



D1.4 – FuturePulse Requirements v2

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1 Executive Summary

This deliverable presents the second and updated analysis of user requirements for the FuturePulse project. The analysis is based on a weighting between technological feasibility, market changes and feedback from the first review meeting of the project.

In this document we present the demands made by industry stakeholders in this project (the leaders of the use cases), in the form of project requirements. After setting the requirements, these have been intensively evaluated by FuturePulse technical partners. These requirements will be redefined iteratively as we continue to understand the needs of all the music industry stakeholders we address.

This document includes the definition of these requirements by the three use case leaders: Playground Music (record label use case), Bass Nation (live music use case) and Soundtrack Your Brand (music platform use case). Platform requirements will be addressed by technical deliverables during the next months.

This deliverable is intended to highlight the importance of progressive definition of requirements, which affects the whole project and its proper development.

It also describes the methodology carried out by both the use case leaders and FuturePulse technical partners during the definition of the requirements.

The deliverable also presents the decisions made by the FuturePulse consortium in terms of technical feasibility and data source evaluation, as well as the considerations taken to categorize the requirements in terms of typology.

Finally, the document includes requirements that have been identified as possible future implementations in the platform.

2 Introduction and Relation to other WPs/Tasks

The co-design of the FuturePulse project is strongly related to the analysis of the user requirements.

The use cases of FuturePulse and the resulting platform are only possible after this co-design process, which follows the examination of the existing music platforms and applications with similar functionalities to FuturePulse already performed and materialized in the deliverable 1.1., Music Industry Innovation Report.

The definition of the requirements will also define the music features, data sources and its collection process executed in **WP2 – Data Collection, Analysis and Indexing**. The technical feasibility of most of the user requirements is totally aligned with the availability of music data sources. Then, this deliverable is related to **WP2** in a decisive way.

In a similar way as in WP2, the progress of **WP3 – Predictive Analytics and Recommendations** is determined by the definition of the user requirements. The diverse granularity of popularity is defined in several of the user requirements described in this document, as well as audience profiling.

FuturePulse architecture and platform design, carried out in **WP4 – Platform Integration and Application Development** tasks, is also dependent on the user requirements described in this document. Requirements will give specific focus towards FuturePulse system architecture.

In a direct way, the user requirements will dictate the path-forward in the development of the three FuturePulse pilots. The design, planning, operation and validation of the three pilots define **WP5 – Pilots and Evaluation** tasks.

2.1 Purpose and Scope

The overall goal of the requirements study is to collect, analyse and synthesize the requirements of music industry stakeholders. After the first stage of the analysis, the results are exposed in this document. In this stage we considered high-level requirements from use cases, with the focus set on developing open user scenarios.

The main stakeholders of FuturePulse are divided in three categories. For record labels, user scenarios were defined with two test cases in mind: an album from an internationally recognized band and a hit by a music producer on musical platforms. This could be conceived as a limitation of the scope of the requirements, but the aim of this approach is to define highly extensive requirements for this use case. The study of these user scenarios has resulted in requirements focused on the area of audience measurement and prediction.

Live music stakeholders, consisting in venues, promoters and festival organizers, are now focused on a complex ecosystem: electronic music. Data from electronic artists and events is more complicated to gather than in other genres, which makes more difficult to elaborate analysis and prediction tools for this case.

Music platform stakeholder requirements are defined by the needs of background music providers. After a survey (comprehensively explained in section 3.2) that reached hundreds of responses from key stakeholders, some requirements had to be redefined. There were also changes in requirements priorities after interpreting survey results.

Live music and music platform requirements, focus primarily on the areas of music attributes and metadata acquisition, although audience prediction tasks are also required.

Outstanding work at this stage of the project is crucial for the rest of project activities, having a special relevance in forthcoming activities such as the development of FuturePulse architecture and large-scale pilots.

The project requires that we also define a detailed set of platform requirements, to which a detailed and updated section will be dedicated in the next technical deliverables.

2.2 Methodology and Structure of the Deliverable

This document is structured as follows:

- Section 3 describes the methodology carried out in the definition, evaluation and validation of the user requirements. It is also described the criteria decided by the consortium to cluster all the requirements.
- Section 4 defines all the user requirements, divided among the three use cases of FuturePulse project: Record Label, Live Music and Music Platform.
- Section 5 describes the methodology carried out in the definition, evaluation and validation of the user requirements.
- Section 6 concludes the document.

3 Methodology

One of the goals of FuturePulse is to be positioned in the highly dynamic landscape of online music. With this purpose in mind, all the partners are involved in the definition of the open user scenarios and detailed user stories organized around the three project use cases.

A wide understanding of the market and its stakeholders started with the study conducted during the configuration of the first version of the Music Industry Innovation Report (D1.1). This document sets out the opportunities and the expectations from FuturePulse by all the stakeholders, inside and outside the consortium.

The methodology adopted involved both technical developers and music industry stakeholders, so we needed to create an understandable environment where all partners engaged could understand the needs and wishes of the users.

It was also a priority to achieve some characteristics that user requirements had to meet given their relevance to the rest of tasks and developments in FuturePulse. All requirements must be:

- Understandable and unambiguous, any open issue about different ways of interpreting a requirement definition should be clarified.
- Consistent according to the motivation of each user scenario.
- Relevant for, at least, one stakeholder group.
- Traceable, they must include information on author, feasibility, etc.
- Feasible or, at least, the feasibility of the requirements will be analysed, and technical partners will evaluate if the requirements can be implemented within the scope of the project.

The set of requirements has been configured through an iterative process, until these requirements met the aforementioned characteristics and the technical side of FuturePulse had sufficient information to distribute and contextualize the work among the tasks within the scope of the project.

Based on these characteristics and technical feasibility, requirements were initially categorized with three colours: a) **green**: the requirement is unambiguous, consistent, relevant and there were identified the tools and data sources needed to achieve it, b) **yellow**: some of the characteristics and/or tools needed are not identified yet and c) **red**: a broader study is needed to understand or meet the proposed requirement and assess whether it is in within the scope of the project.

Although we have come to define a broad set of requirements that covers much of the industry's needs, this iterative definition process will continue to be carried out throughout the rest of the project. This progressive process will be reflected in the new version of the requirements, presented when the project is at an advanced state of progress. Once the needs of the entire range of stakeholders have been collected, several joint working sessions have been dedicated to a) fully understand the

descriptions and motivations for each requirement and b) evaluate technical feasibility of the initial requirements.

After the technical feedback has been provided and the reviewed by the use case leaders, the requirements were modified according to what has been discussed.

This activity has been done on a weekly basis, through regular working sessions, until a workshop was held to reach the final version of the user scenarios. During this last session, we carried out an exhaustive one-by-one review of the requirements.

During these iterations, many decisions have been taken regarding the technical feasibility of the requirements, the clustering of user scenarios (described in section 3.2 and from which three groups are derived: audience metrics, music attributes and additional metadata) and tools and data sources needed.

A pivotal topic that had to be taken into account during this iterative process is the data sourcing due to the characteristics of the scenarios. Both forecasting and characterization activities need accurate data on which to rely and be developed.

Other iterative process in which use cases were involved is the definition of relevant music genres. Due the heterogeneity of the music industry ecosystem, the use case leaders needed to work in a connected and related list of music genres. This made it possible to limit the wide range of musical genres to a finite list of categories that can be used to make the developments in which the genre analysis was implicit.

We obtained two different genres lists. One list tries to collect all the genres with which FuturePulse will work, and another relates a great variety of electronic music subgenres to a wider genre.

