



D7.3 First periodic activity and management report

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Table of Contents

1 Executive Summary.....	4
2 FuturePulse.....	5
2.1 Rationale.....	5
2.2 Partnership.....	5
2.3 Use Cases and Business Scenarios.....	5
2.4 Scope and Objectives.....	6
3 Summary of activity during M1-M12.....	8
3.1 Gantt Chart.....	8
3.2 Deliverables.....	8
3.3 Milestones.....	9
4 Work carried out by WP during M1-M12.....	10
4.1 Work Package 1: Open innovation, User Requirements and Design.....	10
4.2 Work Package 2: Music Data Collection, Analysis and Indexing.....	10
4.3 Work Package 3: Predictive Analytics and Recommendations.....	10
4.4 Work Package 4: Platform Integration and Application Development.....	11
4.5 Work Package 5: Pilots and Evaluation.....	11
4.6 Work Package 6: Innovation Management, Dissemination and Exploitation.....	11
4.7 Work Package 7: Project Management.....	12
4.8 Work Package 8: Ethics requirements.....	13

1 Executive Summary

This deliverable includes a public summary of the activity performed by H2020 project FuturePulse (Grant Agreement Number: 761634) throughout its first year of execution.

Section 2 describes the aims and objectives of the project and its use cases. Section 3 depicts a summary of the activity performed during the period, and section 4 presents the work carried out by every Work Package of the project.

2 FuturePulse

2.1 Rationale

Music is one of the **fastest evolving media industries**, currently undergoing a **transformation** at the nexus of **music streaming, social media and convergence technologies**. As a result, the **music industry** has become a **mixed economy of diverse consumer channels and revenue streams**, as well as **disruptive innovations** based on **new services** and content **distribution models**. In this setting, music companies encounter daunting challenges in dealing successfully with the transition to the new field that is shaped by streaming music, social media and media convergence. The availability of huge music catalogues and choices has rendered the problems of recommendation and discovery as key in the competition for audience, while the continuous access to multiple sources of music consumption have resulted in a dynamic audience, characterised by a highly diverse set of tastes and volatility in preferences which also depend on the context of music consumption.

The project will **help music companies** leverage a variety of music data and content, ranging from broadcasters (TV, radio) and music streaming data, to sales statistics and streams of music-focused social media discussions, interactions and content, through sophisticated analytics and predictive modelling services **to make highly informed business decisions, to better understand their audience and the music trends of the future**, and ultimately **to make music distribution more effective and profitable**. **FuturePulse** will offer these capabilities over a **user-friendly, highly intuitive and visual web solution** that will enable the immersion of music professionals in the realm of music data, and will support them to make highly informed and effective business decisions (e.g., artist/venue to book, marketing budget).

2.2 Partnership

The **FuturePulse** partnership consists of eight partners: three pilot partners (PLAYGROUND, BASS NATION and Soundtrack Your Brand -SYB-), each of them coming to the project with unique business cases with high innovation potential. These will be supported by two leading EU research Organisations (CERTH, IRCAM), and three IT, technology and data providers (BMAT, ATC and MUSIMAP) to ensure that a market-ready system and a set of cutting edge services will be delivered after being thoroughly evaluated in real-world business settings.

2.3 Use Cases and Business Scenarios

To serve the increasingly complex needs of the music ecosystem, **FuturePulse** will **develop and pilot test a novel, close to market music platform** in three high-impact use cases:

- **Record Label use case:** FuturePulse platform will help music professionals grasp how all the different signals (music streaming, music play in radio/TV, social media sharing) translate to future music sales and revenues (digital sales/streaming/ads), and what are the best strategies to optimise them.
- **Live Music use case:** FuturePulse platform will collect and analyse data from multiple sources around artists in order to predict the ticket sales that an artist would bring for a particular venue, the audience demographics (e.g., age composition), discover and recommend artists that will be a good match for a venue, and support the end users in pricing the artists for live events.

FuturePulse will make the results of this analysis accessible to the main live music industry stakeholders: a) venues, b) promoters, and c) festival organisers.

- **Music Platform use case:** FuturePulse will provide a platform for joint analysis of music play data coming from the music streaming platform and data coming from the client business where music is played. This will allow the end user to uncover valuable correlations and recommend music to stream to optimise business goals.

