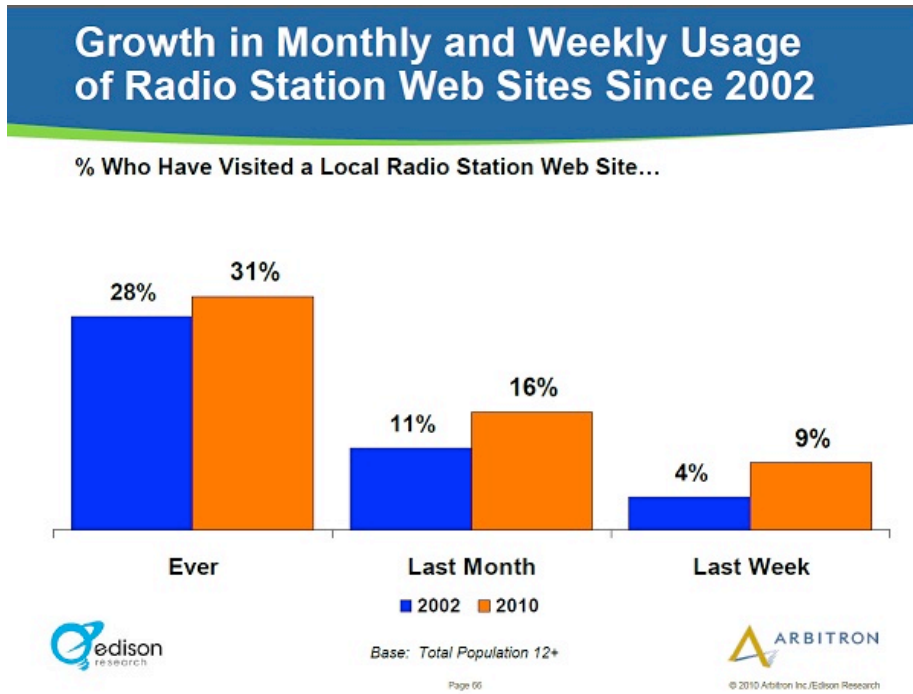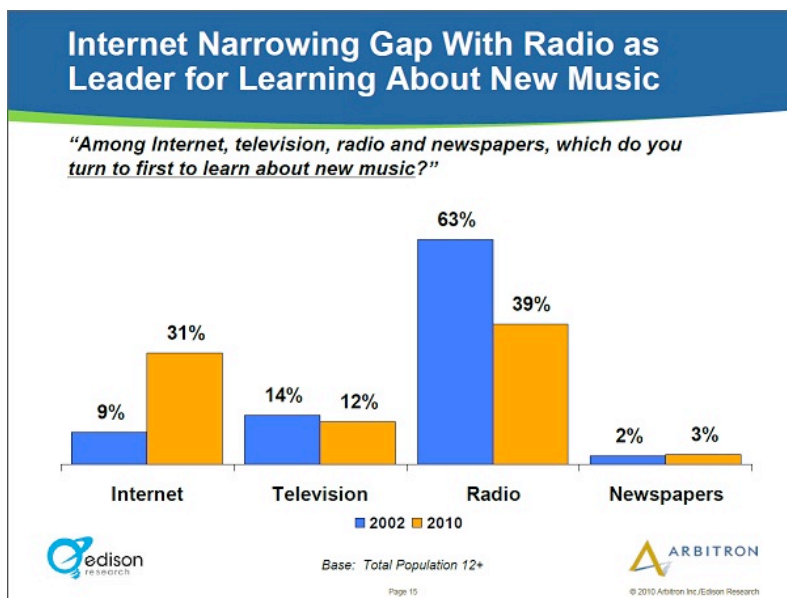|	Time on Site	Change
7 day	2.55333	-10%
1 month	2.72500	+2%
3 month	2.70833	+10%