3.1 Requirement structure

Each requirement is divided in the following fields:

- **Requirement code** - Code that relates each requirement to the use case in which it is defined: LM (Live Music), RL (Record Label), BMP (Background Music Provider). In the preceding version of this document (D1.2) we defined these codes using the short name of each use case leader (BN, PGM and SYB), but in order to be consistent with the use case itself we have decided to use this new coding.
- **Short title** – Short but descriptive title, helping to contextualize what is described in the following sections
- **Description** – Self-contained description of the requirement, from which it must be possible to extract the information necessary to assign a technical manager and link with the necessary tasks of the project.
- **Motivation** – This section must describe the reasons that led the use case leaders to consider the requirement, providing information on the relevance of the requirement to the industry.
- **Priority** – It should measure the relevance and necessity of the developments derived from this user scenario: MUST, SHOULD, COULD. It must also consider the importance of its achievement for the success of FuturePulse.
- **Technical assessment** – This section is the result of all the technical evaluations made during the user scenarios definition process. It must, if possible, provide information on their market presence.
- **Linked task(s)** – FuturePulse tasks that must be carried out in the direction marked by the fulfilment of these requirements.
- **Technical partner(s) engaged** – Consortium technical partner(s) that will lead the processes associated to the tasks linked to this requirement.
- **Data availability and sourcing** – Data sources and data provider (if applicable).
- **Cluster** – Topical categorization of each requirement : Music Attributes, Audience Metrics and Additional Metadata

3.2 Stakeholder involvement (survey)

As a part of the task of identifying valid and correct requirements for the background music streaming platform use case (SYB) we conducted an online survey with different kinds of businesses in eight countries: United States, United Kingdom, Sweden, France, Germany, Spain, Italy and Greece.

The purpose of the survey was to understand how restaurants, retail stores, bars, hospitalities, gyms, supermarkets, dentists and medical practitioners, entertainment establishments, cafés, and other forms of companies are using music in their venues, as well as what kind of audio and sound variables they see as most important for their businesses, providing useful input for what user requirements to focus on.

The results of the survey influenced the identification of the requirements for the background music use case, as well as the decisions made in order to prioritize the most relevant. Recommendation and discovery is key in the FuturePulse project. For this use case the recommendation and discovery of what music to play in commercial establishments is central.

More insights about this survey are provided in the first version of FuturePulse Requirements (D1.2). Overall, the survey has given us a very good view over which requirements to focus on for the SYB use case in the FuturePulse project. There are still a lot of data to analyze, and it will be further analyzed and followed up with a second study in additional countries.

3.3 Clustering considerations

For a better understanding and workload distribution, requirements are classified into three clusters: **audience metrics**, **music attributes** and **additional metadata**.

3.3.1 Audience metrics

This cluster tries to gather all the requirements related to the understanding of the impact of music on several audiences. Target audiences' relevance are different for the many stakeholders involved.

The analysis of the audiences must consider different markets, ages, audience gender, music genres, etc. Many of these metrics are not provided by any platform in the market, so this analysis will result in complex and state-of-the-art quantized metrics to be managed by the FuturePulse platform.

RL_REQ#1	Predict streaming based on artist reference groups
RL_REQ#2	A combined visual timeline for streaming statistics of an artist
RL_REQ#5	Genres trending for each market
RL_REQ#6	Events impact on success
RL_REQ#9	Season related streaming changes
RL_REQ#10	Playlist related streaming
LM_REQ#5	Artist popularity in a given genre
LM_REQ#6	Growth of artist popularity
LM_REQ#8	Top upcoming artist per genre
LM_REQ#9	Genre popularity
LM_REQ#11	Social media analysis over Live performance & Live event Fanbase Feedback
BMP_REQ#1	Recognition level of a track
BMP_REQ#2	Popularity level of a track
BMP_REQ#15	Genre popularity for each market

3.3.2 Music attributes

Attributes that will be obtained by music audio analysis.

BMP_REQ#4	Genre of a track
BMP_REQ#6	Energy level in a track
BMP_REQ#10	Instrumental or vocals, major gender in track
BMP_REQ#11	Moods related to a track

BMP_REQ#12	BPM in a track
BMP_REQ#13	Fade in and fade out of a track
BMP_REQ#14	Major or minor in a track
LM_REQ#1	Genre of electronic music

3.3.3 Additional metadata

This cluster was created regarding the needs of obtaining several information that must be extracted from the audio files or obtained by the input from FuturePulse users.

BMP_REQ#8	Original release year of a track
BMP_REQ#9	Origin of an artist
LM_REQ#3	Discography and typical visuals per artist
LM_REQ#21	Past gigs
LM_REQ#22	User input to FuturePulse system

4 User Requirements

4.1 Record Label Use Case Requirements

There are a lot of sources of information for actors in the music industry today, including for instance, audio and video streaming services, social media as well as traditional media and broadcasting. We have both digital and physical sales figures, but we need to be able to collect, analyze and evaluate all this information in one place.

With the right set of data presented in the right way we could find new ways to market and build artist careers and to sell music. We want and need more insights into how the market works, what music works where, and how to reach the potential music consumer of the music we are releasing. We simply need a more structured business intelligence and analysis tool.

4.1.1 RL_REQ#1 – Predict streaming based on artist reference groups

Description

Predict streaming numbers for first week/month/year of release for all DSPs (Digital Service Providers). With DSPs we mean: Spotify, Apple Music, Deezer, Tidal (currently does not provide an official API), iTunes, YouTube, Vevo (currently not supported) or any local alternatives that we might not know of.

Motivation

This is useful in order to predict the success of new releases when there is no previous track record. With artist reference groups one could predict the outcome of a similar artist (to be released).

Update

The experiments in D3.1 (Predictive analytics and recommendation framework v1) assumed that a timeline of previous values exists. In this requirement, we assume that no previous data exist and that we need to make a prediction based on the reference group of the artist.

<i>Priority</i>	MUST
<i>Technical assessment</i>	<p>In the first version, this requirement refers to just assigning the reference groups/labels to the artists (mostly manually). At a second stage, we will investigate the technical feasibility of automatically predicting them, and then explore whether they correlate with success level/streaming volume.</p> <p>At least currently this looks like a big challenge. An in-between solution could be to make predictions about popularity levels (or ranges) and not precise numbers.</p>

	So far, we have not performed any experiments using reference groups in order to investigate the actual feasibility/validity of such an approach. Consequently, the fulfilment of this requirement will remain uncertain until we have an assignment of PGM artists to reference groups so that we can proceed with experiments.
<i>Linked tasks</i>	2.1, 3.1
<i>Technical partners engaged</i>	ATC (UI for inserting reference groups), CERTH (predictive model development), PGM (manual creation/assignment of reference groups)
<i>Data availability sourcing</i>	<p>Streaming data provided by Kontor New Media* (Playground). Broadcasting numbers (BMAT). Social media mining: Facebook, YouTube, Twitter (only since May 2018). Sales data is not available at the moment, to be considered in future iterations.</p> <p>*Currently available in Kontor are the following sources: Amazon MP3, Apple Music/iTune, Beatport, Deezer, DJ Shop, eMusic, Google Play, Juke (24-7), Juno, Musicload, Napster, Simfy, Spotify, TDC, Traxsource, Vodafone, Xbox music, Youtube</p> <p>Most of them have no streams, so in practice the relevant sources of interest are Spotify, Apple Music/iTunes and Deezer..</p>
<i>Cluster</i>	Audience metrics

4.1.2 RL_REQ#2 – A combined visual timeline for streaming statistics of an artist

Description

Statistics from social media, Youtube and DSPs visualized in a combined interactive graph. The solution should include the possibility to manually enter "events", as simple marks in the timeline, that could influence streaming quantities, such as the start of an ad campaign, an addition of a song to a playlist, or other events. Stats represented should be both number of listeners and number of streams, on a daily basis. Could further be enriched with forecasting based on earlier effects for a specific artist / reference group.

