ABSTRACT
In this paper, a taxonomy of internet music services is presented by combining an extensive literature study with an inductive evaluation of current music services on the internet a taxonomy is derived. The taxonomy has an important contribution to both development of internet music services as well as research in the domain of internet music.

Keywords
Internet music, taxonomy, online music retailers, personalized internet radio, music community

1. INTRODUCTION
Internet music services are (web)applications using the internet for distribution of audible content. Since the lawsuits against Napster and the rise of web 2.0 [1] the application of internet as music distribution channel is growing, while the market for physical distribution of music is declining [2]. There is evidence that the digital distribution of music doesn’t decrease the spending on music, but only shifts spending [3]. This development forces the music industry to adopt a new business strategy [4], using the internet as primary distribution channel. The music industry is trying to get a grip on this development investigating several new distribution models. The morbid growth of music services and new innovative websites in the domain of internet music services increase the need for a clear overview of current music services. Taxonomies provide a set of unifying constructs so that the area of interest can be systematically described [5], helping to structure current services to get a better overview. This taxonomy can help current internet music services in drawing up a business strategy. It also serves as a starting point for further research in the domain of internet music services by contextualizing current internet music services. This helps researchers to generalize, communicate, and apply research findings. Furthermore new internet music services can be developed by combining characteristics of different types of internet music services and future developments can be predicted.

This research is part of a bigger research project in the domain of i-music executed by the department of Information Systems and Change Management of the University Twente.

2. DEFINITION OF MUSIC SERVICES
The term “internet music services” is used in a variety of contexts. The scope of our research is limited by internet sites that distribute music in digitized format using the internet as distribution medium. Sites that offer music as a supplemental service need to be excluded from our taxonomy, because our taxonomy focuses on sites with music as a core-business. Furthermore sites that distribute music on physical media like cd, dvd or vinyl are excluded from our research, because this services don’t contribute to a solution for the changing distribution problematic. This is reflected by the decrease in sales of music on physical media[2].

The discussion about illegal peer to peer services used for the piracy of music and the drastic legal measures forcing the closure of peer-to-peer music-sharing businesses by the Recording Industry Association of America (RIAA) [6], have made it clear that illegal music-sharing services have a relatively short lifetime, the most prominent example is Napster. In order to sustain in the future these services should legalize their activities; hence illegal services are excluded from our taxonomy.

Examples of websites that should be included in our research are internet radio stations, music recommender services (Last.fm, Pandora), digital music shops (iTunes, Amazon MP3) and (legal) music download sites.

Under the mentioned conditions the definition of “internet music services” is as follows: “(Web)applications using the internet for legal distribution of digitized music as core-business”.

3. LITERATURE STUDY
The research commenced by an extensive literature study. The starting point of our literature study are scientific search engines like Google Scholar, ISI Web of Knowledge and Scirus. Different search engines are used, because no single search engine covers all available scientific sources [7] [8]. Important search queries are “internet music”, “internet music services”, “internet radio”, “online music”, “music industry” and related expressions. Technical, economical as well as social literature is used to review resulting in three primary fields of research, namely taxonomic studies, technological aspects and economical aspects of internet music services in particular.

In current literature various taxonomies are available in the domain of internet technology. A relevant taxonomy is presented in “A Taxonomy of Recommender Agents on the Internet” [9]. The article proposes a taxonomy primary based on the technologic aspects of recommender services in various domains like news, music, movies and e-commerce. Part of this taxonomy is applicable in the context of our research. The concept of using technology as an evaluation criteria is used as input for the creation process of our taxonomy. Another relevant taxonomy is the webradio taxonomy [10] which uses business model and technology for the evaluation of webradio. Both criteria can be applied on internet music services.

The technologic aspect of internet music services is widely discussed in current literature. A returning subject is the distribution of files using the internet, for example using peer-to-peer [11]. The exact technical implementation of file distribution on the internet is outside the scope of our research, but the different technologies can serve as criteria for our taxonomy as well. Collard[12] emphasizes that the music
industry should take full advantage of modern technology and modernize in order to regain the monopoly and control it once enjoyed.

