Technical paper on the Canadian content recommendation for online music platforms

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Association des professionnels de l'édition musicale (APEM)
Association québécoise de l'industrie du disque, du spectacle et de la vidéo (ADISQ)
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Brix Labs

Summary

Representatives of the Canadian music industry entrusted Brix Labs with the mandate to help them consider, from a technical standpoint, the stakes associated with regulating the recommendation practices of online music platforms. This report lays out these considerations.

The report presents an analysis of recommendation mechanisms used by various online music platforms. It demonstrates that platforms use many mechanisms which vary from one platform to another and evolve over time.

The consequence of this observation is that any regulation regarding the presence of Canadian and/or French-language content on these platforms cannot be about the internal workings of the recommendation mechanisms. Rather, it must be based on an indicator that measures the results of referral mechanisms as seen by users. This indicator must be applicable to all platforms and remain valid over the long term.

The suggested indicator, which meets these expectations, is to count the number of impressions of music title. This method is inspired by digital marketing metrics (which relies on the tallying of ad impressions and clicks to calculate other indicators).

This suggestion is meant to be pragmatic, because we want it to lead to concrete applications. It has certain limitations for which this report proposes bypasses. It will also need to be fine-tuned: its primary goal is to feed a reflection by proposing a starting point for further discussion.

The report concludes with eleven recommendations of which six are about principles and five are about measures that should be implemented.

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Introduction

Background

The Broadcasting Act of Canada is currently undergoing a review. It therefore seems like an appropriate time to begin a reflection on the way the regulation of broadcasting services can be adapted to include and apply to online music services. Several questions arise… *How do we apply the spirit of the law and regulations to the new means of music recommendation and consumption. What are the mechanisms at play and how are they different from traditional broadcasting? Does relying on algorithms mean it is impossible to implement any kind of measurement or control? What are the concrete tools that could be implemented to set guidelines for online music platforms while also taking their specificities into account?*

Obviously, the stakeholders of the music industry are wondering about this. The Association des professionnels de l'édition musicale (APEM), the Association québécoise de l'industrie du disque, du spectacle et de la vidéo (ADISQ), Music Publishers Canada, Canadian Independent Music Association (CIMA) and the Society of Composers, Authors and Music Publishers of Canada (SOCAN) have therefore commissioned Brix Labs to feed their reflections on the basis of concrete observations and recommendations. This report is the result of that mandate. It will endeavour to fulfill two goals: share the findings on the practices of online music platforms and imagine means to measure and establish guidelines for those practices from the perspective of Canadian and Francophone musical content.

Those observations and recommendations will be laid out as follows:

- The first chapter will be devoted to the definition of the main concepts that will be discussed throughout the report.
- The next chapter will present a typology of recommendation mechanisms and discuss issues associated with recommendation algorithms.
- The third chapter will examine four online music platforms to illustrate concretely how those recommendation mechanisms manifest themselves.
- The final chapter will recommend means to measure the impact of those recommendation mechanisms on Canadian and Francophone musical content.

The report will then conclude on a series of proposals about principles and means.

Methodology

The preparation of this report began by a review of the literature as well as interviews with key industry players. The documents and experts consulted are listed in the bibliography. We also carried out an in-depth analysis of the user experience presented in various versions of a few online music platforms. Several observations made during said analysis are presented in the report's appendixes. Reflections surrounding the measurement tools of the recommendation mechanisms were carried out within the framework of a collaboration between the writer and the APEM team. The document was then proofread by independent experts and representatives of the project's contributing organizations.

The Concepts Under Study

This report focuses on the recommendation of Canadian and French-language content to Canadian consumers by online music platforms. To properly understand the interactions and technical issues related to our study, it is crucial to properly define each of the following concepts:

- Recommendation
- The Content
- Consumers
- Online music platform

Recommendation

Towards a definition of the issues at stake for us

There are several definitions of what a recommendation is when it comes to content, especially musical content. In addition, the concept of recommendation is quite similar to that of promotion, which is often associated with it.

According to the Lexico by Oxford dictionary, **promotion** refers to "the publicization of a product, organization, or venture so as to increase sales or public awareness." Wiktionary states that the goal is to "increase the reach or image of a product or brand."

As for the notion of **recommendation**, the definitions refer to an element of authority or influence. Lexico by Oxford defines it as "a suggestion or proposal as to the best course of action, especially one put forward by an authoritative body," while Wiktionary mentions an "endorsement" and "a suggestion or proposal about the best course of action."

In a more precise and applied manner to this study, "**A recommender system, or a recommendation system (sometimes replacing 'system' with a synonym such as platform or engine), is a subclass of information filtering system that seeks to predict the 'rating' or 'preference' a user would give to an item.**"[1]

For the purposes of this study, we believe it is not necessary to distinguish between promotion and recommendation as the results visible to consumers are similar. It does not seem necessary, either, to distinguish whether a recommendation stems from a computerized system such as an algorithm, or from a choice made by a human. We are simply going to focus on **all**

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[1] https://en.wikipedia.org/wiki/Recommender_system

the mechanisms present in the digital ecosystem of music consumption platforms which **put a consumer in contact with a given content without them specifically requesting said content** and which lead said consumer to **make an implicit or explicit listening choice**.

We will therefore use the notion of "recommendation" in reference to any and all mechanisms of promotion and recommendation that meet those criteria.

Clarifications are needed with regards to each aspect of our definition of a recommendation:

- **"All the mechanisms present in the digital ecosystem of music consumption platforms,"** indicates that we are interested in the digital realm (consequently excluding promotion in print media, outdoor signage, etc.) but without limiting ourselves to a specific format. We are therefore not interested specifically in the results of recommendation algorithms or human curation, nor strictly to personalized playlists, but rather to anything that is presented to the consumer and meets the criteria of our definition. Similarly, we are not interested in one support over another, such as a web or mobile application's interface so as to be able to include other current (*chatbots*, vocal interfaces, emails, etc.) or future formats.

- **"Put a consumer in contact with a given content without them specifically requesting said content"** means we are interested in what *comes before* the decision of consuming a musical title and also that we exclude situations where the consumer has clearly chosen by themselves to listen to a given artist or title.

- **"Make an implicit or explicit listening choice,"** clarifies the fact that a recommendation is not limited to moments when the consumer is actively searching for content to consume, but also when such content is spontaneously presented to them in other contexts (for example after the consumer has listened to content they chose specifically or when titles selected by the platform are played automatically).

As we have mentioned, our definition therefore excludes the consumer's choice of what will be played immediately by looking for a specific song, album, artist or playlists characterized by language or origin (playlists such as "Francophone music of the '80s" or "Brit-Rock Hits").

For clarity, our definition also excludes

- Recommending content that is not music, but that is sometimes found on the same platforms (i.e., podcasts on Spotify, non-music videos on YouTube, TV series in the Apple ecosystem, etc.).

- Third-party advertising or promotional content clearly identified as such.

The Many Forms of Recommendations…

The definition of recommendation we are proposing implies that several mechanisms are included within the scope of our study. We are also explicitly choosing to not comprehensively identify specific mechanisms.

It does seem useful, however, to identify certain characteristics of recommendation mechanisms in order to fully understand their diversity. We therefore propose a typology of recommendation mechanisms that is based on several characteristics that are summarized in the following chapter. Such a typology is required because of the number and diversity of those recommendation mechanisms. Note also that, as it will be laid out in the chapter on the platforms themselves, those mechanisms are not used uniformly by all online music platforms. For example, the Typologie de l'offre musicale en streaming du LATICCE[2] (typology of the music streaming offer), which studies several features of certain platforms (not just their recommendations), has identified nine types of playlists that take different shapes from one platform to the next.

It would therefore be utopian to attempt understanding the internal workings of recommendation mechanisms due to their sheer number and the various modes of operation from one platform to the next. Those inner workings will therefore not be subjected to a detailed analysis or description in this study.

… and Constantly Evolving

In addition to our reflection on the difficulty of understanding the inner workings themselves due to their sheer number and diversity, we also want to underscore that those mechanisms evolve rapidly.

It would have been risky, even just a few years ago, to predict that the services offered via smart speakers would become an important vector of music discovery, but that is precisely what is happening[3]. As a matter of fact, musical platforms are including an increasing number of devices: [4]Spotify proposes no less than 10 categories of devices on Spotify Everywhere, ranging from cars to gaming consoles. Another example, Fitbit, the smart watch maker (owned by Google since 2019) has announced, in April 2020[5] the possibility of controlling one's Spotify playback from its devices.