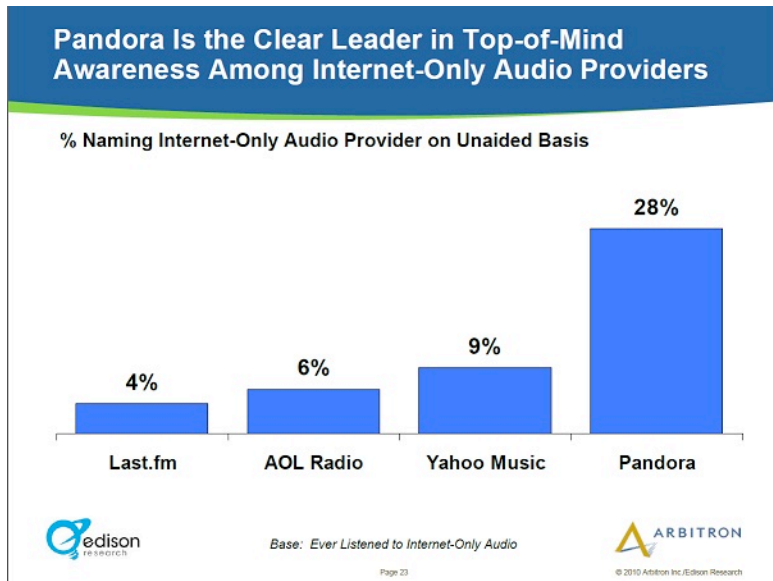## EXHIBIT 6: EDISON AND ARBITRON INTERNET RADIO SURVEYS

6a. Growth in Monthly and Weekly Usage of Radio Station Websites Since 2002

6b. Most Popular New Music Sources

6c. Most Well-Known Internet-Only Audio Providers
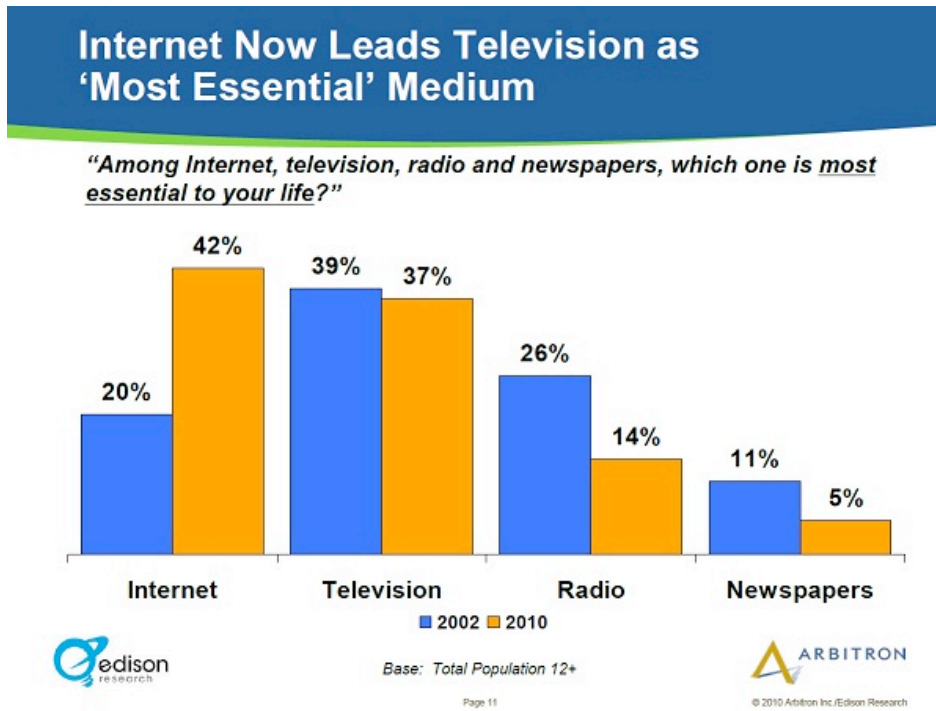

6d. Most Essential "Medium"