Furthermore we need to consider not only the technical aspects of internet music, the economical aspects of internet music are at least of the same importance. In existing literature a great amount of information can be found about business models on the internet. Petrovic[13] divides business models into seven sub-models, giving a better understanding of the term business model. One of this seven sub-models is the value model which describes what core product, service or experience is delivered to the customer. This concept of value exchange between actors is researched in detail by Gordijn [14], supplying an evaluation method for e-business models. The e3 value exchange model provides an import insight in business models of internet music services highlighting the importance of value exchange between the service and the user. Another sub-model part of the business model is the distribution model. Premkumar [6] discusses new digital distribution strategies for the changing music industry. He discusses the pros en cons of the different distribution strategies, making it evident that the internet changes the supply chain of the music industry and emphasizing the importance of the distribution model. A denomination of the different business models on the internet is made by Michael Rappa [15], most of these models are applicable on internet music services.

Also non-scientific information needed to be consulted, because of the nature of our research and the strong coherence with digital sources of information. For this purpose sources like weblogs, company websites and internet communities are being used.

Concluding our literature study three fields of research can be distinguished which are relevant for the taxonomy of internet music services.

- Taxonomic studies
- Technologic aspects
- Economical aspects

In the field of taxonomic studies internet music services have some overlapping with other taxonomies like recommender services and webradio. Used characteristics like ease of use, technical aspects and business models are also applicable on internet music services. The technologic aspect of digital music distribution is a widely discussed subject, which should be part of our research.

In order to keep up with the changing music market the music industry should adopt a strategy which accommodates in making use of the growing market of online music. Important concepts in literature for adapting a successful strategy are business models and exchanging value with the user and therefore should be part of our music service evaluation.

**4. RESEARCH METHOD**

To classify current internet music services an inductive approach is used. The base of our research is studying the various existing music services on the internet. Data about this individual music services are collected using a list of criteria hereby developing a dataset. Using this big dataset of music services we try to structure it and identify patterns and relationships. Hereby gradually developing a taxonomy which accommodated the music services visited. This approach is based on grounded theory using inductive strategies for analyzing data [16] [17]. A schematic overview of our research method can be found in Figure 1.

![Simplified schematic presentation of approach](image)

**4.1 Selection of services**

The first step in the research is creating a diverse list of current internet music services on the internet, using our definition stated in the second section. For constructing this dataset of current internet music services existing literature on this subject and internet sites[18] are used and internet users are inquired about the music services they are using. Around 20 users are consulted which internet services they are using to access music and which other music services they know, using bulletin boards and social networks to contact this users. The other important source of services was an extensive internet search. For this purpose Google is used to find internet music services related websites to discover new services. The services that fit our definition are listed. Finally this resulted in a list of internet music services (APPENDIX A). The list contains 17 internet music services, making this list not necessary comprehensive, but the variety of services and similarity between services suggest that the list is representative for the population of current internet music services.
4.2 Evaluation method
The next step in our research is finding a method to evaluate the services using the same criteria for every music service. Like mentioned in section three existing literature and relevant taxonomies [10] [9] are used to find criteria that could be useful for our research. Other useful criteria where discovered by visiting the internet music services and hereby discovering import characteristics. The combination of both methods is the base of the evaluation criteria (APPENDIX D). For our taxonomic research a degree of detail is used which allows us to evaluate many different music services in a limited timescale. Therefore criteria are used that can be evaluated on a nominal scale. In other research attributes like ease of use and variety in music are included, this criteria aren't applicable for our research giving the time needed to measure such criteria using a scientific funded approach. Measuring usability for example would require extensive user testing for every music service in our dataset [19] [20], this couldn’t be achieved within our given timeframe. Developing a list of criteria was a continues process, removing criteria and adding new ones in the process. Finally this resulted in the following criteria, which are discussed in detail in next section:

- Revenue model
- Goal of user
- Service value
- Level of user input
- Offline counterpart
- Access to the service
- Distribution model
- Content delivered
- Software

4.3 Evaluation of services
Using the criteria identified the internet music services where rated individually and objective using the same rating table for every music service. Because the criteria where subject to constant change, the evaluation of individual services needed to be updated regularly.