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[2]
https://docs.google.com/spreadsheets/d/1FQ-1m2hzwxORNTOoxYf2V2uvMi3tXqPRNmt2y-jxnKI/edit#gid=0
[3]
https://www.billboard.com/articles/business/tech/8531441/smart-speakers-nielsen-study-music-discovery-data
[4] https://spotify-everywhere.com/pages/product-categories
[5] https://blog.fitbit.com/introducing-spotify-app/

This rapidly evolving context explains our decision to exclude from this study an analysis of the *inner workings* of recommendation mechanisms. We will focus strictly on their results, which are concretely visible by consumers.

The Content

Musical Content

The focus of this study is musical content, whether or not it is accompanied by visual elements such as videos, animations, etc. More specifically, the basic unit of what content is will be a song or musical title, regardless of whether it is presented in the context of an album, a playlist, etc. We will also refer to musical titles that are presented on a platform that offers a vast repertoire in the form of a service or a subscription, whether or not it is for pay or free. In this report, we will use "title" as a generic term to designate the *"track,"* the musical piece or the song.

For further precision using counter-examples, we are excluding videos, since their objective is not strictly the music (even though some videos do include a musical track) and non-musical sound recordings (audiobooks, podcasts, etc.).

Canadian Content

It is possible to define Canadian content by applying the criteria of the [MAPL](#)[6] system currently used in the broadcasting system.

It is, however, the application of these criteria, in the context of online music platforms, that is more complicated. This is due in part to the fact that the content selection proposed to consumers is sometimes carried out by algorithms, but also because the volume of titles to process is greater and because Canadian content is not always identified as such.

It therefore seems necessary to implement technical means to allow the music platforms and other stakeholders in the chain of value to know whether a recording meets the MAPL criteria. Without presuming the choices that will be made by the industry's players, let us bear in mind that such technical means can take various forms:

- The systematic use of **metadata** within those music files and the integration of this metadata to determine whether a title meets the MAPL criteria. This probably implies a standardization of the vocabulary and format of the metadata.

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[6] https://crtc.gc.ca/eng/info_sht/r1.htm

- **Databases** containing the information concerning the MAPL criteria for a large set of titles. This probably implies using musical title identifiers that are shared and interoperable across the various IT systems involved.

Francophone Content

Defining what Francophone content is may, *a priori*, seem simpler. The criteria used to confirm the Francophone character of a title in the traditional context can also be applied to the context of online music platforms.

However, and for the same reasons as the character of Canadian content, it will be necessary ti implement technical means to identify titles as Francophone in order to automate the processing (metadata, databases, etc.). Mechanisms similar to the ones described above for Canadian content could also be applied to the identification of Francophone content.

Consumers

Consumers are individuals who listen to content on platforms, whether or not they pay to do so.

Platforms generally identify and authenticate consumers, but there are a few examples of identification-less listening (listening to music on YouTube without a user connection to the service, for example).

Canadian Consumers, Francophone Consumers

Since this reflection is associated with Canadian law, which includes provisions related to the language of audiences, the issue of identifying the nationality and language of consumers is important.

In the context where consumers are identified, platforms have information to determine the nationality of consumers, as well as their language (noting that this is sometimes a choice of the consumer, who may identify a language that is not their mother tongue). As we will see in our analysis of four of those platforms, this information is generally logged in a user profile.

In the context of identification-less listening by consumers, there are still mechanisms that can determine their nationality and language, but they are not as precise or reliable:

- **Consumer IP address**: databases allow the identification of the country of origin of an IP address. These databases are not perfect, but they allow a relatively precise identification of the country of origin of a service user on the web.

- **The settings of the web client** (typically a web browser, a mobile app or a smart speaker) used to access the service: web client settings generally include the language of the user interface and, in some cases, their variants (i.e., for French, variants would be the different variations of the French language spoken in France, Canada, Belgium, etc.).

Platforms

For the purposes of this study, we consider that an online music platform is an Internet-based service (via the web, mobile apps or smart devices) that allow consumers to listen to musical content on demand from a vast repertoire.

We are therefore not talking about [online music stores](#) or download services, but [on-demand consumption](#) services, whether they are interactive or semi-interactive. In the case of a platform that offers both modes of consumption, the analyses and comments presented in this study will only refer to the on-demand side of the business.

The platform's business model, namely whether or not consumers pay to access the content, has no impact in the context of our definition. The same is true when it comes to whether the platform offers other types of content. In this sense, YouTube, YouTube Music or YouTube Music Premium qualifies as online music platforms in the same way as Apple Music does.

Recommendation Typology

In the context of a reflection on framing the results of the recommendation mechanisms used by the online music platforms, it seems essential to understand with greater precision how these mechanisms operate and influence what consumers choose to listen to. The goal is not to study every way recommendations can be made, but rather to identify their overarching characteristics. These characteristics will in turn allow to categorize recommendations according to a typology that will be useful to support a reflection about them.

Thus, this chapter will study the ways recommendation mechanisms can be generally characterized, and then it will take a closer look at IT recommendation (or "algorithms") systems. Finally, we will attempt to summarize the salient elements of those characterizations within a simple matrix that allows for the classification of the diverse and numerous recommendation mechanisms used by online music platforms.

Characteristics of Recommendation Mechanisms

In characterizing the recommendation mechanisms, we choose to use a systematic and exhaustive analysis technique by applying an adaptation of [Five Ws approach](#). In short,

describing each mechanism will be accomplished by answering the questions summarized in the following table:

Question	Notes	Examples
Who or What? (what is being recommended)	The answer to this question can be summarized by "music," but there's obviously more to it than that. The elements recommended by music platforms are varied.	Title, Album, Artist, Playlist, Lyrics, Concert
Where? (via which interface?)	Nowadays, online music platforms come in many types of interfaces, all of which are associated to a certain type of user experience.	Desktop app, mobile app, smart speakers and other "smart" objects, application programming interfaces (API), search engines, emails.
When? (at what moment?)	Recommendations come at various moments during a consumer's use of a music platform.	Prior to their use of the service, when launching apps, during playback, after playback or at other times between listening sessions.
How? (how is the recommendation constructed?)	Recommendations means are essentially all about proposing content to consumers. There are, however, many techniques used to present those recommendations.	Human curation, individual streaming history, search tools and metadata, streaming statistics, user preferences, crowdsourcing, "social" interactions, complex algorithms, hybrid techniques.

In the case of each example listed in the table above, concrete examples extracted from online music platforms have been illustrated and commented in Appendix 1.

Complex Algorithm Recommendation

Recommendations made by complex algorithms have been under intense scrutiny over the last few years.

An algorithm is "a finite sequence of well defined, computer-implemented instructions, typically to solve a class of problems or to perform a computation[7]." They are "recipes" that software uses to accomplish tasks. Many music recommendation engines are algorithm-based and we can more or less guess their inner workings by observing their presentation and results. In the case of a social recommendation, it is clear that the algorithm identifies the music people marked as "friends" listen to and proceeds to sort them according to a set of criteria such as the number of streams, or even randomly, before presenting them to the consumer.

There exists, however, a certain category of algorithmic recommendations that is based on more complex algorithms whose results and inner workings can hardly be understood simply by observing their results. This is the category that is typically referred to when we speak about recommendation algorithms.

Recommendation algorithms are in fact a family of technical tools whose goal is to match content to consumers. Experts do not all use the same characteristics to describe them. Some[8] distinguish only two types of recommendation algorithms depending on whether they are *content-based* or based on user behaviour (*collaborative*), although they leave room for hybrid models. Others[9] refer to up to six categories, essentially variations of content-based or user behaviour-based algorithms.

Even though it is difficult to comprehend the inner workings of such algorithms, many attempts to do so for the major content streaming platforms, including the musical ones. Spotify has been the subject of several analyses throughout the years:

- In 2015, the business media Qwartz revealed that the algorithm behind Spotify's weekly discovery playlists was based on user profiles and their subscriber's playlists: "The main ingredient in Discover Weekly, it turns out, is other people. Spotify begins by looking at the 2 billion or so playlists created by its users."[10]
- In the following years, researchers were interested by this phenomenon and they published a book titled *Spotify Teardown*[11], in 2019, an investigation based on a research-action methodology that tries to understand the platform's recommendation tools. In the book, we learn, among other things, that "playlists, which are the core of the service, are, in a vast proportion, created by third-party services that belong to the majors[12]."