2.4 Scope and Objectives

In response to the industrial needs of the music industry the **FuturePulse** project has identified the following six specific technological and innovation objectives:

- **Objective 1:** Deliver a single tool for collecting and accessing music data from a diverse set of sources.
- **Objective 2:** Deliver a set of data-driven services for estimating the current and future popularity of songs, artists and genres.
- **Objective 3:** Deliver a set of services for enhanced audience analysis and management.
- **Objective 4:** Integrate music data collection, mining, and visualisation in a scalable Software-as-a-Service (SaaS) platform.
- **Objective 5:** Perform large-scale pilots on three clearly defined music segments.
- **Objective 6:** Develop and execute a comprehensive dissemination and exploitation plan and pave a clear path to market.



Figure 1: FuturePulse Platform and Applications

The project will result in a number of high-quality outcomes that will form the basis for the exploitation plan of the project. These are illustrated in figure above and include the following:

- A robust and extensible multi-source music data ingestion and real-time indexing framework.
- A multi-modal music popularity prediction engine: This will produce short- and long-term predictions for popularity indices about specific artists, albums, songs, styles and genres, given a variety of incoming signals.
- An online music community analysis framework and a music recommendation engine.



- An integrated scalable cloud-based platform offering the full spectrum of FuturePulse services.
- Three market-driven applications serving the needs of record labels, event organisers and music platform operators.



3 Summary of activity during M1-M12

The activities undertaken during the first year of the project (M1-M12) have been carried out according to the proposed Work Plan of the project without significant deviations.

3.1 Gantt Chart

	Start	End	Y1				Y2				Y3			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
WP1 Open Innovation, User Requirements and Design	1	15	D1.1/5	D1.2			D1.3/6/4							
T1.1 Technology and market innovation analysis	1	15												
T1.2 FuturePulse co-design process	1	15												
WP2 Music Data Collection, Analysis and Indexing	2	27			D2.1	D2.2/5			D2.3		D2.4			
T2.1 Collection of broadcast data	2	21												
T2.2 Collection of online music platform data	2	21												
T2.3 Collection of social media and open data	2	21												
T2.4 Music analysis and indexing	2	27												
WP3 Predictive Analytics and Recommendations	1	30				D3.1				D3.2/4		D3.3		
T3.1 Popularity estimation and prediction	1	24												
T3.2 Audience profiling and recommendation	7	30												
T3.3 Business-driven music mining & recommendation	10	30												
WP4 Platform Integration and Application Development	1	36		D4.1/8		D4.2/9		D4.3	D4.4		D4.5		D4.6	D4.7
T4.1 System architecture	1	18												
T4.2 Visualization and user interaction	4	24												
T4.3 FuturePulse platform development and component integration	4	36												
T4.4 FuturePulse application development	10	36												
WP5 Pilots and Evaluation	4	36			D5.1/9									D5.8/16
T5.1 Record label pilot	4	36								D5.2/10				D5.5/13
T5.2 Live music pilot	4	36								D5.3/11				D5.6/14
T5.3 Music platform pilot	4	36								D5.4/12				D5.7/15
T5.4 Pilot coordination and management	4	36												
WP6 Innovation Management, Dissemination and Exploitation	1	36	D6.1	D6.2				D6.3/7		D6.4/8				D6.5/9
T6.1 Development of engagement and communication strategy	1	12												
T6.2 Creation of FuturePulse website and dissemination material	1	36												
T6.3 Dissemination activities	7	36												
T6.4 Exploitation activities	7	36												
WP7 Project Management	1	36	D7.1	D7.2		D7.3/7				D7.4/5/8				D7.6/9
T7.1 Project coordination, resource monitoring & financial control	1	36												
T7.2 Project quality planning and monitoring	1	36												
T7.3 Data management	1	24												

Table 1: FuturePulse Gantt chart

3.2 Deliverables

The following table includes the deliverable submitted to the Participant Portal during the period M1-M12, as included in the Description of Action (DoA). All submissions were done in time with the foreseen delivery dates.