4.4 Construction of taxonomy
The individual evaluations of services are compared to find common properties and relationships between characteristics. This resulted in different groups of services which all had common properties, finally resulting in the archetypes which are discussed in detail in section six.

4.5 Evaluation of taxonomy
We evaluated the taxonomy by testing if the taxonomy accommodated all the services in the list of music services, this evaluation was a continues process, updating the criteria in this process, evaluating the services, constructing the taxonomy and discovering new insights. Hereby sub-dimensions where identified by further specifying the taxonomy.

4.6 Research findings
The last step in our research was applying our taxonomy and analyzing our research. Hereby presenting the research findings and conclusions.

5. CRITERIA FOR EVALUATION
Music services included in this research where evaluated using a list of criteria. Like mentioned in section three an inductive approach was used deriving criteria to identify the characteristics of internet music services. The foundation of these criteria is created by an extensive literature search in combination with examining current internet music services. This approach is based on grounded theory using inductive strategies for analyzing data [16] [17].

The list of criteria was subject of constant change evolving in the research process. A nominal scale is used were possible. The final list of criteria and the meaning of these criteria are explained in this section.

5.1 Presentation of the evaluation criteria
The following evaluation criteria are derived to identify the characteristics of internet music services.

5.1.1 Revenue model
Every music service has to generate profit to be economic feasible. Our research shows that varying ways of generating profit are being applied by current internet music services. Petrovic defines revenue models as "Describes the logic of what, when why, and how the company receives compensation in return for the products."[13]. Based on the work of Rappa [15] nine ways of generating profit for companies on the web can be distinguished. Based on our research we found the following models applicable on internet music services:

- Advertising model: Revenue is generated by showing ads for example on the site or by audio adverts added to the music. The best application of this model is on sites with a high volume of visitors or a niche audience.
- Affiliate model: The affiliate model generates revenue by generating sales on partner sites. The music service gets a certain fee for every sale generated by the website.
- Community model: The community model profits from the loyalty of the user based on both the invested time as emotion. Revenue can be generated by the sale of ancillary products and services or voluntary contributions; or revenue may be tied to contextual advertising and subscriptions for premium services.
- Subscription model: Users have to pay a periodic fee to use the service.
- Utility model: Users have to pay for what they use, for internet music services this typically means the user pays for accessing his selected music.

The merchant en manufacturer model are excluded from our criteria, because the merchant and manufacturer model still need at least a second model to generate revenue, for example a user can pay a monthly fee for access to the merchant’s music service (subscription) or pays for the songs he downloads (utility). Our list of music services didn’t contain any services using the infomediary and brokerage revenue model, therefore these revenue models are not included.
5.1.2 Goal of user
The actors (user and music service) depend on each other to achieve goals [14], this goals can be grouped in different categories. Based on our empirical observations we identified the following goals:
- **Discovery**: The goal of finding music the user likes and didn’t knew before.
- **Acquire**: When a user wants to possess the music, we call this goal acquire.
- **Listen**: Listen to music, in contrary to acquiring music the user only wants to use the music for a limited time.
- **Socialize**: Share thoughts, discuss music and find people with the same interest. In short the social aspect of music.

5.1.3 Service value
The service value is closely related to the goal of the user. For reaching the users goal the music service has to supply a specific amount of value that helps in reaching this goal[14]. The value delivered by the music service to the user we call **service value**. For example a user that wants to socialize is supplied by the service with a channel to discuss music and other active users with the same interest. In short the service value is defined as the supplied value that helps the user in reaching his goal.