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[7] https://en.wikipedia.org/wiki/Algorithm
[8] https://towardsdatascience.com/introduction-to-recommender-systems-6c66cf15ada
[9] https://www.bluepiit.com/blog/classifying-recommender-systems/
[10] https://qz.com/571007/the-magic-that-makes-spotifys-discover-weekly-playlists-so-damn-good/
[11] https://mitpress.mit.edu/books/spotify-teardown
[12] https://wiki.uqam.ca/pages/viewpage.action?pageId=64294664

- This service has been the subject or more recent analyses published on digital media (OneZero[13] and Towards Data Science[14], for example) which explain how Spotify combines advanced big data processing and artificial intelligence techniques, web scraping and its interpretation using natural language processing, the analysis of the audio characteristics of the tracks (some of which is described in Spotify's API documentation[15]), etc.

Similar endeavours have been undertaken, on various scales, for other platforms. YouTube was the object of certain studies often focused on video recommendations in general (not strictly music-related). The Pew Research Center study on YouTube[16] underscored that music videos are among the four most represented categories in the platform's recommendation.

It is clear that the recommendation algorithms used by music platforms are highly complex. In some cases, if they use artificial intelligence techniques, such as automatic learning and deep learning, they may even fall victim to the "black box" effect (a phenomenon where even though the results of the system can be observed, the internal functioning is inexplicable) and, according to Forbes, decreases the level of confidence[17] in their results.

These algorithms also create a system of mutual influence between recommendations and consumption. The consumption (or non-consumption) data of the recommended content creates a feedback loop whose objective is to allow the algorithm to evolve.

Yet, it is important to bear in mind that despite their complex inner workings, the results, in the context of music platforms, are relatively simple and the same as other recommendation mechanisms: musical content suggestions presented to consumers.

Visual Classification Inside a Matrix

In order to simplify the analysis and classification of recommendation mechanisms, we propose to synthesize the characteristics mentioned above into two dimensions:

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https://onezero.medium.com/how-spotifys-algorithm-knows-exactly-what-you-want-to-listen-to-4b6991462c5c

[14] https://towardsdatascience.com/how-spotify-recommends-your-new-favorite-artist-8c1850512af0

[15]See "Tunable Track attributes" in
https://developer.spotify.com/documentation/web-api/reference/browse/get-recommendations/

16

https://www.pewresearch.org/internet/2018/11/07/many-turn-to-youtube-for-childrens-content-news-how-to-lessons/

17

https://www.forbes.com/sites/jasonbloomberg/2018/09/16/dont-trust-artificial-intelligence-time-to-open-the-ai-black-box/#e1fe003b4a7d

- **The consumer's level of activity**: combining the "where" and "when" characteristics allow us to identify a consumer's level of activity. At one end of the spectrum, they are very active (for example, they launch a specific search in the mobile app of a music platform), and at the other end, they are passive (for example, they open an email presenting new music releases).
- **The level of automation of a recommendation**: by relying on the "how" characteristic, we can identify the level of automation. At one end of the spectrum, the recommendation is not automated, is entirely created by a human and is relatively simple (for example, a playlist curated by a team of staff at the music platform), and at the other end of the spectrum, it is entirely automated, created by an algorithm that may have a certain level of complexity (for example, listening recommendations based strictly on the fact that certain titles are frequently listened by the same people).

From these two dimensions, we are able to create a matrix and place the various recommended elements into it (the "what" characteristic). This matrix allows us to visualize the tremendous diversity of recommendation mechanisms. For example
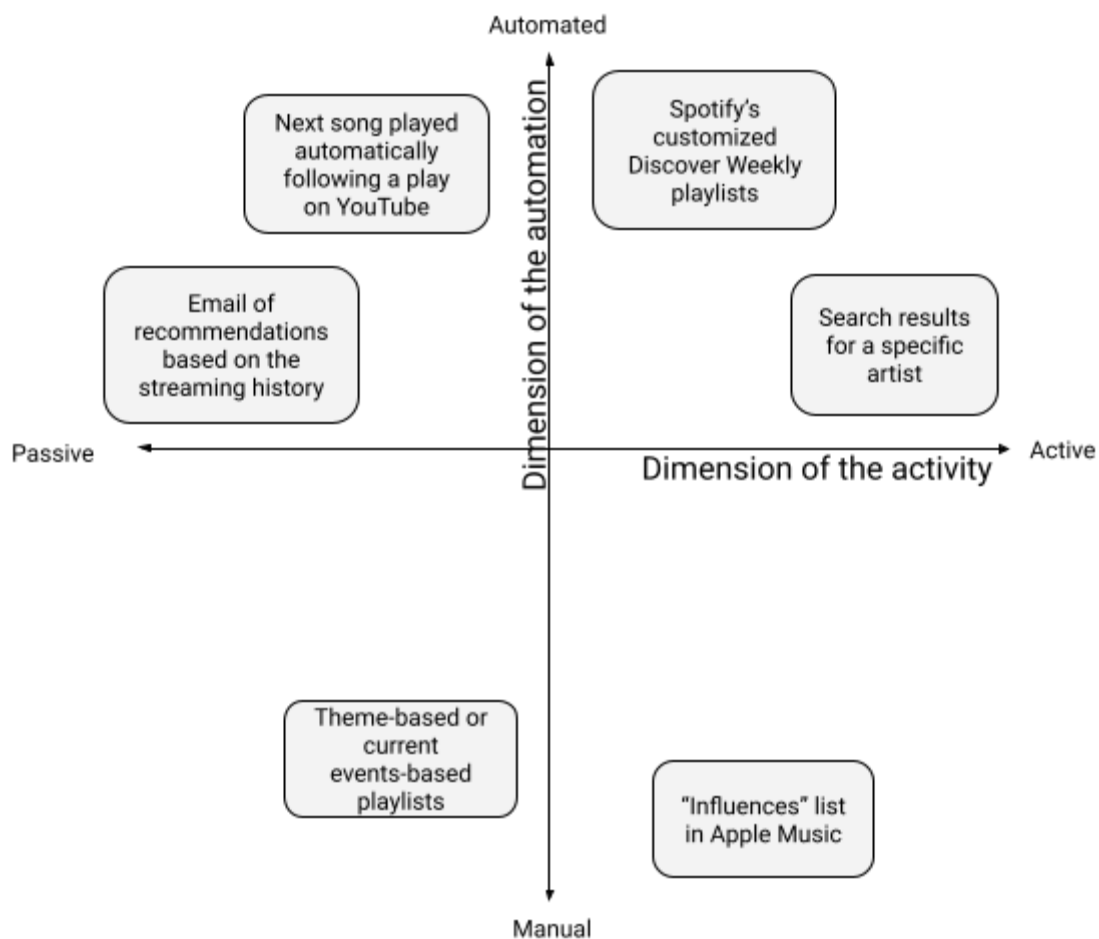
What the Typology Does Not Say

We believe the proposed typology is a tool that allows us to describe in a more precise manner the practices of online music platforms and to identify what could and could not be regulated. It is important to note, however, that classifying segments of the user experience in the typology does not capture all of the elements to be considered.

Firstly, the typology does not allow us to measure the **effectiveness** of recommendation mechanisms. *Are the recommendations effective? Are recommendations by email more effective than those displayed on the home page? Do the playlists created by human curators generate more streams than those created by algorithms? Is an artist suggested to a consumer because their "friends" listen to that artist more likely to generate more streams?* These are complex questions and their answers will necessarily vary from one person to the next, from one platform to the next and most likely depend on other factors. Therefore, it seems difficult, to us, to integrate the dimension of effectiveness in a typology of recommendation mechanisms. This does not mean, of course, that the notion of efficiency should be removed from regulatory thinking. What it means is that in light of the complexity of evaluating each platform's practices by considering the effectiveness of each type of recommendation, we should

- either be content with an average estimation of a simple indicator which can be used in all contexts;
- or work, ideally alongside the platforms, to qualify various mechanisms and obtain more precise data on their inner workings and their effectiveness.

Secondly, the typology does not describe **the level of difficulty to produce large scale automated observations** on the use of said mechanisms. At one end of the spectrum, recommendations presented through a programming interface (API) are particularly well suited to automated measures: it is the very nature of programming interfaces. At the other end, recommendations presented via smart objects such as smart watches have a very low potential for observation automation. Web-based interfaces lie somewhere between those two ends of the spectrum. This is an important consideration in a context where there is a desire to implement regulations. The control measures of whether these indicators have been met will need to account for that. For example, it will not be possible for external observers to compile quantitative data on those recommendation practices on a large scale, regardless of the type of recommendation. It would be absurd to attempt to count the presence of Canadian or Francophone content in all smart objects (watches, cars, speakers, TV sets, gaming consoles, etc.) of the Spotify ecosystem.