Requirement details

- RL_REQ#2.1 – ability to see Spotify popularity index at artist/track level
- RL_REQ#2.2 – ability to see Spotify streaming numbers of an artist/track
- RL_REQ#2.3 – ability to get deeper knowledge on charts (ie top 100.000). We often focus on when a track reaches top 100, top 50 etc. But longtail is very important for back catalogue and it would be interesting to know when/if a track reaches top 1000, top 10.000 etc.
- RL_REQ#2.4 – ability to get up to date facts from streaming and social media platforms. RL_REQ#2.5 – ability to analyze instagram followers to locate fans -

At the moment we do not have access to Instagram data, so we should work on evaluating the feasibility of this sub-requirement in the next months.

- RL_REQ#2.6 – ability to see monthly listeners to followers conversion rate for artists
- RL_REQ#2.7 – ability to get more in depth apple music information
- RL_REQ#2.8 – ability to compare streaming with extensive airplay data
- RL_REQ#2.9 – ability to see demographics on all data sources
- RL_REQ#2.10 – ability to see device use on all data sources
- RL_REQ#2.11 – ability to see free/subscription on all data sources - per track and artist

Motivation

The timeline would make it possible to compare different streaming platforms with each other, for individual artists. It would make it possible to understand how Youtube consumption translates into streaming on DSPs (Spotify, Apple Music etc). It would also make it possible to understand the effect of different forms of events, such as campaigns, live performances, playlist additions etc. The effects of such events should be saved for each artist, making it possible to create forecasts of how a likewise future event could influence streaming on different platforms.

Update

This requirement was included in the requirements to be taken into account in later phases of the project. After the definition of the user stories and the visualization panel of the case of use of the record labels, we considered this requirement indispensable, as it defines the basis of the product to be developed.

<i>Priority</i>	MUST
<i>Technical assessment</i>	<p>Possible with collection of KNM data and YouTube data. A visualisation problem might be the dominance of certain platforms in some markets, f.e. in Scandinavia where Spotify is totally dominant.</p> <p>RL_REQ#2.3 is also challenging as it's difficult to acquire longtail chart data. Typically, charts are comprised of much less than 1000 and 10000 entries.</p>
<i>Linked tasks</i>	2.3, 3.1, 2.2
<i>Technical partners engaged</i>	CERTH (data processing & aggregation), BMAT (data visualization)
<i>Data availability sourcing</i>	<p>YouTube CMS access granted (csv download and API integration). Spotify Analytics access granted (csv download). KNM web service provides streaming data for all platforms (ex YouTube). Additional data i.e. playlist information is available through KNM, but only for playlists containing PGM artists.</p>

<i>Cluster</i>	Audience metrics
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4.1.3 RL_REQ#5 – Genres trending for each market

Description

Predict trending genres in different territories and investigate recurrent patterns. Do genre trends that are big in Europe always follow North America? Where do trends start and how do they expand - are there common denominators? Does social media follow suit; can you see the same movement in social media as in streaming and sales / chart positions etc. We will investigate impact of artists in each genre. Present movements on timeline to visualize the trends on a global level.

Motivation

This could help record companies with the A&R process and to make better decisions on what type of artists to sign. Could also help with the export process and to understand where to spend marketing budget for local acts in certain foreign territories.

<i>Priority</i>	SHOULD
<i>Technical assessment</i>	Does not exist on the market. Specifically, if the predictive perspective is to be used. Directly attached to BMP_REQ#15 (Genre popularity for each market).
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	CERTH (data collection, analysis and aggregation), BMAT (broadcast charts)
<i>Data availability sourcing</i>	Spotify top charts, general charts, broadcast data (to be investigated - depending on the market), Twitter (to be investigated)
<i>Cluster</i>	Audience metrics

4.1.4 RL_REQ#6 – Events impact on success

Description

Investigate the impact an event (e.g. new release, tv show, etc) has on the success of an artist. For example, map out correlations between release day and playlist additions / social media shares / streaming numbers. Most tracks are released on Fridays (global

release day). We want to know if this is optimal for all releases or if there are exceptions. Do the results differ with regards to genre or target group? Maybe releasing a track on a different day means less competition, this is the kind of information we find useful. Present a comparison between tracks released on Friday and all other weekdays with regards to number of streams, number of playlist additions (divided in organic and curated) and social media impact (ie number of shares). An appearance on a TV show, or the start of a new campaign may affect number of streams in the short or long term. How to quantify that impact? We should be able to sort results by genre to see if that impacts the correlations.

Motivation

Useful for record companies when scheduling a project in order to maximize the outcome and also push correctly to streaming platforms.

Update

The day of publication has a two-step examination. It may have a "short" impact in the sense that it is included or not in the curated playlists due to more or less competition. However, it has been proven that being included in these playlists has a "long" impact on streaming numbers.

<i>Priority</i>	COULD
<i>Technical assessment</i>	Access to event data is necessary in order to conduct exploratory data analysis.
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	CERTH (data analysis), BMAT (UI for entering events)
<i>Data availability sourcing</i>	Streaming data provided by Kontor New Media (Playground). Manually created events. Release dates for the tracks/albums of PGM.
<i>Cluster</i>	Audience metrics

4.1.5 RL_REQ#9 – Season related streaming changes

Description

Identify season related patterns in the way we listen to music. Find optimal time for releasing a single/album/video or launch an artist project given a specific genre / type of artist. Map out what genres grow during what season and if it differs between countries.

Motivation

Useful for record companies when scheduling a project in order to maximise the outcome and also push correctly to streaming platforms.

<i>Priority</i>	COULD
<i>Technical assessment</i>	Possible with collection of KNM data
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	CERTH, PGM (genre per artist for more precise analysis)
<i>Data availability sourcing</i>	Streaming data provided by Kontor New Media (Playground).
<i>Cluster</i>	Audience metrics

4.1.6 **RL_REQ#10 – Playlist related streaming**

Description

If a song is featured in a specific e.g. Spotify curated playlist – how many streams will that playlist generate. We can see that certain playlists are very important when growing streams – what’s the common denominator.

Requirement details:

- RL_REQ#10.1 – ability to see playlist evolution and new playlist additions on Spotify
- RL_REQ#10.2 – ability to divide Spotify playlists by followers
- RL_REQ#10.3 – ability to sort playlists by editorial (playlists that a DSP creates manually) / all
- RL_REQ#10.4 – ability to click on playlist name for further details
- RL_REQ#10.5 – ability to click on playlist name and get list of similar playlists
- RL_REQ#10.6 – ability to sort playlists by territories - This is currently not feasible due to data access limitations.
- RL_REQ#10.7 – ability to see playlist evolution and new playlist adds on all DSPs
- RL_REQ#10.8 – ability to see statistics on specific playlist
 - RL_REQ#10.8.1 – company share - Labels associated with the artists in the playlists (i.e. UMG 50%, WMG 30%, Sony 10%...)
 - RL_REQ#10.8.2 – genre share
 - RL_REQ#10.8.3 – country of artist
- RL_REQ#10.9 – ability to filter playlists by "average monthly listeners"

- RL_REQ#10.10 – ability to see playlist follower statistics: number of followers and demographics
- RL_REQ#10.11 – ability to see Spotify popularity index of a playlist

Motivation

This can be helpful when pitching songs towards various playlists and their editors.