5.1.4 User input
The level of user input specifies how much user input the service needs to reach the goal of the user. In this research we adopt a model which separates the input in startup, during play and after play (Figure 2). The evaluation method only specifies when input is needed to play the music and keep playing the music, this method leaves no room for defining how much input is needed.
- **Startup**: Input needed to play the first song
- **During play**: Input needed during playing the song
- **After play**: Input needed to play the next song
To evaluate the level of user input we used the following scale:
- **Low**: Input needed in 0-1 categories
- **Moderate**: Input needed in 2 categories
- **High**: Input needed in all categories
For example, a service that needs input to startup and during play we call moderate. A service that only needs input to startup we call low and a service that needs input in all three categories we call high.

5.1.5 Offline counterpart
Most internet sites act as a replacement or supplement of traditional services. Also internet music services have much in common with “offline services”. This offline counterpart shows the functionality of the internet music service within the music industry. Therefore we try to identify an offline counterpart for the music service which has much in common with the music service, this counterpart is mainly based on the goal of the internet music service from the user perspective.

5.1.6 Access to the service
To access a service a login is sometimes required. This makes it for the user more difficult to access the service and it can be a barrier for some users.
- Registration required: The user has to login, the service can’t be used without login
- Registration offers extra options: Not all options are accessible without login, but the service can be used without login
- No login: Using the service doesn’t require to login

5.1.7 Technical distribution model
On the internet different techniques are used to distribute music. The technique used for the distribution of music files we call **distribution model**. A single music service can use different kinds of distribution models. Examples of distribution model are:
- **Fileserver**: files are distributed from a central server
- **Streaming**: music is streamed real-time to the user
- **Peer to peer**: two or more users share files distributing music using a decentralized model [11]

The more detailed specification of distribution technique used (architecture, protocols, etc.) is outside the scope of this paper.

5.1.8 Content delivered
Music services offer different kind of content. Some services offer only a part of a song, while other services offer full albums including other media like videos. In this research we distinguish the following content types:
- **Song**: one single complete song
- **Album**: a collection of bundled songs
- **Music video**: a combination of music and picture
- **Snippet**: a short part of a song, typically used as preview before buying the full song.

5.1.9 Software
Some services need additional software. Other services have a browser interface only requiring an internet connection. Additional software decreases the ease of access to the service, because the user needs extra effort to access the service [21].

![Figure 2: User input visualization with examples](image_url)
5.2 Criteria analyses
We created a allocation of criteria to the different sub-models based on the work of Petrovic [13]. In his work he separates a business model into seven sub-models. Figure 3 shows that the criteria cover four of the seven sub-models. The sub-models which are not covered are off-site aspects, which are not directly visible to the user. The resource model and the production model describe how resources are converted into output and which resources are needed, this aspect of the music industry is to comprehensive to study and would require a separate research. The capital model describes the logic of how financial sourcing occurs; this aspect is not directly related to the music service and thereby is outside the scope of our research. We couldn’t find criteria that covered the marketing aspect of customer relations, researching this aspect wasn’t possible within the timeline of our research.

The value model describes what core product, service or experience is delivered to the customer. This sub-model is covered by the service value criteria.

The distribution model describes the logic behind the delivery process. For music services this includes the digital delivery of music. Criteria that cover this area are the technical distribution, the content delivered and the software necessary.

The service model describes the logic behind serving the customer, usability aspects and distribution are related to this sub-model.

The revenue model describes how the company receives compensation in return for their products. This sub-model is covered by the revenue model criteria.

Finally the market model describes the logic of choosing a relevant environment in which the business operates. The goal of the user describes which user group is targeted by the music service. The offline counterpart describes which offline counterpart is active in the same market.

That criteria have relationships to other criteria and different areas of interest is visualized in Appendix D. The distribution model is linked to many criteria, indicating a high priority. This importance can be explained by the function of the music service, the site functions as a distribution channel for music. So the primary task of the music service is distribution of the music. The criteria cover what, how and against which value the distribution process is executed.