A Study of Four Online Music Platforms

Music platforms are as diversified as they are aplenty. To continue the **illustration of recommendation mechanisms** we began in the previous chapters, we have elected to study more closely four of those platforms. We chose the following platforms for their representativeness of the various business models offered to Canadian consumers:

- Apple Music
- Amazon Music Unlimited
- Spotify
- YouTube

YouTube also has an offer entirely dedicated to music called YouTube Music. We chose to study YouTube itself because it is widely used by consumers to listen to music. YouTube also offers a user experience that stands out from the others, which affords us an opportunity to study different recommendation mechanisms.

It should also be noted that a service called QUB Musique was launched in Québec while this report was being prepared. It was not included in our detailed analysis because it is too recent; it was launched as a preliminary version with incomplete features, and it is only offered in Québec and in French. Nonetheless, we have used certain examples of its inner workings in the illustrations associated with the typology of recommendation mechanisms when these examples illustrated mechanisms that are less visible on other platforms.

One of the **important issues of this study is the identification of consumers**: it is that identification, their nationality and language in particular, that could enable the application of regulation mechanisms specific to Canada. Thus, for each platform, we will pay close attention to the tools it uses to know about the consumers who use it, and more specifically their nationality and native language. We will also include, in an appendix, the main user experience elements annotated according to our typology of recommendation tools. Some of the elements presented are also counter-examples: they are elements that are not part of the scope of the recommendation.

The notes and user interface extracts presented in the following paragraphs are the result of observations carried out between May and July 2020.

Apple Music

Overview

Apple was a pioneer of downloadable music with the launch of iTunes and the iPod in the early 2000s. Apple Music, its on-demand music service, was launched in 2015.

The following notes are based on observations made using the MacOS and iOS versions of the Apple Music app.

User Management

Using the service without identification: It is not possible to use this service without identifying oneself. Consumers must identify themselves using an Apple ID. This ID is used across various Apple platforms such as iTunes, Apple TV, tech support, etc.

Country selection: there is no country selection associated with Apple Music. On the other hand, the Apple ID is associated with a country. Apple requires customers to "choose the country or region that matches the billing address for your payment method[18]."

Language: the Music app uses the language defined by the operating system. It is possible to change the language under MacOS, but this choice only impacts interface elements such as menus, not the content that is presented.

Typical User Experience and Practices

The main typical user experience elements and the practices related to a recommendation are presented in appendix 2.

Observations

Apple Music has, at all times, information on the country of origin and language of the consumer. It uses several recommendation mechanisms. All the observed user experience elements can be described using the definitions and typology proposed in this report.

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[18] https://support.apple.com/en-ca/HT204316#macos

Amazon Music Unlimited

Overview

Amazon Music Unlimited is, as the name implies, Amazon's unlimited online streaming offer which completes its other offers, namely Amazon Music (free but limited to a certain number of titles) and Amazon Prime Music (also a limited catalogue, but reserved to Amazon Prime subscribers).

The following notes are based on observations of the web browser version of the Amazon Music app and the iOS version of the app using an individual Unlimited package.

User Management

Using the service without identification: it is possible to visit the site without identification (and see the musical content), but it is not possible to listen to the music without identification. Consumers must identify themselves using an Amazon ID. This ID is used across several other services offered by Amazon.

Country: the Amazon Music account is associated to a country. A consumer using the free version can associate their account to another country as long as they enter a valid address, but in the case of an Unlimited subscription, contacting Amazon's customer support is required.

Language: the web-based app allows the modification of the interface language (which is not the case of the native iOS version). Changing the language modifies the interface's tools, but not the musical content that is presented.

Typical User Experience and Practices

The main typical user experience elements and the practices related to a recommendation are presented in appendix 2.

Observations

The Amazon Music platform has information on a consumer's country and language at all times when the consumer can listen to music. It uses several recommendation mechanisms. All the observed user experience elements can be described using the definitions and typology proposed in this report.

YouTube

Overview

YouTube is an online video publishing and consumption service operated by Google.

The following notes are based on observations made using the web version and iOS app version of YouTube.

User Management

Using the service without identification: It is possible to watch videos on YouTube, including music, without identification. Identification is required to use certain features such as creating lists.

Country: YouTube automatically identifies the consumer's country of origin, but consumers can select a different country in the service's preferences. The choice of country has an influence on the content that is proposed. For example, in the YouTube Music channel, the pop songs chart is different according to the selected country.

Language YouTube automatically identifies the consumer's language, but consumers can select a different one in the service's preferences. The choice of language influences certain interface elements, but we could not determine to what extent it changes the musical content that is proposed.

Typical User Experience and Practices

The main typical user experience elements and the practices related to a recommendation are presented in appendix 2.

Observations

YouTube offers a user experience that differs from the more classic approaches of other platforms. This platform allows users to listen to music without identifying themselves and also allows consumers, more easily than others, to choose their language and country. Moreover, the content it recommends is not always music since it is a generalist video platform.

Spotify

Overview

Spotify is an independent platform created in 2008 whose model relies on a free version with limited features and a full-featured subscription-based version.

The following notes are based on observations made using the web and iOS version of Spotify.

User Management

Using the service without identification: it is not possible to see or listen to the musical content offered without identifying oneself. Consumers are required to create a Spotify account.

Country: the Spotify account is associated with a country.

Language: the web-based app allows the modification of the interface language (which is not the case of the native iOS version). Changing the language modifies the interface's tools, but not the musical content that is presented.

Typical User Experience and Practices

The main typical user experience elements and the practices related to a recommendation are presented in appendix 2.

Observations

Spotify has consumers' country and language information at all times. It uses several recommendation mechanisms. All the observed user experience elements can be described using the definitions and typology proposed in this report.

Indicators and Measurement

The broadcast environment has traditionally been framed by various means, including quotas for broadcasting different types of content (Canadian, Francophone) in certain contexts. This control is based on a simple **indicator** (the proportion of titles with certain characteristics that are played during certain periods in relation to the total number of titles that were played during that period) as well as on **measurement** tools that are appropriate for said indicator (sampling techniques of a data set for a given period or other tools).

If we work with the assumption that this system is adequate and should apply to online music platforms, it will need to be adapted to their reality. The indicator and measurement tools used in the traditional realm cannot simply be transposed to the online music platforms ecosystem, and there are several reasons why:

- A **completely different user experience**: online music platforms offer interactive tools that allow consumers to make frequent and subtle choices (skip a title, do a new search, get suggestions, etc.), whereas in the context of broadcast radio, those choices are very limited (listen to a radio station, or not).
- The **distinction between recommendation, on one hand, and consumption, on the other**: in the realm of broadcasting, these elements are closely associated due to the user experience described above. The opposite is true for online music platforms where these elements are highly decoupled. What one chooses to listen to can be totally different from what was recommended *a priori*.
- A **tenfold increase in data volume**: since each consumer goes through a different sequence of choices and streams, the number of elements to measure is multiplied by several orders of magnitude.

For these reasons, we believe it is useful to reflect on the definition of an indicator and measurement tools that are adapted to the context of online music platforms. This indicator and the related measurement tools could then be used to define the regulation to apply to online music platforms, such as quotas, for example.

Reflection on the Indicator

Principles

While looking for an indicator that reflects the recommendation practices of online music platforms, we believe we should aim to fulfill the following objectives:

- The indicator has to be compatible with all platforms;

- It also needs to be compatible with multiple user interfaces (computers, phones, smart speakers, watches…);
- It needs to be usable in the long-term;
- It must position itself coherently in relation to other indicators commonly used in the digital universe.

We believe the last principle is a good starting point in defining an indicator that will apply to the musical content of online music platforms. The digital marketing industry relies on counting impressions as the fundamental element of its systems of indicators. In the context of online advertising, for example, an [impression](19) is counted when an ad is retrieved from a server and displayed to a potential consumer. Counting impression is independent from any measurement of the impact of said ad: the consumer's choice of reacting to the ad (by clicking, commenting, watching a video…) generates distinct indicators such as the [click-through rate](20). Other indicators can also be derived from the number of impressions, such as the cost per thousand. It should also be noted that the term "impression" is also used for audio advertisements, for example on vocal assistants, often referred to as "audio impressions."[21]

This method of separating impressions and engagement is omnipresent in digital advertising, promotion and referencing tools. It therefore seems useful to rely on this measurement method, even more so since analogies with the context of online music platforms are easily made:

- Impressions correspond to what is proposed to consumers, whether it is a recommendation or an explicit choice by the user (such as searching for a specific title or artist, for example).
- Engagement, or simply the clicks, means streaming the proposed musical content.