Month	#	Title	Lead beneficiary	Type	Dissemination level
M1	D7.1	Project quality and assessment plan	BMAT	Report	Public
M2	D1.1	Music industry innovation report v1	Playground	Report	Public
M2	D1.5	Music industry innovation report v1 (D1.1 Confidential)	Playground	Report	Confidential
M2	D6.1	FuturePulse website online	ATC	Websites, patents filling, etc	Public
M6	D1.2	FuturePulse requirements v1	BMAT	Report	Public
M6	D4.1	Overall system architecture	ATC	Report	Public
M6	D4.8	Overall system architecture (D4.1 Confidential)	ATC	Report	Confidential
M6	D6.2	Communication & dissemination plan	BMAT	Report	Public
M6	D7.2	Data management plan v1	BMAT	ORDP: Open	Public

				Research Data Pilot	
M9	D2.1	Data specifications and collection v1	CERTH	Report	Public
M9	D5.1	Pilot plan	ATC	Report	Public
M9	D5.9	Pilot plan (D5.1 Confidential)	ATC	Report	Confidential
M12	D2.2	High-level music content analysis framework v1	IRCAM	Demonstrator	Public
M12	D2.5	High-level music content analysis framework v1 (D2.2 Confidential)	IRCAM	Demonstrator	Confidential
M12	D3.1	Predictive analytics and recommendation framework v1	CERTH	Report	Public
M12	D4.2	Visual analytics for music	BMAT	Demonstrator	Public
M12	D4.9	Visual analytics for music (D4.2 Confidential)	BMAT	Demonstrator	Confidential
M12	D7.3	First periodic activity and management report	BMAT	Report	Public
M12	D7.7	First periodic activity and management report (D7.3 Confidential)	BMAT	Report	Confidential
M12	D8.1	POPD – Requirement No.1	BMAT	Ethics	Confidential
M12	D8.2	H – Requirement No.2	BMAT	Ethics	Confidential

Table 2: Deliverables M1-M12

3.3 Milestones

The milestone covered during the M1-M12 period is:

Number	Title	Lead beneficiary	Due Date	Means of verification
MS1	Project initiation and requirements definitions	BMAT	M6	The following have been completed: project quality plan, dissemination and communication plan, first draft of project dissemination channels and business framework, including an initial approach for the market analysis, FuturePulse user and system requirements definition, and a first version of the data requirements definition and data management plan.

Table 3: Milestones M1-M12

Besides, at this moment, the Consortium is working towards the achievement of the second milestone of the project, due to M18 (February 2019). The project is performing the 1st annual reporting period. Work on the first 12 months has been successfully carried out with the design of the platform architecture, the ongoing first implementation of the FuturePulse platform and the design of the three pre-pilots.

4 Work carried out by WP during M1-M12

4.1 Work Package 1: Open innovation, User Requirements and Design

The objective of this Work Package is to position FuturePulse in the highly dynamic landscape of online music, to specify its unique and innovative characteristics and to deliver a set of concrete user requirements for FuturePulse.

The main activities and results of this WP during the M1-M12 period are:

- First version of Music Industry Innovation Report was conducted. This included a SWOT analysis including questionnaires and in depth interviews of existing music platforms and applications with similar functionalities. Based on this an analysis was made and next steps presented to position FuturePulse in the highly dynamic landscape of online music.
- First version of FuturePulse requirements created. This included a list of requirements that have continuously been improved by regular group calls and face-to-face meetings involving both use case leaders and technical partners in order to match the ever-changing market.
- Draft of second version of Music Industry Innovation Report started.

4.2 Work Package 2: Music Data Collection, Analysis and Indexing

The main objective of this Work Package is to ensure that consortium partners have timely access to music data that are necessary for developing and testing the FuturePulse capabilities.

The main activities and results of this WP during the M1-M12 period are:

- Annotated corpora (songsets) were created in order to feed the indexing machine learning algorithms.
- An infrastructure was set up in order to automatically collect the specified data (broadcasting, online music statistics, social media and open data) used for the automatic estimation of High-Level Music Content Analysis from the audio.
- Data are accessible through SaaS to help the development and the scalability of the predictive analysis and recommendations of artists and tracks in WP3.

4.3 Work Package 3: Predictive Analytics and Recommendations

The main objective of this Work Package is to develop methods to leverage the large variety of collected music data (from WP2) for supporting decision making by various stakeholders (e.g., artists, labels, and brands).

The main activities and results of this WP during the M1-M12 period are:

- The problem of popularity estimation and prediction was explored and a first set of approaches were implemented and tested:
 - Using social media and web data from WP2, experiments were carried out with different methods and models of popularity estimation and prediction (web charts, Google trends).
 - Multiple sources of data (Spotify, YouTube, etc.) about artist popularity were used to estimate and predict the popularity of artists of interest.