6. PRESENTATION OF THE TAXONOMY
The taxonomy consists of four main archetypes with their own characteristics. These four archetypes are internet radio, online music retailers, free music suppliers and music communities. Some of these archetypes have sub-dimensions extending the archetype and further narrowing-down the characteristics of the music services.

We first discuss the four archetypes and present some research findings. After this we discuss the main characteristics on which internet music services can be placed within an archetype.
6.1 Internet radio

The first type of internet music service is internet radio. Internet radio supplies a constant stream of music without input needed to keep playing. This archetype has much in common with regular radio frequency radio, supplying the passive user with music. The service delivers music which satisfies the goal of the user, listening to music and/or discovery of new music. Some services offer the possibility to give input while playing, for example, by rating the song that is currently playing. No further input is needed to continue streaming the music, so the level of user input is considered low to moderate. Internet radio services typically use an advertising revenue model, showing adds on the site or adding in audible adverts to the music stream. Also affiliate revenue models are applied on some services, for example by offering the music played as ringtone or download using a third-party service. The user delivers value by increased popularity of the station; an increase in number of listeners positively influences the willingness of advertisers to advertise on the station. The value delivered by the music service to the user is the music played.

6.1.1 Internet radio broadcasting

Internet radio broadcasting encloses all music services using the internet to broadcast a static stream of music. In concept internet radio broadcasting is the same as radio frequency radio; every user receives the same radio stream. The difference in comparison with "regular radio" is the medium used to broadcast, allowing the channel to have lower costs and reach a wider audience [22]. The exact advantages and disadvantages of the internet as broadcasting medium are outside the scope of our research. Many existing radio frequency stations use the internet as additional broadcasting medium, but also numerous new stations discover the internet as their only broadcasting medium. In "On the evaluation of Web radio" a taxonomy is defined separating existing radio frequency stations and webradio stations, based on our evaluation criteria no significant difference in characteristics can be found in our research. The user input of internet broadcasting is low, the user starts the stream and no further input is required. Typically no registration is required and no additional software is required to access the stream.

6.1.2 Personal internet radio

Personal internet radio services offer like the name says a radio stream fitted to the user. The content of this stream is based on the input of the user, play history and other preferences the service knows about the user. The biggest difference with internet radio broadcasting is that the stream is personal fitted to the user. The output is based on the user input, therefore is slightly more input required, making the level of user input moderate. Typically no registration is required, but extra options are available when doing so. Most services offer additional options for paying members.

6.2 Online music retailers

The online music retailers allow the user to acquire specific songs using digital distribution with the internet as distribution channel. Like arises from our definition of internet music services, retailers selling physical music like CDs are excluded from our taxonomy. Online music retailers have much in common with an offline music shop also offering the possession of music. The user input is moderate because input is necessary to choose the songs the user wants to acquire. Signing up is required for both a membership as for a transaction.

The goal of the user of this service is acquiring music. To accomplish this goal the service offers the possession of music. The value delivered by the user is above all the money he pays to acquire the music. The service value is the music he acquires in return.

The term retailer in our naming can be confusing, because the traditional retailer doesn't need to be part of the supply chain. Like Premkumar suggests [6], many distribution strategies are applicable which disintermediate the traditional retailer from the supply chain. The role of retailer can be executed by any of the actors, for example by the record company.

6.2.1 Subscription based retailers

Subscription based retailers offer memberships to acquire music. Typically the user pays a periodic fee to acquire a certain amount of songs, thereby using the subscription revenue model. The other characteristics correspond with the archetype online music retailers.

6.2.2 Digital music shops

Digital music shops offer music downloads letting the user pay for the songs he or she acquires hereby using the utility revenue model. No membership is necessary. This category of retailers has the most in common with traditional music retailers, using the internet as distribution medium.