EXHIBIT 7: USAGE METRICS COMPARISON AMONG TUNEIN AND COMPETITORS

Stats	TuneIn	Pandora	Groove-shark	Live365	iHeart-Radio	Radio Shark	Maestro.fm	Last.fm	Rhap-sody
Users	-	80 million	10 million	-	12 million	-	-	40 million	750,000
Unique Users/ Month	9 million	13 million	20 million	2 million	-	-	-	15 million	-
Subscription Cost	free / pay for app	$36/year	$60 /year and free option	$5.95 / month	free	-	free	$3/month	$10 / month
Usage/ User/ Month	90 million connections	11.6 hours	-	9 hours	100 minutes per week	-	-	-	-
Software/ Hardware	software	software	software	software	software	both	software	software	software

EXHIBIT 8: COPYRIGHT ROYALTY BOARD INTERNET RADIO ROYALTY RATES

The rates set by the Board for commercial web-casters, including broadcasters retransmitting their over-the-air signals on the Internet, are as follows:

Year	Cost
2006	$.0008 per performance
2007	$.0011 per performance
2008	$.0014 per performance
2009	$.0018 per performance
2010	$.0019 per performance

A "performance" is defined as the streaming of one song to one listener. A station that has an average audience of 500 listeners would count 500 "performances" for each song it plays. The minimum fee is $500 per channel per year.

For noncommercial web-casters, the fee will be $500 per channel, for up to 159,140 Aggregate Tuning Hours (one listener listening for an hour) per month. Noncommercial webcasters who exceed that level pay at the commercial rate for all listening in excess of that limit.

EXHIBIT 9: TUNEIN'S SUPPORTED DEVICES

MOBILE DEVICES	HOME DEVICES
iPhone/iPad/iPod Touch	Google TV
Android	Yahoo TV
Palm	Roku
Blackberry	WDTV
Samsung Bada	
Windows phone	

EXHIBIT 10: TUNEIN'S HISTORY

TIMELINE	EVENT
2002	Bill Moore founds RadioTime 27)
September, 2008	RadioTime acquires RadioSherpa28)
September, 2010	RadioTime acquires TuneIn29)
December, 2010	TuneIn Radio releases "Song Search"30)
April, 2011	TuneIn Radio adds pause/rewind/record features to Android app; free release available for iPod/iPad/iPod Touch. Desktop version released.31)

EXHIBIT 11: 2010 ANALYSIS OF INTERNET RADIO MAJOR PROVIDERS

Internet Radio 2010 Update (Sorted by Monthly Unique Users/Subs)