The advantage of relying on relatively well-defined indicators from the realm of digital marketing stem from the benefits derived from the learnings, rules and tools used in that industry.

Proposal for an indicator of online music platforms recommendations

We therefore propose that the indicator used to regulate the recommendation practices for Canadian or Francophone content by online music platforms corresponds to a ratio calculated on the basis of displaying music responding to certain criteria.

An impression will be defined as the proposal of a musical title to which the consumer is exposed, whether it is effectively "displayed" on a screen or proposed in a wider sense via different types of interfaces (a smart speaker, for example). For the purpose of having an

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[19] https://en.wikipedia.org/wiki/Impression_(online_media)
[20] https://en.wikipedia.org/wiki/Click-through_rate
[21] https://www.audiogo.com/what-is/impression

indicator that is universal and durable, we will exclude the impression of other types of content (lists, albums, articles, etc.) which, in any case, ultimately lead to the impression of musical titles.

An impression will be counted as a recommendation inasmuch as it corresponds to the definitions in the first chapter, which is to say that it is not the result of an explicit request by the consumer.

Finally, those impressions will be distinguished according to whether they are Canadian or Francophone content.

The ratio that will be used as an indicator can then be obtained simply through the following calculation:

- Indicator for the recommendation of Francophone content = impression of recommended Francophone content/impression of all recommended content
- Indicators for the recommendation of Canadian content = impression of recommended Canadian content/impression of all recommended content

The indicators can be represented visually using a Venn diagram:
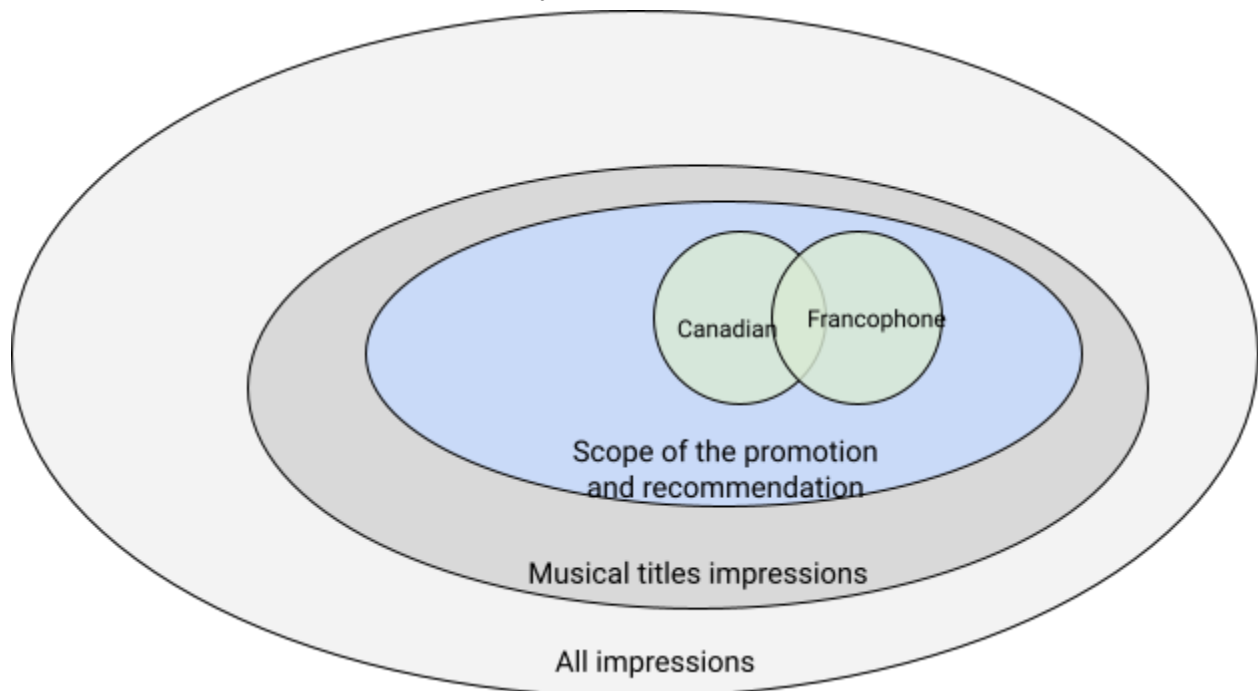
Therefore, both indicator ratios correspond to the respective proportions of the two green circles relatively to the size of the blue one.

Applicability and Limitations of the Indicator

Based on our observations made on the various music platforms presented in the previous section, we believe the proposed indicator can be used concretely. It is compatible with the various music recommendation mechanisms on a number of supports.

Although the proposed indicator has the advantages previously listed, it also has certain limitations, just as the indicators associated with broadcasting regulation do, as a matter of fact.

Firstly, it does not take into account **musical content recommendations other than titles** (artists, albums, playlists, articles…). This choice is dictated by simplicity and uniformity. Measuring recommendations for other types of musical content would necessarily lead to ambiguities and questions. *How do we process lists containing Canadian and non-Canadian content? How do we process artists whose albums are in several languages? How do we process articles on several artists?* Moreover, those other types of musical content eventually lead to the impression of titles. Besides, even if the desired indicator does *not* relate to the consumption of musical content, it will necessarily be studied in parallel to other indicators which are themselves related to consumption. Since the basic unit for measuring consumption in online music platforms is the title, it seems logical to use the same unit to measure the recommendation.

Secondly, it does not take into account the *quality* **of content impressions**. We could question ourselves at length on this subject. *Is an impression at the top of the screen worth more than one at the bottom? Does using graphic elements in certain impressions give them an edge? Is an impression at the beginning of a playlist more likely to generate a play than one at the end of that list?* In other words, if we stick to an analogy with the realm of digital marketing, we could wonder if certain types of impressions associated with certain recommendation mechanisms generate better click-through rates or engagement (or streams, in the case of music) than others.

Without answering each question specifically, it seems obvious that not all impressions have the same value. But rather than quantifying these relative values, something that would need to be done frequently and for an increasing number of interfaces and devices, we will rather propose integrating elements related to the impact on streaming to Canadian and Francophone content in the review of the targets associated with recommendation indicators. Indeed, the practical benefits of the proposed indicator must not lead to neglecting the intentions of the laws and regulations. Regulation should dictate the means, but the ultimate goal remains to achieve certain results. It therefore seems desirable to review, when needed, the regulation or its means of application in order to ensure they are still in synch with the goals.

Proposal: Mechanism for Regulating Canadian Content on Online Music Services

Targets Set by the Regulation
The minimum targets of Canadian content recommendations, notably Francophone, made by online music platforms would be set by the CRTC and could be a percentage of the total number of impressions.

Impressions
The number of impressions is an indicator that corresponds to a tally of the number of exposures to titles (displayed on a screen or proposed via another type of interface) which are not explicit user requests.

Evaluating the Results
The targets set by the regulation would be reviewed periodically, taking into account its impact on the streaming of Canadian content.

Streaming Canadian Content
Streaming Canadian content would not be regulated. The CRTC, however, would obtain data on the listening of Canadian content relatively to the total number of streams in Canada.

For example, the targets for the number of impressions could be adjusted according to the average and global click-through rate on the content subject to the law. Alternatively, in order to avoid an obligation to increase the number of impressions, a platform that does not generate the expected playbacks could commit to increase the number of impressions that generate a better click-through rate, which could be accepted inasmuch as it shares the quantified information on these impressions and their effectiveness.

Implementing such a review process probably is the best response to the risk associated with the absence of weighting based on the quality of impressions. Platforms would have no incentive to thwart the system by achieving the obligations associated with the proposed indicators using low quality impressions if the outcome is increased constraints. Let's be clear, however: recommendation mechanisms are not all as effective. Suggesting to not weigh the required number of impressions on the basis of their quality is not in contradiction with this finding; it is rather a suggestion to maintain the simplicity and universality (compatibility with all platforms) of the measurement tools while allowing each platform to build a user experience that makes it stand out in the market (while still complying with the spirit of the law).