6.3 Free music suppliers

Free music suppliers are music services allowing the user to acquire music without paying for it. Typically these services are distributing the music as promotion for the artist. For example starting artists using to internet to become famous, but also established artists use free singles as promotion material, for example the band Coldplay made their live album freely available for download [23]. Martin Peitz and Patrick Waelbroeck [24] show how the music industry may benefit from online sampling, the same concept can be used by the legal distribution of free singles.
Exceptions are the music services distributing license free material, typically this are older songs for example classical music. For these services the promotion doesn’t play an import role, because the music is freely available.

The music offered are typically singles, other differences in comparison with online music retailers are that generally registration is not required and no additional software is needed.

The revenue model is indirect. Income is generated by showing adds and the promotion of the artist. Typically the free music suppliers use an advertising or affiliate revenue model.

### 6.4 Music communities

Music communities offer the user the possibility to socialize. People can share their thoughts about music and find other people with the same interests. An offline counterpart can be a fanclub.

Most music communities offer free access, generating revenue by advertisers or premium memberships, using the community revenue model. Because the goal of the user is socializing, the user input is of great importance, so a high user input is required.

The value delivered by the user is his input. By commenting on the music or sharing his opinion the user contributes to the community. The value received by the user is the music from the artist and the social input of other users.

### 6.5 Taxonomy analysis

The taxonomy can help current music services in developing a successful business strategy and can serve as a starting point for further research. In this section we present findings in three distinctive categories by examining the observations off all investigated services in the perspective of our final taxonomy.

#### 6.5.1 Combinations of archetypes

The taxonomy presents a conceptual view on music services, in actual practice it isn’t always possible to place the music service in one category. Most services can be placed within one main category, but also present characteristics of other categories, thereby combining the properties of multiple archetypes. For example Last.fm one of the biggest recommender services on the web also offers community functionality, combining personal internet radio with music community characteristics.

While music services are growing, there seems to be a trend towards extension of the offered service by more features and pleasing a greater audience. This trend can be explained by the need of continues growth. A widely adapted strategy for this is market expansion [25]. This can be accomplished by offering more features and attracting a wider audience fading the typical characteristics of the taxonomy, resulting in an all-one-service serving different types of users. This development is not without risk. Porter [26] describes three generic strategies to achieve competitive advantage. They are cost leadership, differentiation, and market segmentation. Market segmentation narrows the market scope, but the trend is to broaden the market scope. Offering more features means higher cost and thereby cost leadership can’t be applied. The only strategy left over for getting a competitive advantage is differentiation, with a growing number of services this gets harder and harder. Music services should adopt one strategy to get a competitive advantage instead of aiming for multiple strategies. Another disadvantage of extending the services offered is the usability. More functionality means that the user has more options. This makes it harder for the user to find the needed functionality.

#### 6.5.2 Revenue models

Adopting a good revenue model is of great importance for every music service, because failing to generate revenue results in a short lifetime of music services. This taxonomy can help music services in getting better insights in possibilities for generating revenue. To make this concrete we present the following findings:

- The revenue model adopted is closely related to the archetype. Most music retailers adopt an utility model, the number of retailers using a subscription model is very small.
- Most internet radio and free music suppliers adopt an advertising model
- Most music communities adopt a community model.

The motive behind the choice of revenue model is outside the scope of research, but there are still numerous of possibilities for service to distinguish themselves on revenue models. For example no music services were found using the infomediary revenue model. The infomediary revenue model generates revenue by collecting data about consumption habits or collecting data about products. Information about music consumption habits can help the music industry to better understand the consumer and thereby improving the service, this can be a valuable source of information. Thereby this model seems very useful for music services, for example in combination with an advertising revenue model. Especially music recommender services which collect personal user data about the music preferences are suited for this revenue model.

Another possibility is offering the user different payment options. For example personal internet radio services offer premium memberships with extra options, this concept can be extended by letting customers choose between ad-free subscription or free advertised radio. Download services can offer both subscription based models as utility models. The service doesn’t have to choose a revenue model, but can also let the user decide.