Major I'net Radio/ Online Music on Demand Providers	Number of Stations	Business Model	Music Downloads	Song Library	Mobile App Download	Monthly Unique Users/Subs	2009 Rev. (mil.)
CBS Interactive*	350	Free Ad Supported	No	Unlimited for CBS stations; 3.5+ mil. on Last.fm	iPhone, iPod Touch, iPad, BlackBerry, Palm Pre, Android App	226 mil. worldwide / 26.4 mil. for Last.fm	$550
News Corp. / MySpace Music**	Personalized Playlists, Music on Demand & Vid. Streaming	Free On-Demand Ad Supported	Yes, via Amazon	Unlimited	iPhone, iPod Touch, iPad, BlackBerry, Palm Pre, Android App	70 mil. unique users/mo. on MySpace (incl. approx. 15 mil. imeem & iLike registered users)	$490e
Clear Channel Radio (iheartradio.com)@	750+	Free Ad Supported	No	Unlimited	iPhone, iPod Touch, iPad, BlackBerry, Palm Pre, Android App	110 mil. total listener base, approx. 22 mil. online listeners & 5.8 mil. mobile app downloads	$175e
Pandora Radio	Personalized	Free Ad Supported or $36 Annual Premium Subscription	No	Approx. 700,000	iPhone, iPod Touch, iPad, BlackBerry, Palm Pre, Android App	50 mil. registered, 20-25 mil. actively streaming on site, 6+ mil. iPhone, 1+ mil. BlackBerry and Android app downloads	$50
Sirius XM Internet Radio	120	Up to $17/mo. "Best of Both" Programming (add $3 for Internet and mobile streaming)	No	Unlimited	iPhone & BlackBerry app $3/month	18.7 mil. total subscribers	NA
Napster^	60	$15 for 15 MP3 Downloads & 3 Months of Unlimited Streaming	5, 15, or 60 song credits based on subscription	8 mil.	AT&T Select Phones	700,000	NA
Rhapsody&	100+	Free 25 songs per month or Unlimited $10/month	Access on Partnered MP3 devices	9 mil.	Verizon Vcast Phones, iPhone, Android apps	600,000	NA
Slacker Radio	Personalized	Free Ad Supported or $48 Annual Premium Subscription	No	2.4 mil.	iPhone, iPod Touch, iPad, BlackBerry, Palm Pre, Android App	500,000	NA
AccuRadio	480	Free Ad Supported	Yes, via Amazon	Unlimited	Palm's webOS, iPhone, iPod Touch, iPad	400,000	NA
FlyCast @@	2,000	Free Ad Supported	No	Unlimited	iPhone, iPod Touch, BlackBerry, Android App	NA	NA
GOOM Radio	Personalized; Top Artist & DJ Playlists	Free Ad Supported	No	Unlimited	iPhone, iPod Touch, iPad, BlackBerry (coming soon)	1+ mil. registered for beta version	NA
Apple/Lala Radio^^	Personalized	$0.10 for permanent access to streaming songs	Yes, via iTunes	Unlimited	iPhone, iPod Touch, iPad	NA	NA
Microsoft Zune Pass	Unlimited Music Streaming	$15/month	Access on Partnered MP3 devices	3+ mil.	Zune HD (upcoming Windows 7 phones)	NA	NA

* CBS Interactive 2009 reported revenues: $550.3 mil. total (estimated $75 mil. for Internet radio properties); Includes CBS.com, CNET.com, Radio.com, TV.com, Last.fm, CBS Powered AOL Radio & Yahoo Launchcast. ** Purchased iLike music discovery site for $20 mil. 8/17/09 and imeem social media Internet radio for $1 mil. in cash 12/8/09. @ Clear Channel estimated 5%-10% of total 2009 radio revenues were from online. @@ Powered by AccuRadio, Entercom, FOX News, Sandusky Radio, etc. ^ Now a subsidiary of Best Buy. & Now independent after spinoff from RealNetworks. ^^ Apple purchased from Warner Music 12/4/09. NA - Not Available. e - estimated.
Source: Company press releases, public data.

EXHIBIT 12: ADDITIONAL TUNEIN COMPETITORS

Rhapsody

The Rhapsody digital music service gives subscribers unlimited on-demand access to more than 11 million songs, whether they're listening on a PC, laptop, Internet-connected home stereo or TV, MP3 player, or mobile phone. It is the first and largest premium, on-demand music service in the United States.

Rhapsody allows subscribers to access their music through more touch-points than any other digital music service, including mobile phones from Verizon Wireless, through Rhapsody applications on the Apple iPhone, iPod Touch, RIM BlackBerry, and Android mobile platform, as well as through devices from Vizio, SanDisk, HP, Sonos, and Philips.32)

Live365

Live365 is an Internet radio network where members can create their own online radio station or listen to other Live365 broadcasters' online stations. It currently offers both free and paid services, charging $5.95/month for commercial-free access. (See Exhibit 7) It features more than 260 genres of music produced by more than 7000 broadcasters and music taste-makers from over 150 countries, and can be used for various desktops, mobiles, widgets, and streaming media devices.

Live365 represents two business models. The first consists of providing diverse webcast music streams to listener-subscribers plus the technology and required licenses for end-to-end broadcasting by individuals and organizations who wish to webcast music. The second business model is for the web-casters who can use Live365 to promote their music and offer links to sell their music by mail-order and downloads.

iHeartRadio

iHeartRadio is an interactive media social networking platform outlet created by Clear Channel. The app aggregates local radio brands, personalities, and on-demand content including photos, videos, and more. It is best known as a mobile application, available for iOS devices such as the iPhone or iPad, as well as BlackBerry, Android, and Windows Phone 7 devices.