Thirdly, the use of this indicator will need to be adapted to certain contexts. For example, the notion of "impression" is obviously not the same for a smart speaker and a mobile app. Typically, a smart speaker only makes one recommendation at a time (playing back the musical content), therefore distinguishing between a piece of content and its consumption becomes harder. Defining "rules" that clearly identify impressions will be necessary. As an example, for

compensation purposes, Spotify considers that a playback of over 30 seconds corresponds to a consumption[22]. Therefore a piece of content that is played back for less than 30 seconds was an "impression," but it was not consumed.

Fourthly, the proposed measurement relies on an element that can sometimes be hard to understand, and that is the intent of the consumer. When a consumer uses a platform's search tool to find a specific artist, the results displayed correspond exactly to the terms used for the search; they are not recommendations. The same is true when the consumer consults their playback history. At the other end of the spectrum, content displayed in a music discovery list are clearly inside the realm of recommendations. Which means there has to exist a zone between those extremes where things are not as clear-cut. Additional work will be needed to clarify whatever lies in that zone, but we believe it is possible to achieve.

Finally, constraints on the proposed indicator are not the only way to promote listening to Canadian or Francophone content. The present reflection focuses on this specific means as the digital evolution of the means used in traditional broadcasting. The digital realm opens the door to other tools which could be the subject of other studies.

Reflections on Measurement Tools

Once the indicator is defined, it will be necessary to measure it in the appropriate contexts.

Reports by Online Music Platform

It seems obvious that it is impossible for an external observer of online music platforms to measure all impressions. Since the experience is customized and different for each consumer, attempting to systematically tally all the titles played by a given service such as it is done for traditional broadcasting would be so complex that it is unrealistic to even consider.

We therefore propose that the principal measure of the indicator that will be chosen be carried out by the musical platforms themselves. They most likely already compile such datasets for the purposes of improving their recommendation tools, especially in the case of complex algorithms which rely on impressions and engagement data to customize the user experience.

Thus, musical platforms would be compelled, through the legislative framework, to report impressions corresponding to the aforementioned indicator. These reports would be transmitted to the organization in charge of the application of the regulation.

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[22] https://artists.spotify.com/faq/stats#how-are-streams-counted-for-a-release

Control Measures

Two types of control measures can be implemented to ensure that the platforms' reports are in accordance with reality.

The first type of measure is a right to audit that would allow the organization supervising online music platforms to carry out (or mandate a third party to carry out) an audit of the data. This right, which promotes transparency, is commonplace in commercial agreements where one of the parties does not have access to data that is essential to the execution of the agreement.

The second type of measure could be automated sampling tools that monitor the recommendation practices directly on each platform, just as consumers do. Different variations are possible.

The voluntary installation of software devices that observe the platforms from the interfaces used by a panel of consumers is one of those variations. It is, however, highly complex due to the number and variety of interfaces for which an observation solution would need to be developed.

Another such variation would be to develop software agents, or "robots," that simulate user behaviour on one or several platform interfaces. This approach is used in various cultural industries to carry out different types of studies. It was used by UQAM's Laboratoire de recherche sur la découvrabilité et les transformations des industries culturelles à l'ère du commerce électronique (LATICCE) during its research on discoverability[23]. LATICCE's methodology simulates users who navigate the web interface of various music platforms. The Pew Research Center developed a random walk technique based on an application programming interface (*API*) to measure the video recommendations made by YouTube[24].

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[23] https://www.ceim.uqam.ca/spip.php?article946
[24]

https://www.pewresearch.org/internet/2018/11/07/many-turn-to-youtube-for-childrens-content-news-how-to-lessons/

Conclusions and Proposals

The goal of this process was, essentially, to suggest, in the simplest possible way, angles of interpretation and reflection concerning the mechanisms used by online music platforms to make musical content recommendations. We attempted to achieve this in four stages.

1. The **definition of the concepts under study**, of which the take away is that a recommendation is any situation where a consumer does not make explicit choices, therefore, more concretely, that the explicit choices of consumers have to be excluded from anything that might be regulated.
2. The analysis of the **various aspects of recommendation mechanisms** using a **typology**. This analysis allowed us to take heed of the fact that those mechanisms are numerous, complex and rapidly evolving. It would therefore be impractical to regulate the way they work. The results generated, which are visible to consumers, are rather similar and stable: they can more realistically be subjected to regulation.
3. The concrete illustration of the implementation of these mechanisms by **four online music platforms**, which reinforced the previous findings, allows us to see that all platforms have sufficient information to identify the territory and language of each consumer.
4. A reflection on **tools to measure the presence of Canadian and Francophone content in the music recommended** by online music platforms. The proposed indicator aims to be simple and, above all, realistic to implement. This creates certain limitations which, we believe, can be managed by integrating review mechanisms of those obligations based on the measured results with regard to the law's objectives.

Even though the objective was essentially descriptive and focused on functional and technical aspects, this report is part of a broader context: the music industry's reflections on the renewal of the terms and conditions of the Broadcasting Act. To support this reflection and subsequent ones, we have elected to conclude this report with a series of proposals on how to approach the regulation of online music services made possible by the modernization of the Broadcasting Act. In other words, *if* the law is amended and those modifications aim to adapt the tools used to supervise traditional broadcasting, here are proposals on how to proceed. These proposals are based on the technical and functional analysis presented in the previous chapters.

They are grouped according to whether they are proposals related to **principles** or to **means** they need to be implemented. We make six proposals on principles and five on means.

Proposals on Principles

1. Do not coerce consumers

As we have suggested in our definition, the limit where recommendations can be regulated is once consumers make choices.

Evidently, it has become clear that the relationship between recommendations and consumption is increasingly complex. This is particularly true with the advent of recommendation algorithms where these two poles create a complex system of mutual influence through feedback loops.

Despite that, it does not seem useful or desirable to imagine regulation mechanisms that would impose constraints on consumption.

2. Framing the results of recommendations as a quantifiable and "regulatable" aspect of discoverability

These last few years, the concept of discoverability has been at the heart of many reflections and communications by the stakeholders of the music sector and, more broadly, the arts, culture and media sector. It is indeed a very significant issue.

We believe that the results of a recommendation as defined above (namely music content that are not derived from explicit choices by consumers) are a tangible and quantifiable aspect of discoverability. They are the result of concrete mechanisms whose parameters are controlled by music platforms and whose manifestations are observable. Promotion and recommendation are therefore potentially "regulatable."

3. Recommend simple solutions that can be applied in the short term, and make them evolve regularly

Saying that digital content distribution platforms evolve rapidly is tantamount to a cliché. And there is no reason to believe that this will change over the next few years. Moreover, as we have seen, developing quantified indicators that are perfectly representative of all recommendation practices will not be easy.

Because of this, we believe it is better to implement simple yet concrete means of regulation (bearing their limitations in mind) and have them evolve iteratively according to a rhythm that remains to be determined (but more rapidly than the previous reviews of the law) than to wait until technology ceases to evolve or we find perfect ways to regulate it.

In other words, we must prefer simple, rapidly applicable and probably imperfect solutions over ideal solutions that are hardly applicable.

4. Respecting the intention of the law

The three previous proposals on principles are clear: we are suggesting that the regulation frames the recommendation actions of the platforms, not the choices made by consumers.

At the same time, we must recognize that all musical recommendations are not equal. A regulation will lead to an obligation of means (the recommendation) for the platforms whereas the intention of the law aims at results (consumption). A strict application of the criteria on recommendations and on the simple indicator we have imagined—without taking into account the impacts on consumption—could lead to a counterproductive dynamic. This dynamic would manifest itself through a concentration of the efforts to respect those criteria without taking into account the expected results and the spirit and objectives of the law.

The regulatory means that will be used will therefore need to be adapted and to evolve in order to avoid those potential pitfalls.

5. Focus on what is presented to consumers rather than on the mechanisms that generate those results

The technical or non-technical mechanisms behind recommendations evolve towards more or less complexity, they are different from one platform to the next and they are the competitive edge of each platform.

We believe it is useless to imagine laws or regulations that would frame those mechanisms. The legislation needs to focus on the *results* these mechanisms generate. These results are essentially visible and measurable through the user experience of music consumers.