<i>Priority</i>	COULD
<i>Technical assessment</i>	Possible with collection of KNM data
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	CERTH, PGM (genre per artist for more precise analysis)
<i>Data availability sourcing</i>	Streaming data provided by Kontor New Media (Playground).
<i>Cluster</i>	Audience metrics

4.2 Live Music Use Case Requirements

Live music industry uses various information data sources like record sales, past events ticket sales, broadcasting performance. However, it is mainly driven by internet-based data like streaming performance and a lot on social media performance and interactions. Live music use case is probably the less automated of the three use cases as it requires a lot on human knowledge and word to mouth recommendation, tied up to the music production (labels) industry analysis of the market as being released on a label is one of the main entry point for an artist to perform in events.

Being the least digitally assisted use case could be seen as a weak point in a sense that live music industry do not have many already existing databases and analysis tools; but it is also a strength because there is a lot of innovation opportunities in live music ecosystem, such as being able to refine by artificial intelligence an event's line-up regarding the music genres, audience, fanbase, targeted mood of an event in order to maximize the impact on potential customers; to have the ability to book the right and differentiating artists and upcoming artists based on predictive analysis to reach new customers to retain. Bass Nation will work with a selected number of live music clubs and festivals to help them enhance their line up's, be different from their competitors and grow audience and attention using the Future Pulse predictive platform.

4.2.1 LM_REQ#1 – Genre of electronic music

Description

Identify the genre / subgenre of an electronic music track.

Motivation

Genre identification is very important for live music Use Case. Concerts, gigs or festivals are set up around genres. Festival stages are usually divided by sub-genres. This could also open up to additional services for DSP's and online players in order to automatically tag the electronic music tracks uploaded by users.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Based on electronic music genres examples provided by Bass Nation. The technical partners engaged will evaluate how far we can detect sub-genres in electronic music based on our inputs. Possible if training data are provided
<i>Linked tasks</i>	2.4

<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	Electronic music genres examples provided by BN. The data will be tracks owned by Bass Nation and extracted web excerpts. Bass Nation already evaluated the feasibility of electronic music subgenres identification with IRCAM.
<i>Cluster</i>	Music attributes

4.2.2 LM_REQ#3 – Discography and Typical visuals per artist

Description

Full discography (with charts performance) and common visuals. Merge of previous requirements.

Requirement details:

- LM_REQ#3.1 : Display a picture of the artist
- LM_REQ#3.2 : Display the latest EP or album covers of the artist with an update as soon as a new release is out
- LM_REQ#3.3 : Display the Top 5 releases of the artist based on sales of a “track” or “album” growth / popularity
- LM_REQ#3.4 : Display the full discography of the artist
- LM_REQ#3.5 : Enable FuturePulse users to upload pictures / logos / releases of given artists on the platform

Motivation

Those additional metadata will help end users narrowing their choice of artists to book in their events and visuals of the artist/releases will make the end user UI nice looking and captivating.

Update

See technical assessment.

<i>Priority</i>	COULD (1)
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<i>Technical assessment</i>	<p>Based on music database (and charts). Discogs API can provide full discography and image for an artist and release. This could be displayed on user request. It is going to be harder to gather charts for smaller electronic music subgenres.</p> <p>We will work on the definition of a set of different data sources so that we do not depend on the availability of Discogs API.</p>
<i>Linked tasks</i>	2.1, 2.2, 2.3
<i>Technical partners engaged</i>	WP2 (Data collection) partners
<i>Data availability sourcing</i>	Discogs dB and API. Web crawling.
<i>Cluster</i>	Additional metadata

4.2.3 LM_REQ#5 – Artist popularity in a given genre

Description

Identify the popularity of an artist in an electronic music genre or subgenre.

Requirement details:

- LM_REQ#5.1 : Popularity of an artist in a given genre on a specific music platform = distributor (Beatport); streaming platform (Spotify)
- LM_REQ#5.2 : Popularity of an artist in a given genre in a “region” = EU, Asia, USA, Latin America, Africa
- LM_REQ#5.3 : Popularity of an artist in a given genre in a country = France, Italy, China, Canada, Israel, Sweden, etc
- LM_REQ#5.4 : Popularity of an artist in a given genre in a city
- LM_REQ#5.5 : Popularity of an artist in a given genre among a gender = male, female
- LM_REQ#5.6 : Popularity of an artist in a given genre among a specific age category = Les than 18y/o - 18 to 25 y/o - 25 to 35 y/o - etc
- LM_REQ#5.7 : Popularity of an artist in a given genre on a specific music platform in a given “region”
- LM_REQ#5.8 : Popularity of an artist in a given genre on a specific music platform in a given country
- LM_REQ#5.8 : Popularity of an artist in a given genre on a specific music platform in a given city
- LM_REQ#5.9 : Popularity of an artist in a given genre on a specific music platform in a given “region” among a specific gender
- LM_REQ#5.10 : Popularity of an artist in a given genre on a specific music platform in a given country among a specific age category

- LM_REQ#5.11 : Popularity of an artist in a given genre on a specific music platform in a given city among a specific age category
- LM_REQ#5.12 - Growth of new track popularity - A successful new electronic music track for an artist is usually the only gateway for an artist popularity regarding events' booking. This can help a decision maker if, for example, an artist has been making a recent hit that is topping the charts since a month while not being known for his other tracks. A user could decide that this artist is interesting to have on his lineup because of this hit.

Motivation

The ability to separate popularity by genres is extremely important for the Live Music use case. We will need to classify popular artists for a given subgenre for end users who are looking to do a musical event around a specific electronic music subgenre or a multistage event proposing several stages with several subgenres of electronic music. The analysis of the popularity of an artist in a given genre or subgenre of electronic music could also be linked to the REQ regarding the popularity of a given genre or subgenre in a specific geographical territory. It would be important and relevant to have a match between the popularity of a given genre on a specific territory and the most popular artists in this genre AND in the given territory. For example : Trance is popular in France and the most popular Trance artist in France is XXX. The geographical aspect is key for Live Music professionals.

Update

BN_REQ#7 (see D1.2) now is merged with this document as sub requirement LM_REQ#5.12.

See Requirement details and Technical assessment.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	<p>Based on electronic music charts, past events, social media and streaming platforms. The main idea is to use past events and venues as indicators of artist's popularity. This popularity can be further refined using charts data, social media activity and popularity metrics from streaming platforms. .</p> <p>LM_REQ#5.2, LM_REQ#5.3 and LM_REQ#5.4 can be supported if we use popularity rankings produced by venues and charts.</p> <p>LM_REQ#5.5 and LM_REQ#5.6 cannot be supported as there is not enough public demographic data.</p> <p>It is difficult to provide popularity (LM_REQ#5.7 to LM_REQ#5.11) per platform/region/age as we do not have access to public data.</p>
<i>Linked tasks</i>	3.1

<i>Technical partners engaged</i>	CERTH, Musimap
<i>Data availability sourcing</i>	Electronic music charts (e.g. Beatport) and venues data. Additional use of social media and streaming platforms (mainly SoundCloud and Spotify).
<i>Cluster</i>	Audience metrics

4.2.4 LM_REQ#6 – Growth of artist popularity

Description

Growth of popularity on a week / month / year basis. This feature would offer a global view of the growth of the artists as well as a localized view for local promoters.