![Figure 2: Overlap in internet music services](image-url)
6.5.3 Distribution technology
From our investigation we observe that digital music services can be put into the perspective of technology as follows:

- Most music services don’t require additional software in order to function. Nearly all modern browsers support streaming of music and can play the popular music files likeMp3 and Wma.
- The most popular file format for downloading music is MP3.
- The free music suppliers which we examined distributed their music files using a fileserver. Central distribution using a fileserver costs bandwidth and thereby money. Distributing free files using peer to peer seems an option if there are no restrictions on the free music files distributed. This option can save money and increase revenue of free music suppliers. A disadvantage of this solution is that additional client software is necessary for downloading files.

6.6 Framework for classification
The classification of music services in practice can be difficult. To assist this process a set of guidelines is supplied (Figure 3). This set of guidelines makes use of the common characteristics like goal of the user and revenue model.

7. CONCLUSION
This paper presents a taxonomy of internet music services based on an extensive literature study in combination with an evaluation of current internet music services. The evaluation criteria cover most aspects of a business model. The taxonomy proposes four archetypes:

- Internet radio
- Music retailers
- Music communities
- Free music suppliers

Every archetype has its set of unique identifying characteristics based on the evaluation of current music services. Our research shows a trend towards the integration of different archetypes into an all-in-one music service. This trend is not without risk and requires profound consideration with respect to competitive strategy and usability.

In this research a specific focus is chosen, resulting in some limitations. Limitations include the limited timeline for our research. Therefore the following aspects can be identified as new areas of research:

- The evaluation criteria cover four out of seven sub-models of the business model. Further research needs to point out if the evaluation criteria can be improved covering more aspects of the business model.
- Because of the limited timeline not all aspects of the internet music services could be researched. For example the supply chain in combination with the value exchange within the supply chain could be researched in more detail. Other improvements can be made by measuring the level of user input. In our research the level of user input is only measured by the input moment. A better evaluation method could be used making use of how much input is required for the service to work.
- Due to license restrictions it wasn’t possible to evaluate services which were restricted to US only. This limited the insights in popular and innovative music services in the United States.

The research raises various new questions. Like which revenue model is most suitable for an archetype. The music retailers for example use both subscription as utility revenue models. By looking at the success of both revenue models the model best suited revenue model for music retailers can be determined. This can give us an understanding in applying the revenue model with the highest economical feasibility.

Another question that arises is if there is a significant difference in economical feasibility between the archetypes. In other words is there a relation between the archetype in which the music service can be classified and the economical feasibility.

Our taxonomy is subject to the changes in the domain of internet music service and. thereby needs to be extended to keep up with developments in the domain of internet music services. Examples of developments can be new technologic possibilities or innovative applications of internet music services.

ACKNOWLEDGMENTS
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Appendixes

APPENDIX A: LIST OF MUSIC SERVICES

- Meemix
- Musicovery
- Soundpedia
- Last.fm
- Live365
- Launchcast
- eMusic
- Amazon mp3
- iTunes
- Walmart Music Download
- We7
- Deezer
- Garageband
- iLike
- Mp3.com
- Ez-tracks.com
- Rhapsody
APPENDIX B: TAXONOMY OF MUSIC SERVICES