6. Collaborate with the platforms

It seems essential to go into greater depth on the subjects addressed in this report: definitions need to be clarified, the scope of what constitutes a recommendation needs to be clarified, the proposed quantitative indicators need to be refined, etc. The work to achieve this must obviously include legislators, the music industry, consumers and researchers, but we believe that it must also include representatives of online music platforms. Their expertise will be extremely useful, especially when the time comes to identify simple, concrete solutions.

Recommendations on means

7. Use a simple quantitative indicator, tallying music titles impressions

Should the regulation relate to a quantified measure, the selected quantitative indicator must meet certain constraints. It has to be measurable using several means, in several contexts, and over various user experiences from one platform to the next. It must also be durable.

For these reasons, we believe that the ideal indicator is as simple as possible (a universally recognized and easily identifiable definition within a user interface) and offers as much granularity as possible (a measuring unit through which the groupings required to calculate ratios can be made, for example).

The indicator we have proposed in the previous chapter, namely tallying the impressions of music titles that are not explicit consumer requests, seems like a good starting point to fulfill these objectives.

8. Use the data supplied by the platforms and setup verification tools

In light of the great number of consumers, of music titles and of recommendations, and considering the fact that the typical online music platform experience is customized and unique to every user, it becomes virtually impossible to measure compliance to the targets established by the regulation by simply observing the platforms "from the outside."

We therefore propose that the measurement of target achievement b e based on data aggregated and supplied by the musical platforms subject to the regulation. The frequency, format and level of detail of this reporting remain to be determined.

Obviously, the legislator must equip itself with the means to cross-check the information provided by the music platforms. In addition to a conventional right to audit, it would be advisable to implement technical tools that enable sampling. Such tools could be, for example, software installed by a panel of consumers whose use of the platforms would be automatically measured. They could also be agents, or "bots," that simulate a consumer's use of the platforms in order to compile the data.

Data supplied by the platforms would obviously be more reliable than those obtained by sampling, but too great a discrepancy between the data sources would be an indication that attention should be paid to the platforms' reports.

9. Regular review of the targets

We suggest that the regulating body proceeds to a periodic review of the achievement of target indicators or quotas on recommendations that will take into account other data associated with consumption so as to ensure that the regulation achieves its objectives. These periodical reviews are a response to the limitations presented in proposal 4. The goal is to compensate for potential attempts to thwart the system by ensuring that the means implemented by the platforms produce the results targeted by the law.

10. Continue work to clarify the scope of what should be subject to regulation

The elements presented in this report are a starting point to define the scope of what a music recommendation is and how it could be regulated. We are aware that the proposed definitions leave blurry areas. Working collaboratively to clarify these definitions would be necessary. Such clarifications will allow to identify more clearly the elements that need to be frameworked and the means to verify compliance with this framework. Moreover, the proposals in this report can also be completed by other types of measures that will contribute to achieve the State's objectives regarding Canadian and Francophone musical content.

11. Implement the tools necessary to identify Canadian or Francophone content

Finding solutions to the issue of the identification of Canadian or Francophone content will be essential in order to implement regulation. In an ideal world, the metadata associated to the pieces of content would make it possible to obtain the necessary information in a simple way. It is, however, not realistic to think that all musical content pieces will come with rich metadata in the short or medium term. We suggest that platforms request this information when they obtain the metadata of musical titles, as they do for some other essential metadata. Quality metadata that is compatible with international standards will allow Canada's music industry to be in a better position to face several challenges.

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It was prepared by Christian Roy of the firm Brix Labs.

Work was coordinated by Jérôme Payette, Executive Director of APEM, with the contribution of Frédéric Giroux, cultural and digital development consultant.

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Glossary

IP address. An Internet Protocol address (IP address) is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication. The IP address is the basis of the routing system of data packets on the Internet.
https://en.wikipedia.org/wiki/IP_address

API. An application programming interface (API) is a computing interface which defines interactions between multiple software intermediaries.
https://en.wikipedia.org/wiki/API

Web client. Client—server model is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients. By extension, client also designates the computer or virtual machine on which the client software is executed.
https://en.wikipedia.org/wiki/Client%E2%80%93server_model

Discoverability. In the digital realm, the discoverability of a piece of content refers to its availability online and the ability to find it among a vast offer of other pieces of content, notably by an individual who was not specifically looking for it.
https://www.mcc.gouv.qc.ca/index.php?id=2032#c6089

User experience. User experience (UX or UE) is a person's emotions and attitudes about using a particular product, system or service. Additionally, it includes a person's perceptions of system aspects such as utility, ease of use, and efficiency.
https://en.wikipedia.org/wiki/User_experience

Metadata. Metadata is "data that provides information about other data". In other words, it is "data about data". Many distinct types of metadata exist, including descriptive metadata, structural metadata, administrative metadata, reference metadata and statistical metadata.
https://en.wikipedia.org/wiki/Metadata

Web scraping. A technique that consists in using a program or script to explore web pages and extract content or data from them.

Natural language processing. A branch of artificial intelligence concerned with the interpretation of textual content, written or spoken, for the purpose of transcription, translation, correction, interpretation, or extraction of information.

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APPENDIXES

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Who or What?

Titles

Titles in Amazon Music's Country Heat list.

Source: Amazon Music

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Album

Albums (playlists) on Apple Music.

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
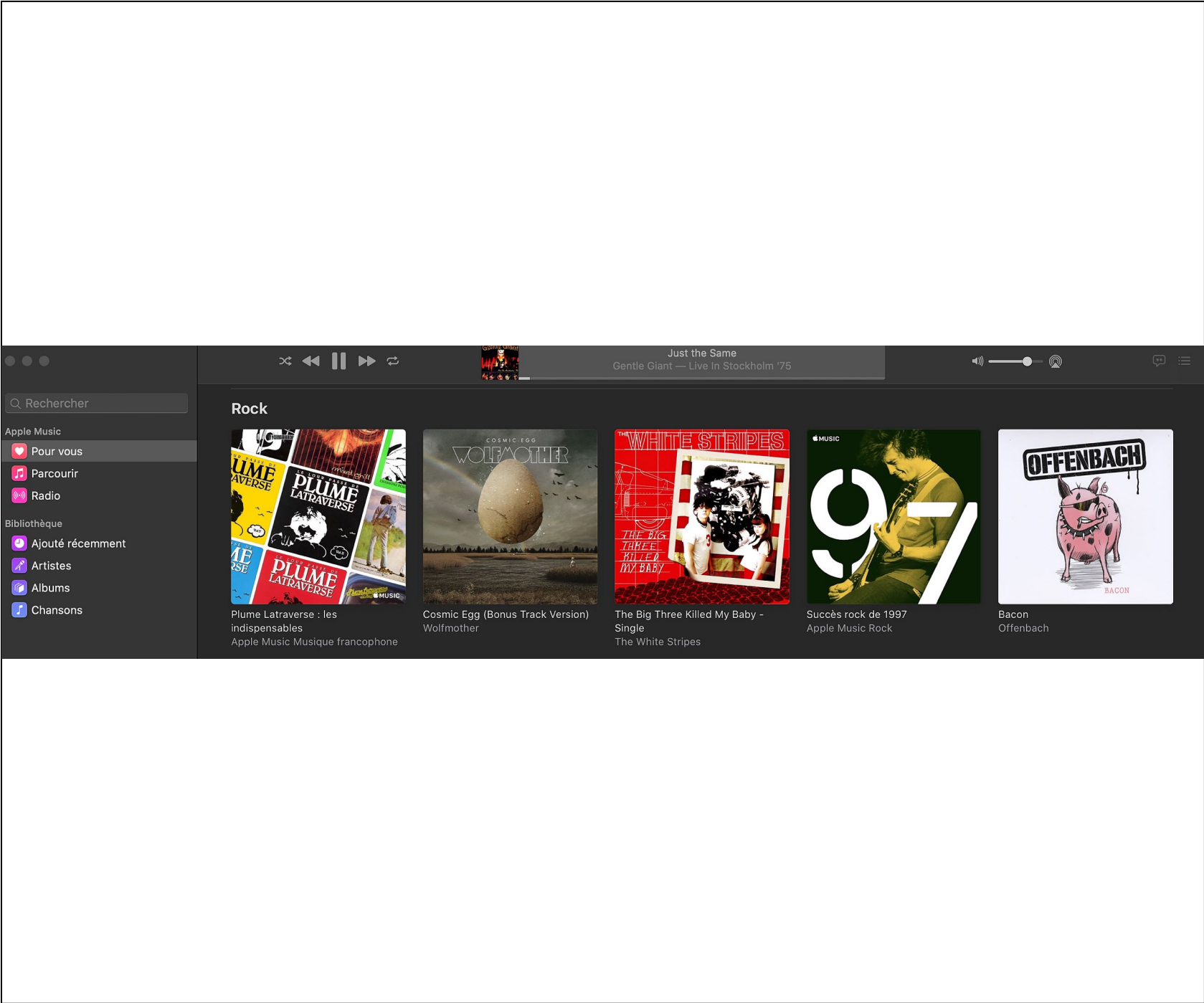
Appendix 1 – Recommendation Typology