Requirement details

- LM_REQ#6.1 : Growth of artist popularity on a specific music platform = distributor (Beatport); streaming platform (Spotify)
- LM_REQ#6.2 : Growth of artist popularity in a given genre in a “region” = EU, Asia, USA, Latin America, Africa
- LM_REQ#6.3 : Growth of artist popularity in a country = France, Italy, China, Canada, Israel, Sweden, etc
- LM_REQ#6.4 : Growth of artist popularity in a city
- LM_REQ#6.5 : Growth of artist popularity among a gender = male, female
- LM_REQ#6.6 : Growth of artist popularity among a specific age category = Less than 18y/o - 18 to 25 y/o - 25 to 35 y/o - etc
- LM_REQ#6.7 : Growth of artist popularity on a specific music platform in a given “region”
- LM_REQ#6.8 : Growth of artist popularity on a specific music platform in a given country
- LM_REQ#6.9 : Growth of artist popularity on a specific music platform in a given city
- LM_REQ#6.10 : Growth of artist popularity on a specific music platform in a given “region” among a specific gender
- LM_REQ#6.11 : Growth of artist popularity on a specific music platform in a given “region” among a specific age category
- LM_REQ#6.12 : Growth of artist popularity on a specific music platform in a given country among a specific age category
- LM_REQ#6.13 : Growth of artist popularity on a specific music platform in a given country among a specific gender
- LM_REQ#6.14 : Growth of artist popularity on a specific music platform in a given city among a specific gender
- LM_REQ#6.15 : Growth of artist popularity on a specific music platform in a given country among a specific age category

- LM_REQ#6.16 : Growth of artist popularity in a specific electronic music genre
- LM_REQ#6.17 : Growth of artist popularity in a specific electronic music genre on a specific music platform = distributor (Beatport); streaming platform (Spotify)
- LM_REQ#6.18 : Growth of artist popularity in a specific electronic music genre in a “region”
- LM_REQ#6.19 : Growth of artist popularity in a specific electronic music genre in a country
- LM_REQ#6.20 : Growth of artist popularity in a specific electronic music genre in a city
- LM_REQ#6.21 : Growth of artist popularity in a specific electronic music genre among a specific gender
- LM_REQ#6.22 : Growth of artist popularity in a specific electronic music genre in a given age category

Motivation

With this req. we will be able to deliver to our users an overview of an artist popularity per genre and help them in their final decision. (eg well known artist that is performing less since a year vs. a less known one that is performing better because of a social buzz, a release, etc).

<i>Priority</i>	MUST (4)
<i>Technical assessment</i>	<p>This feature depends on LM_REQ#5. Using popularity evolution over time, we will quantify popularity growth of artists for specific time periods.</p> <p>LM_REQ#6.1 to LM_REQ#6.4 are feasible only for future estimations</p> <p>LM_REQ#6.5 and LM_REQ#6.6 are not feasible due to lack of demographic data</p> <p>LM_REQ#6.7 to LM_REQ#6.15 are not feasible due to lack of data</p> <p>LM_REQ#6.21 and LM_REQ#6.22 are not feasible due to lack of data</p>
<i>Linked tasks</i>	3.2
<i>Technical partners engaged</i>	BMAT, CERTH, Musimap
<i>Data availability sourcing</i>	Electronic music charts and venues data.

<i>Cluster</i>	Audience metrics
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4.2.5 LM_REQ#8 – Top upcoming artists per genre

Description

Identify who are the most popular upcoming artists per genre.

Motivation

An internal top of upcoming artists per subgenre is a must have, including cross-subgenres recommendation to establish the best performing booking. Upcoming artists are often the only differentiator in a complex multistage line up. Having the opportunity to have a pre-selection of new talents would help promoters to select either an artist instead of another or to find an artist they didn't here about before using the FuturePulse platform.

Update

This requirement was included in the requirements to be considered in the next iterations of the project (see D1.2). CERTH has started working on this requirement using the VenueRank approach (see D3.1).

<i>Priority</i>	MUST
<i>Technical assessment</i>	Upcoming artists will be identified by analysing the appearance of artists in music charts and venues, in subsequent time periods. An artist that performs in more important venues or has a higher appearance in music charts, compared to the past can be considered as an emerging/upcoming one.
<i>Linked tasks</i>	3.2
<i>Technical partners engaged</i>	CERTH
<i>Data availability sourcing</i>	Electronic music charts and venues data.
<i>Cluster</i>	Audience metrics

4.2.6 LM_REQ#9 – Genre popularity

Description

Give short and long-term popularity of a genre with a global approach (popularity worldwide) as well as a local input for local Live Music professionals.

Requirement details

- LM_REQ#9.1 : Genre popularity on a specific music platform = distributor (Beatport); streaming platform (Spotify)
- LM_REQ#9.2 : Genre popularity in a given genre in a “region” = EU, Asia, USA, Latin America, Africa
- LM_REQ#9.3 : Genre popularity in a country = France, Italy, China, Canada, Israel, Sweden, etc
- LM_REQ#9.4 : Genre popularity among a gender = male, female
- LM_REQ#9.5 : Genre popularity among a specific age category = Les than 18y/o - 18 to 25 y/o - 25 to 35 y/o - etc
- LM_REQ#9.6 : Genre popularity on a specific music platform in a given “region”
- LM_REQ#9.7 : Genre popularity on a specific music platform in a given country
- LM_REQ#9.8 : Genre popularity on a specific music platform in a given city
- LM_REQ#9.9 : Genre popularity on a specific music platform in a given “region” among a specific gender
- LM_REQ#9.10 : Genre popularity on a specific music platform in a given “region” among a specific age category
- LM_REQ#9.11 : Genre popularity on a specific music platform in a given country among a specific age category
- LM_REQ#9.12 : Genre popularity on a specific music platform in a given country among a specific gender
- LM_REQ#9.13 : Genre popularity on a specific music platform in a given city among a specific gender
- LM_REQ#9.14 : Genre popularity on a specific music platform in a given city among a specific age category

Motivation

This will help Live Music professionals to make a decision on selecting a particular music genre for their event/stage. In the case of a multistage event, secondary stages are often used as a differentiator against competitors.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Based on electronic music charts and social media activity. In the current implementation we tackle this requirement similarly to RL_REQ#5 and BMP_REQ#15. The difference is that in this

	<p>requirement the set of genres for which we estimate popularity are more specific than the genres of RL and BMP use cases. This introduces a new challenge as the chart data for these electronic music genres tend to be more sparse.</p> <p>LM_REQ#9.4 and LM_REQ#9.5 are not feasible due to lack of demographic data.</p> <p>LM_REQ#9.6 to LM_REQ#9.8 are partially feasible. Only the global estimation per platform is available.</p> <p>LM_REQ#9.9 to LM_REQ#9.13 are not feasible due to lack of demographic data.</p>
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	BMAT, CERTH, Musimap
<i>Data availability sourcing</i>	Electronic music charts, Social media (to be investigated).
<i>Cluster</i>	Audience metrics

4.2.7 LM_REQ#21– Past gigs

Description

Where and when did the artist play. This is key for a Live Music professional in order to book artists that did not perform too many times in the past months / year in the city / country where the event takes place.

Merge of previous BN_ REQ#11, REQ#12, REQ#13 and REQ#14.

Motivation

Will help promoters to have an overview on where an artist plays before and/or after the event he's trying to set up. A promoter won't book the same artist (except headliners) who played 2 weeks ago in a near location.

Update

This is key for a Live Music professional in order to book artists that did not perform too many times in the past months / year in the city / country where the event takes place.

This information is part of the artist popularity estimation (LM_REQ#5), but could be displayed as a standalone feature (including social media feedback performance on past event).

<i>Priority</i>	MUST (4)
<i>Technical assessment</i>	Based on concert discovery services (an example is Bandsintown) and information extraction from web pages hosting events. This information is part of the artist popularity estimation (LM_REQ#5), but could be displayed as a standalone feature (including social media feedback performance on past event).
<i>Linked tasks</i>	2.3
<i>Technical partners engaged</i>	CERTH
<i>Data availability sourcing</i>	Past events, Google, Bands in Town, ResidentAdvisor, SongKick (to be investigated, as we need to request for access to Songkick's API first)
<i>Cluster</i>	Additional metadata

4.2.8 LM_REQ#22 – User input to FuturePulse system

Description

Where and when did the artist play.