- Different predictive models of popularity of tracks have been prototyped and tested.
- Initial steps in the area of audience profiling and recommendation were made:
 - A component for mood analysis from audio was tested.
 - Preliminary exploration of inter-country relations with respect to music trends was performed.
 - Graph-based models were explored as a means of quantifying artist important. The underlying graphs can be used in the context of artist similarity computation and ultimately for artist recommendation.
- Preparatory steps were conducted to support the business-driven music mining and recommendation pilot:
 - The experimental design of the music platform pilot was prepared.

4.4 Work Package 4: Platform Integration and Application Development

This Work Package is devoted to the definition of the FuturePulse platform architecture and the development of the actual platform and applications to be used by the pilot users throughout all pilot phases. The activities during this first project period, have been:

- The outcomes of the requirements analysis were assessed and aligned with respect to music data collection management, predictive analytics, recommendations, visualisation and user interaction.
- The architecture, technologies, and APIs to be developed and used throughout the project and the definition of an appropriate visualisation engine was defined.
- Technical development of the platform was performed: building and setting up the appropriate back-end services and repositories to be used by components owners (WP2 and WP3).
- Integration plan has been designed and followed to ensure a smooth and agile technical implementation.

4.5 Work Package 5: Pilots and Evaluation

The overall goal of this Work Package is to ensure the appropriate design and smooth execution of the large-scale pilots so that the FuturePulse outcomes are thoroughly evaluated and improved over the course of the project leading to a market-ready solution.

The main activities and results of this WP during the M1-M12 period are:

- Use Case scenarios created in order to define how each Use Case Pilot will work and will be evaluated.
- WP5 tools created: timeline, technical feedback, workflow, monthly meetings in order to define a clear workflow for each Use Case Pilot and enable a quick and clear feedback for the technical partners. These tools will also enable to shape the solution according to the feedback and the needs expressed by the Use Case Pilots.

4.6 Work Package 6: Innovation Management, Dissemination and Exploitation

The main objective of this Work Package is twofold: a) to generate awareness about the project and its achievements in the general public and in communities of interest, b) to pave a clear path to exploitation and sustainability for the project outcomes.

The main activities and results of this WP during the M1-M12 period are:

- Communication and dissemination plan was designed to reach the widest possible awareness in music and technology industries.
- Initial exploitation plan and activities performed: SWOT analysis and Business Model Canvas.
- Setup of communication and dissemination tools: website, social media sites and physical dissemination material.
- Dissemination activities: workshops, social media activity or interviews in online specific media.
- Liaison activities were performed with H2020 projects MARCONI¹ and HRadio².

4.7 Work Package 7: Project Management

The objective of this work package is to support the project in succeeding its goals through strong coordination and continuous monitoring, assessment and reporting.

The main activities and results of this WP during the M1-M12 period are:

- Performed day-by-day management, effective work and control of deadlines, work plan follow-up, deliverables and milestones follow-up, project advancement, problems to be solved, decision-making processes, motivation and cooperation.
- An amendment was submitted to include confidential versions of some deliverables.
- The External Advisory Board (EAB) and User Panel (UP) were set up.
- A KPI follow-up and quality assurance for the overall project was performed, together with peer review workflow for deliverables, risk management and contingency plans.
- The quality procedures and risk management involved in the effective and efficient management of the project were defined.
- The Data Management Plan was delivered defining the first version of the methodology and standards with respect to the data generated and collected throughout the FuturePulse project.

1 <https://www.projectmarconi.eu>

2 <https://www.hradio.eu>

List of project meetings, dates and venues

Date (M1-M12)	WP	Type	Partners	Venue
26th-27th September, 2017	All	Kick-off meeting	All	Barcelona, Spain
6th-7th February, 2018	All	Plenary meeting	All	Athens, Greece
14th-15th June, 2018	All	Plenary meeting	All	Paris, France

Table 4: List of project meetings, dates and venues

Apart from project management meetings, several technical and user requirements meetings took place during the first year of the project. In these meetings, both technical partners and use case partners attended.

4.8 Work Package 8: Ethics requirements

The objective of this WP is to ensure compliance with the 'ethics requirements' set out in this work package.

Two deliverables have been submitted by M12:

- D8.1: POPD – Requirement No. 1 (Protection of Personal Data): report on ethical considerations in regards to social media data.
- D8.2: H – Requirement No. 2 (Humans): procedures and criteria to identify/recruit research participants, information on the informed consent procedures implemented and clarification whether children and/or adults unable to give informed consent are involved.