Radio Shark

Griffin Technology's $70 RadioShark can turn a Mac or PC into a radio. It also lets users pause and rewind a live AM or FM broadcast and can record programs for later listening on their computer or music player. These capabilities make the RadioShark handy for people who miss a favorite show, and its ability to send recordings directly to Apple's iTunes software lets owners of iPods, who lack radio tuners of their own, listen to their favorite broadcasts on the go.

However, RadioShark has received complaints from users about unsatisfactory music streaming quality. Furthermore, RadioShark's software cannot split a FM recording into MP3 files for each song.

Maestro.fm

Maestro.fm is a social music network that not only makes it possible to search for new music, connect with friends, and share playlists, but also gives users the ability to store their own digital music library via remote storage. Users can then remotely access, manage, and interact with their entire music library stored at home through any web browser. In order to start streaming music, the Maestro Connector must be downloaded and installed. Maestro then quickly scans all the user's music meta-data(e.g. location, artist, album, length) and logs it in the user's profile online. The use of playlists account for a large part of the Maestro.fm service which allows users to create, manage, and share them with friends.

Source: "Jobs.StackOverflow.com." Stack Overflow. Web. 16 May 2010. <http://jobs.stackoverflow.com>.

EXHIBIT 13: INTERNET RADIO TECHNOLOGY

Internet radio involves streaming media – presenting listeners with a continuous stream of audio that cannot be replayed or paused, somewhat similar to traditional broadcast media. In this respect, Internet radio is distinct from on-demand file serving. Internet radio is also distinct from podcasting, which involves downloading rather than streaming.

Streaming - Streaming technology is used to distribute Internet radio, typically using a lossy audio codec. Streaming audio formats include MP3, Ogg Vorbis, Windows Media Audio, RealAudio, and HE-AAC (or aacPlus). Audio data is continuously transmitted serially ("streamed") over the local network or Internet in TCP or UDP packets, then reassembled at the receiver and played a second or two later. The delay is called lag, and is introduced at several stages of digital audio broadcasting.

Simulation - A local tuner simulation program includes all the online radios that can also be heard in the air in the city.

Device - Hardware Internet radio players usually have:

• Broadband connection: an Ethernet and/or Wi-Fi network interface, with TCP/IP support for access to the Internet

• USB port , where the user can connect an external MP3 player like iPod or external hard drive for MP3 files

• LCD display and remote control.

• Built-in amplifier/speaker, or AUX-out port, that can be used to connect to a HiFi or similar audio device.

• Rechargeable batteries for mobility with internal charger integrated.

• Favorite streams & contents can be saved as presets.

• Clock with lighted display, some with alarm settings and auto-time-sync.

• Some devices also have:

• Memory card reader: SD or even SDHC card

• XLR connectors

• Stream encryption

E X H I B I T   1 4 :   R A D I O   F O R M A T S '   R E A C H   O N   C O R R E -
S P O N D I N G   D E M O G R A P H I C S

A G E T A R G E T	F O R M A T (S)
Teens 12-17	Primarily CHR, some Urban, Alternative
Adults 18-24	CHR, more Alternative, Urban preference
Adults 25-34	Alternative, Rock, CHR, some Urban, AC
Adults 35-44	Rock, AC primarily
Adults 45-54	Oldies, AC
Adults 55-64	Classical, New AC
Adults 65+	Adult Standards, Classical, News Talk

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INTRODUCTION

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2.   "About - Stack Overflow." Stack Overflow. Web. 17 May 2010. http://stackoverflow.com/about.

1. OVERVIEW OF ONLINE BROADCAST INDUSTRY

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2. INDUSTRY TRENDS

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6. CONCLUSIONS

8.

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