Artist profile is defined by the age, gender, etc. Admin information is defined by management contact, booking contact, performance price, etc. Cancellation rate is defined by the number of performances cancelled in the past 6 / 12 / 18 months and the reasons (missed flights, illness, etc). Artist attitude is defined by the “easiness” or “difficultness” of an artist and their requirements level (rider, etc).

Merge of multiple previous requirements from Bass Nation.

Requirement details:

- LM_REQ#22.1 : User input to FuturePulse system : User can add past and upcoming artist gigs
- LM_REQ#22.2 : User input to FuturePulse system : User can add past artist releases
- LM_REQ#22.3 : User input to FuturePulse system : User can amend / propose amendments of the electronic music genres and subgenres
- LM_REQ#22.4 : User input to FuturePulse system : User can add comments on the artist
- LM_REQ#22.5 : User input to FuturePulse system : User can add length of performance

- LM_REQ#22.6 : User input to FuturePulse system : User can add type of performance : live or dj set
- LM_REQ#22.7 : User input to FuturePulse system : User can give feedback on the platform's features

Motivation

This requirement has been added to fulfill a need from Live Music use case regarding numerous important information to be displayed to the end user by FuturePulse final interface.

Update

See Requirement details.

<i>Priority</i>	MUST (4)
<i>Technical assessment</i>	Based on user input or web and social media crawling. Having the ability to display artists professional contact with details would be a plus for users once they have made their choice. Cancellation rate: decision maker info for users as they calculate a risk factor of an artist. Artist attitude: could be difficult to achieve but could be a real plus. Some artists have high level requirements which need to be fulfilled. Gaining access to those requirements at the decision level could be very interesting for users.
<i>Linked tasks</i>	4.1, 4.2
<i>Technical partners engaged</i>	ATC
<i>Data availability sourcing</i>	Manual input by us or end user (account settings)
<i>Cluster</i>	Additional metadata

4.3 Background Music Platform Use Case Requirements

Music Platform

Background music providers based on a streaming solution are to a large extent using manual processes when finding and choosing music that matches brands and establishments. Editors are trying to construct playlists that are suitable for specific businesses areas, and in this work, it is essential that some of these processes are automated if brand fit music are to be scaled. End clients of the background music platform in this use case (Soundtrack), also need to be able themselves to choose between high level variables.

A thorough review of the research that has been made during the last 50 years around background music (by means of more than 200 studies) and its impact on businesses revenues as well as end customers satisfaction, length of stay etc., together with the survey conducted as a part of the FuturePulse project, have revealed that the following requirements are the most important to focus on:

4.3.1 BMP_REQ#1 – Recognition level of a track

Description

The current level of recognition, or awareness, of a track per market, as defined in ISO 3166-1, and globally. This could further be enriched with recognition levels for certain age and gender groups per market, as well as globally, if demographic data is made available. Historical data also important. Could be represented as a float 0-100. Might be more historically based.

Motivation

Recognition levels can be used in governing f.e. how long customers stays in establishments, as well as influencing customer satisfaction. The survey among businesses showed that Recognition placed nr 3 in what they considered to be the most important variable. Different countries have different music histories, estimating the recognition levels should therefore be done for each market. Aggregated global recognition levels of a track is also a useful measure.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Does not exist on the market. Model for how to estimate recognition levels needs to be developed.
<i>Linked tasks</i>	3.1, 2.1, 2.2
<i>Technical partners engaged</i>	BMAT, CERTH

<i>Data availability sourcing</i>	Charts historically, All popularity proxies: views, shares, retweets, etc.; airplay monitoring.
<i>Cluster</i>	Audience metrics

4.3.2 BMP_REQ#2 – Popularity level of a track

Description

The current popularity of a track per market as defined in ISO 3166-1, and globally. This could further be enriched with popularity levels for certain age and gender groups per market (right now it is not a possibility, since we do not have any demographic data available), and globally, as well as a categorization of popularity into different "popularities". Could be represented as a float 0-100. Might be more contemporary based, compared to BMP_REQ#1.

Motivation

The popularity level of music has proven important in background music. In the survey, popularity was the sixth most important variable for businesses. The levels of popularity (hits or none hits) have f.e. been found in a SYB study to be influential on how much money visitors spend in a restaurant (Daunfeldt, S-O., Rudholm, N., Sporre, H., 2017).

Update

Right now, it is not scalable to crawl 44M songs daily on all data sources (Youtube, Spotify, Deezer, etc.). FuturePulse will demonstrate its possibilities in this requirement on a smaller subset catalog.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Does not exist on the market. Model for how to estimate recognition levels needs to be developed.
<i>Linked tasks</i>	3.1, 2.1, 2.2
<i>Technical partners engaged</i>	BMAT, Musimap
<i>Data availability sourcing</i>	Charts historically, streaming and downloads charts historically, All popularity proxies: views, shares, retweets, etc.; BMAT airplay monitoring
<i>Cluster</i>	Audience metrics

4.3.3 BMP_REQ#4 – Genre of a track

Description

Identify one or more of the following, for the whole SYB catalogue: *Afrobeats, Afrofunk, Ambient, Blues, Bossanova, Classical, Country, Dancehall/Soca, Disco, EDM, Folk, Funk, Hard Rock, Hip Hop, House, Indie-dance, Jazz, Lounge, Nu-disco, Pop rock, Pop, Reggaeton, Psychedelic Rock, R&B, Reggae/Dub, Rock, Salsa, Singer-Songwriter, Soul, Tech House, Techno, Trap, Tropical House*. Since the genre taxonomy is constantly changing for actors in the music industry, the solution need a certain degree of adaptivity or flexibility.

The possibility to map SYB genre taxonomy with a larger set of genres that are being tracked by FuturePulse. (Relates to BMP_REQ#15, as well as RL_REQ#5 and LM_REQ#9). Sometimes the mapping would be one-on-one, and sometimes the mapping would be towards two or more genres.

Motivation

The genre of a song is an indicator of what kind of music one is dealing with. For the editors of playlists at music background providers, as well as for the clients of the platform, genres make it possible to quicker find music that suits certain brands.

Update

See Technical assessment.

<i>Priority</i>	MUST (4)
<i>Technical assessment</i>	<p>Exists. FuturePulse needs to agree upon a united set of genres.</p> <p>Possible if training data are provided.</p> <p>Adaptability to genre taxonomy changes is feasible but very time and effort consuming. Each time the taxonomy changes, we need to update the training set with some new songs of the new genres; in order to re-train the models, and to recompile the software.</p> <p>To map SYB genre taxonomy with a large set of genres is not feasible at the moment.</p>
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	<p>Existing partners genre lists combined into one joint genre set.</p> <p>Created jointly at requirements workshop.</p>
<i>Cluster</i>	Music attributes

4.3.4 **BMP_REQ#6 – Energy level in a track**

Description

Information about perceived energy for all of the tracks in the SYB catalogue. Proposed here as a float from 0.0-1.0.

Motivation

The energy level of a track is very important for how customers experience the brand and the visit to an establishment, depending on how many visitors that are present. In the earlier FuturePulse survey, energy ranked as the second most important by businesses. Energy levels can be used to govern how much time customers spend in the store as well as influence the experience.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Does not exist on the market. Possible with existing training data.
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	Sample of manual annotation of energy levels in tracks provided by SYB (1 000 - 10 000)
<i>Cluster</i>	Music attributes

4.3.5 **BMP_REQ#8 – Original release year for a track**

Description

The year that all of the tracks in the SYB catalogue was released first. Often the same as the album's release year, but not always. E.g. if the track is a remaster or reissue, the year might be another than the year when the track was originally released.

Motivation

Information about when a track was released is an also an indicator of what a song contains. Together with genre information it makes it easier for editors, and clients, to find correct music for playlists.