<table>
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<tr>
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<th>Internet radio</th>
<th>Online music retailers</th>
<th>Free music suppliers</th>
<th>Music community</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue model</strong></td>
<td>Affiliate / Advertising</td>
<td>Subscription / Utility</td>
<td>Affiliate / Advertising</td>
<td>Community</td>
</tr>
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<td><strong>Goal of user</strong></td>
<td>Listening and discovery</td>
<td>Acquiring music</td>
<td>Acquiring music</td>
<td>Socializing</td>
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<tr>
<td><strong>Service value</strong></td>
<td>Music stream</td>
<td>Possession of music</td>
<td>Possession of music</td>
<td>Medium to socialize</td>
</tr>
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<td><strong>User input</strong></td>
<td>Low to Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td><strong>Offline counterpart</strong></td>
<td>Radio</td>
<td>Music shop (Retailer)</td>
<td>Free promotion singles</td>
<td>Fanclubs and music magazines</td>
</tr>
<tr>
<td><strong>Access to service</strong></td>
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<td>Signup</td>
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</tr>
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<td><strong>Technical distribution model</strong></td>
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<td>Download / fileserver</td>
<td>Download / fileserver</td>
<td>Various</td>
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<td>Albums, songs, snippets</td>
<td>Songs</td>
<td>Songs, music videos, snippets, information</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>Webbased (sometimes plug in required)</td>
<td>Webbased or application</td>
<td>Webbased</td>
<td>Webbased</td>
</tr>
</tbody>
</table>

Table 1: The three archetypal types with their characteristics

<table>
<thead>
<tr>
<th></th>
<th>Personalized internet radio</th>
<th>Internet radio broadcasting</th>
<th>Subscription based retailers</th>
<th>Digital music shops</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue model</strong></td>
<td>Affiliate / Advertising</td>
<td>Affiliate / Advertising</td>
<td>Subscription</td>
<td>Utility</td>
</tr>
<tr>
<td><strong>Goal of user</strong></td>
<td>Listening and discovery</td>
<td>Listening and discovery</td>
<td>Acquiring music</td>
<td>Acquiring music</td>
</tr>
<tr>
<td><strong>Service value</strong></td>
<td>Music stream</td>
<td>Music stream</td>
<td>Possession of music</td>
<td>Possession of music</td>
</tr>
<tr>
<td><strong>User input</strong></td>
<td>Moderate</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Offline counterpart</strong></td>
<td>Radio</td>
<td>Radio</td>
<td>CD Subscription Program</td>
<td>Music store</td>
</tr>
<tr>
<td><strong>Access to service</strong></td>
<td>Free or signup</td>
<td>Free</td>
<td>Signup required</td>
<td>Signup required</td>
</tr>
<tr>
<td><strong>Technical distribution model</strong></td>
<td>Streaming</td>
<td>Streaming</td>
<td>Download / fileserver</td>
<td>Download / fileserver</td>
</tr>
<tr>
<td><strong>Content delivered</strong></td>
<td>Songs</td>
<td>Songs</td>
<td>Albums, songs, snippets</td>
<td>Albums, songs, snippets</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>Webbased (sometimes plug in required)</td>
<td>Webbased</td>
<td>Webbased or application</td>
<td>Webbased or application</td>
</tr>
</tbody>
</table>

Table 2: Sub-dimensions and their characteristics
## APPENDIX C: MUSIC SERVICES

<table>
<thead>
<tr>
<th>(Personal) internet radio</th>
<th>Extended radio broadcasting</th>
<th>Subscription based</th>
<th>Pay for usage</th>
<th>Music community</th>
<th>Free music suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meemix</td>
<td>Live365</td>
<td>eMusic</td>
<td>Amazon MP3, Deezer</td>
<td>Walmart, iLike</td>
<td>MP3.com</td>
</tr>
<tr>
<td>Musicover</td>
<td>Launchcast</td>
<td></td>
<td>iTunes, Garageband</td>
<td></td>
<td>Ez-tracks.com</td>
</tr>
<tr>
<td>Soundpedia</td>
<td></td>
<td></td>
<td>Walmart, Music Download</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last.fm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extended radio broadcasting: Live365, Launchcast
Subscription based: eMusic
Pay for usage: Amazon MP3, Deezer, Walmart, iLike
Music community: Garageband
Free music suppliers: MP3.com, Ez-tracks.com
APPENDIX D: BRAINSTORM

Brainstorm of different criteria and factors influencing the distribution of music.