<i>Priority</i>	COULD (4)
<i>Technical assessment</i>	Exists. Based on the ISRC code. For example, in UKUNI9700663 "97" would be the year.
<i>Linked tasks</i>	2.1, 2.2, 2.3
<i>Technical partners engaged</i>	SYB, ATC
<i>Data availability sourcing</i>	ISRC codes provided for tracks being used.
<i>Cluster</i>	Additional Metadata

4.3.6 BMP_REQ#9 – Origin of an artist

Description

Information about the country of origin for an artist, with country codes as defined in ISO 3166-1.

Motivation

The origin of an artist is information that can be used when choosing music for different markets.

<i>Priority</i>	COULD (3)
<i>Technical assessment</i>	Does partly exist.
<i>Linked tasks</i>	2.1, 2.2, 2.3
<i>Technical partners engaged</i>	SYB, ATC
<i>Data availability sourcing</i>	ISRC code, f.e. SE for Sweden, US for USA etc
<i>Cluster</i>	Additional Metadata

4.3.7 **BMP_REQ#10 – Instrumental or vocals, major gender in track**

Description

Information on which gender the vocals is mainly sung by in the SYB catalogue, or if there are no vocals. One or more of the following: Vocals = Female, Male, Instrumental, Other.

Motivation

Information on whether music is instrumental or not is important, since some brands are keener on having less vocals in their sound environment.

<i>Priority</i>	COULD (3)
<i>Technical assessment</i>	Does not exist on the market. Would need either development of novel audio analysis, or manual tagging.
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	Annotated data with audio files from SYB. Also data provided by IRCAM.
<i>Cluster</i>	Music attributes

4.3.8 **BMP_REQ#11 – Moods related to a track**

Description

Data on what kind of moods, feelings, or sound classification, that all tracks in the SYB catalogue might be recognized as by an audience. High level mood classification might be needed, such as based on combined values in genre, vocals, year, language, bpm etc. The present taxonomy is: *Mainstream, Indie, Acoustic, Electronic, Youthful, Mature, Modern, Traditional, Elegant, Rugged, Careful, Provocative, Serious, Happy, Low-key, Expressive, Dreamy.*

Motivation

Information about what moods or sound characteristics that are related to specific tracks. This was ranked as the most important variable in the survey among businesses, and is therefore a very important requirement.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Exists partly, but not adjusted and focused on background streaming music. Possible with existing training data.
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	SYB annotated data sample; Musimap is developing a mood recognition algorithm
<i>Cluster</i>	Music attributes

4.3.9 **BMP_REQ#12 – BPM in a track**

Description

The general Beats Per Minute, or tempo, for all tracks in the SYB catalogue. Instead of average BPM, information on what bpm is dominant in most part of the track might be used.

Motivation

BPM was ranked as number 4 in the survey among businesses. The BPM of music describes, combined with information on energy and moods, a track's characteristics, which makes it easier for editors and businesses to choose suitable music.

<i>Priority</i>	SHOULD (4)
<i>Technical assessment</i>	Exists, but needs to be customized to the specific use case.
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	IRCAM has BPM detector. Musimap employs a 3rd party one (to be checked if it can be used)
<i>Cluster</i>	Music attributes

4.3.10 BMP_REQ#13 – Fade in and fade out of a track

Description

Information of how long a fade in/out is in seconds, if existing, for all tracks in the SYB catalogue.

Motivation

Amplitude is a variable that is important in providing sound environments that matches the brand and establishment. I.e. long fades could influence visitors experience at restaurants and cafés.

<i>Priority</i>	COULD (2)
<i>Technical assessment</i>	Exist. Testing a smaller sample from SYB.
<i>Linked tasks</i>	2.4
<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	IRCAM has an algorithm, to be checked
<i>Cluster</i>	Music attributes

4.3.11 BMP_REQ#14 – Major or minor in a track

Description

A value for major or minor in all tracks of the SYB catalogue. Could be binary values but could also be more refined with strong or weak variables for each.

Motivation

Information on major or minor is an indicator of the "feeling" of a track.

<i>Priority</i>	SHOULD (4)
<i>Technical assessment</i>	Exists but needs to be customized to the specific use case. IRCAM module integrated in the platform.
<i>Linked tasks</i>	2.4

<i>Technical partners engaged</i>	IRCAM, Musimap
<i>Data availability sourcing</i>	IRCAM has an algorithm, to be checked.
<i>Cluster</i>	Music attributes

4.3.12 BMP_REQ#15 – Genre popularity for each market

Description

Returns a specific genres popularity divided per market, and globally. Also includes top artists and tracks for each genre. Could be further enriched with genre popularity divided by age and gender groups per market, and globally.

Motivation

If a certain genre is very popular in a specific country, music from that genre could preferable be chosen as background music. Aggregated global genre popularity is also important.

<i>Priority</i>	MUST (5)
<i>Technical assessment</i>	Does not exist on the market. Directly attached to LM_REQ#9.
<i>Linked tasks</i>	3.1
<i>Technical partners engaged</i>	CERTH
<i>Data availability sourcing</i>	Spotify top charts, general charts, broadcast data
<i>Cluster</i>	Audience metrics

4.4 Requirements to be reconsidered in the next stages of the project

4.4.1 **BMP_REQ#3 – Liking level of a track**

Description

The current liking level of a track per market as defined in ISO 3166-1. This could further be enriched with the liking levels for certain age and gender groups per market. Liking levels in social media, YouTube etc.

4.4.2 **BMP_REQ#5 – Explicit content in a track**

Description

A Boolean solution, 1 or 0. Preferable this data would also be available if a track have explicit visuals, i.e. in a music video, even though the lyrics themselves might not be explicit.

4.4.3 **BMP_REQ#7 – Language of vocals/lyrics**

Description

One or more language codes, if applicable, from ISO 639-1, i.e. `en` = English. If the track has vocals, information on the language of the vocals/lyrics is needed.

4.4.4 **RL_REQ#3 – Measure streaming and share-frequency with regards to demographics/target groups**

Description

Based on a number of demographic groups, identify the patterns for streaming and sharing music, i.e. how a track "grows". Present data on track basis in order to see if the demographics change over time and if so how. Platforms investigated: Facebook, YouTube and Spotify (due to lack of detailed statistics from other platforms). Other platforms to be added if statistics is available.

Motivation

What platforms are used for music consumption in the different age/gender groups in different countries? How do the different groups share music and are can one find patterns in how a track grows? I.e. from local fans to global or from one age group to another. The reason for this requirement is to have better knowledge in how to establish the right target groups for campaigns.

4.4.5 **RL_REQ#4 – Reference groups and success levels**

Description

In order for any predictions to be made one would need to create reference groups and measure success. Few artists have the kind of historical data needed for qualitative

predictions. Therefore we would need the submitted data to be analyzed and grouped together. We also need to create some sort of scale to measure success. Suggestions for this would need to be discussed further but could be similar to ""selling gold"", is X streams = success level 1, XX streams = success level 2.

As a start PGM will create a couple of test groups with between 10-20 artists in each group.

In the FuturePulse platform it could be useful to have the option to categorize artists in order to be able to compare them to reference groups. This would have to be defined manually by the end users.

Motivation

In order for any predictions to be made one would need to create reference groups and measure success. Few artists have the kind of historical data needed for qualitative predictions. Therefore we would need the submitted data to be analyzed and grouped together. We also need to create some sort of scale to measure success. Suggestions for this would need to be discussed further but could be similar to ""selling gold"", is X streams = success level 1, XX streams = success level 2.

Groups should probably be genre based and would need to be big enough and correlate enough to be used as reference, should probably also overlap as little as possible. How we create these groups is a question for a larger group to discuss but we believe it will be difficult to make predictions based solely on artist-by-artist cases.

Examples of groups:

""female singer songwriters with no previous released material""

""all men rock group with no previous released material""

""male singer songwriter with one previous released album that reached success level 2 within six months, success level 3 within 2 years"".

4.4.6 RL_REQ#7 – Trending artist discovery

Description

Recommend a list of emerging artists that are trending in one platform vs others.

Motivation

If we have knowledge about platforms where certain genres/target groups are more consumed/present it would help us in the marketing of music and when scouting for new artists within those genres. If hip hop fans are streaming music on YouTube, then emerging new talents will post their work there and that's where a record company A&R should be scouting.

4.4.7 RL_REQ#8 – Impact from additions on curated vs organic streams

Description

Identify how streaming numbers develop when tracks are added to playlists. Map out the differences and common denominators between additions on organic vs curated streaming. Identify patterns, ie additions on organic playlists leads to additions on curated playlists or vice versa.

Motivation

It would be very useful to know if a certain type of track (genre/type of artist) performs better on Spotify if it gets early support from curators or if the long-term success is better achieved through organic streaming, which would mean that the marketing/promotion shall be directed to directly towards end consumers.

4.4.8 RL_REQ#11 – Blogs & Media vs Streaming, Download & Radio

Description

Identify how blog & media coverage correlate with streaming and downloads. Measure the importance of media coverage for an artist. How does the coverage impact the social media and streaming numbers and radio plays? If possible also identify if there are differences between reviews and blogs etc. This is something that needs to be discussed, because the identification - though technically feasible - is a very resource-intensive task. We therefore need to discuss whether this is something that would really differentiate us from our competitors in order to move forward.

The analysis of other existing solution datasets could be also considered a subtask of this requirement.

Motivation

This is useful when deciding on promotion actions and spending. We are often hiring external promotion agencies in selected areas for artist in different genres but find it hard to evaluate the impact and the actual return of this investment.

<i>Priority</i>	SHOULD
<i>Technical assessment</i>	This is not possible unless both blog/media data and streaming data are available. Currently, no data is available for blog/media mentions of artists/tracks.
<i>Linked tasks</i>	2.1, 2.2, 2.3, 3.1

<i>Technical partners engaged</i>	CERTH, BMAT, Musimap
<i>Data availability sourcing</i>	
<i>Cluster</i>	Audience metrics

4.4.9 LM_REQ#2 – Live track identification

Description

Identify track, artist name, data from release: date of release, length, type of release (digital, cd...), part of an album, an EP, unique release.

Motivation

This requirement was first intended to match the idea of track identification in the overall FuturePulse solution and part of the genre identification. An artist could produce different music genres. Live music identification is not mandatory for our use case but should be part of the overall music tracking to set up an efficient live artist popularity (this could be a discussion for req. v2).

4.4.10 LM_REQ#10 – Artist fanbase analysis

Description

Based on demographics, gender, age, country, travel, level of merchandising purchase, etc.

Motivation

An overview of the fanbase is important for event promotion. This req. was also meant to be part of the first vision BN has of the 'artist popularity'.

4.4.11 LM_REQ#11– Social media analysis over Live performance & Live event Fanbase feedback

Description

Reach and success by social media platform - Growth, engagement, feedback on live performances. We define Live Fanbase feedback as the impact of a gig, a tour on the artists fanbase (post event fanbase engagement): growth rate, interaction, etc.

Merge of multiple previous requirements from Bass Nation.

Requirement details:

- LM_REQ#11.1 : Social media analysis over Live performance & Live event Fanbase feedback after a single event / show : number of new fans, engagement, growth of interactions, positive comments, etc.
- LM_REQ#11.2 : Social media analysis over Live performance & Live event Fanbase feedback after a festival season (4 to 6 months) : number of new fans, engagement, growth of interactions, positive comments, etc

Motivation

For our use case it is important to separate "everyday" social media analysis from before/after event social media analysis and to have this data for each social media platform separately.

<i>Priority</i>	MUST (4)
<i>Technical assessment</i>	Based on social media, video channels (YouTube, Vimeo) and streaming platform data. Feasible as long as there are social media data for the artist. As we don't have access to past data, if we need to provide that type of insights for artists, we have somehow provide a mechanism to add new artists some time before the live performance.
<i>Linked tasks</i>	2.3 (2.1, 2.2, 2.3 for previous BN14)
<i>Technical partners engaged</i>	CERTH
<i>Data availability sourcing</i>	Social media, streaming, web mining
<i>Cluster</i>	Audience metrics

4.4.12 LM_REQ#12 – Communication performance

Description

Semantic analysis: Analyze the keywords that qualify the artist = i.e.: nice, hard, happy, etc. List of keywords that would impact best the artist announcement for a given event. Timing: Analyze the best moment to trigger artist announcement for a specific event regarding its fanbase. Future fans: Best keyword match to reach event participants outside the given artist fanbase. Optimization: List of keywords that would impact best the artist announcement for a given event. Optimization, timing, semantic analysis for artist description and qualified tags to reach non-fans users.

Merge of LM_REQ#12, LM_REQ#13, LM_REQ#14, LM_REQ#15 and LM_REQ#16.

Motivation

An overview of the fanbase is important for event promotion. This req. was also meant to be part of the first vision BN has of the 'artist popularity'.

4.4.13 LM_REQ#17 – Emotional analysis of artists

Description

- 1) Mood/emotion analysis on the artists releases / tracks
- 2) Mood to color. Heat map i.e.: heat linked to happiness generated by the artist = red.

Merge of LM_REQ#17 and LM_REQ#18.

Motivation

What emotions does the artist trigger would be a real plus for promoters to set up a coherent event's lineup or a stage's lineup.

4.4.14 LM_REQ#19 – Type of performance

Description

Djing, Digital Live performance, Vocals, using analog instruments etc. This requirement could be linked to the BN22 requirement, enabling users to feed the platform with their information.

Motivation

This is purely informative but quite important when doing an event's backline: Dj backline is easier to setup than an electronic music live that is easier to setup than an "unplugged" performance.

4.4.15 LM_REQ#20 – Length of performance

Description

Usual and average duration of the artists performance (1 hours, 30 minutes, long Dj set, all night long, etc.). This requirement could be linked to the BN22 requirement, enabling users to feed the platform with their information.

Motivation

A full lineup in a gig or festival is tied to timing. Some artists won't play less than x hours while others have a "xy minutes" digital performance that cannot be changed.

4.4.16 LM_REQ#23 – Artist visual mood / visual ID

Description

What does the artists performance drive visually and what does he / and his fanbase share as visual content.

Motivation

This could be a nice feature to have in FuturePulse solution as the visual ID of an artist gained importance recently with the development of shared music and event's experience over internet. Promoters are looking to book artists whose visual IDs are matching their event's concept.

4.4.17 LM_REQ#24 – Artists visual performance look

Description

What type of visuals, stage design, live perf, etc. during the artists performance.

Motivation

Same as BN23 but in a live situation taking into account the stage design work.

5 Conclusions

This document details the work done by all the partners to obtain a wide and complete set of requirements that will be a key reference for the next stages of the project. Pilots and exploitation will be strongly related to the success we obtain while meeting these requirements.

After this first round of user scenarios definition, a plan for finalising the definition of the user stories is already being followed both by users and technology developers. This plan needs to establish the required flexibility for all the partners to understand and synthesize the needs of a complex industry.

FuturePulse must be close to all the stakeholder groups and users so that the final version of open user scenarios and detailed user stories can cover all the industry requirements.

Parallel to the industry research, we will emphasize our work on the analysis of all the technical assessments and feasibility issues, as well as the availability of all the necessary data sources.