Artist

Artists in the search results for a genre on Spotify.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms
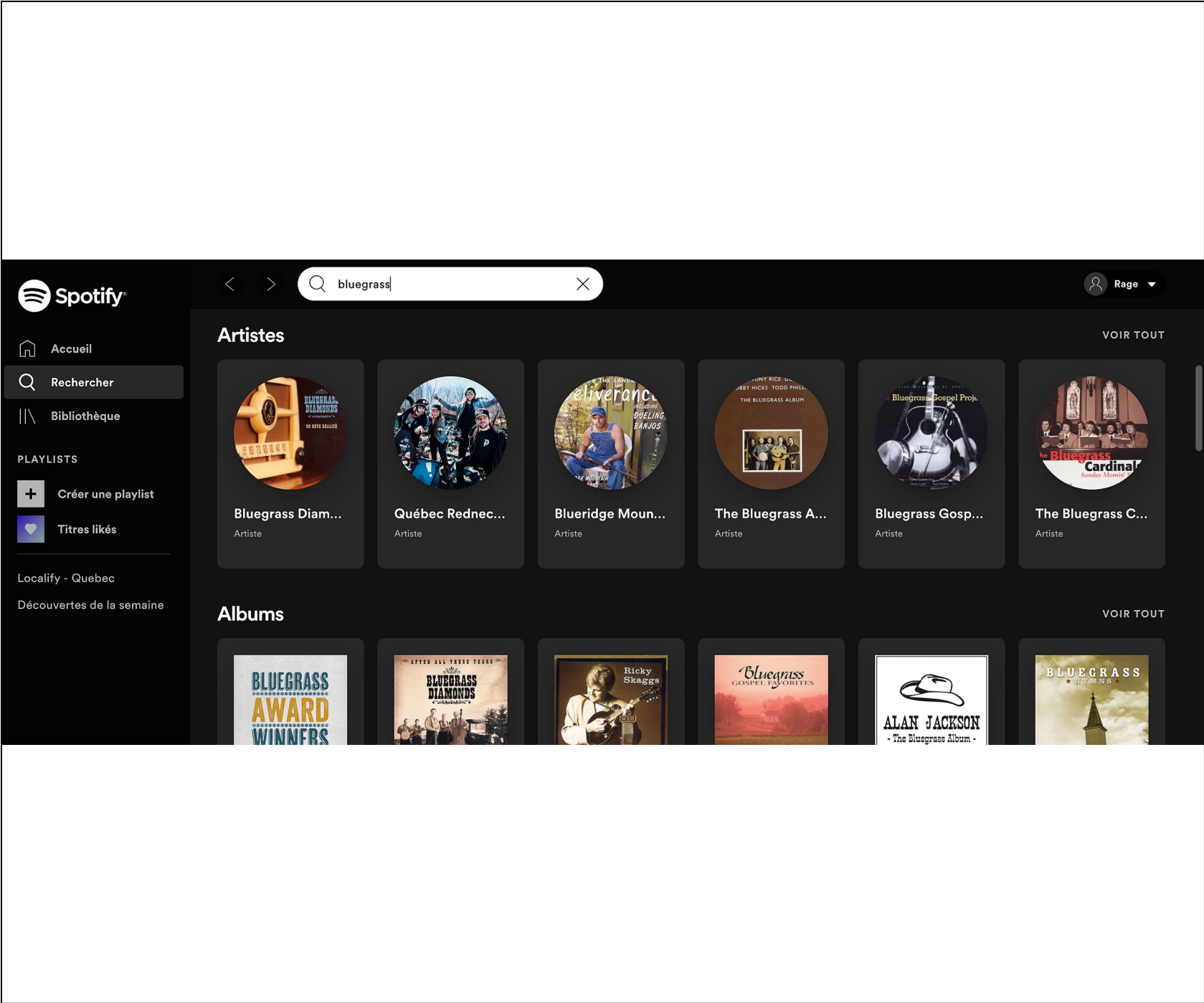
Appendix 1 – Recommendation Typology

Who or What?

Playlist

Playlists presented as search results from YouTube's mobile app.

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms
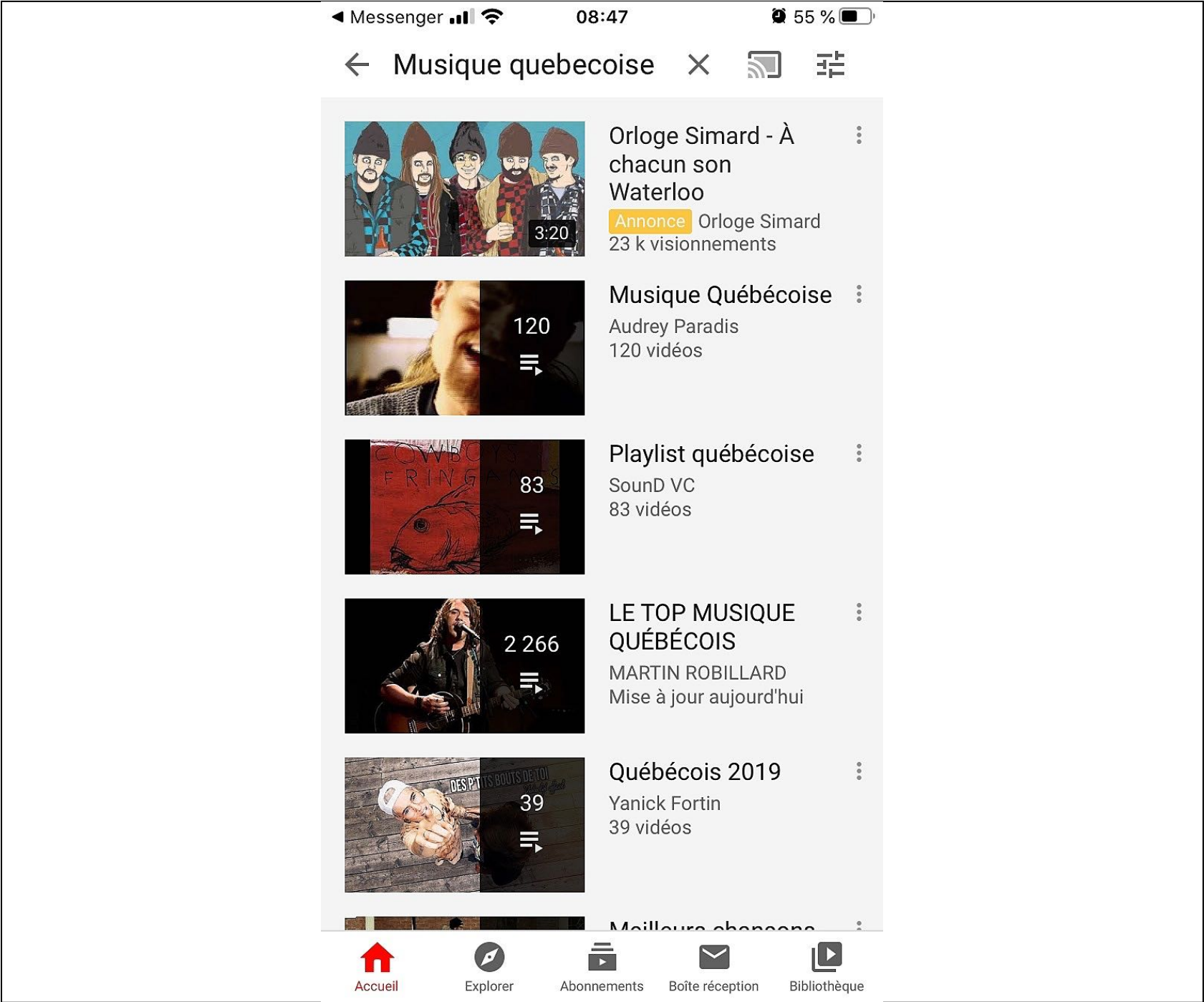
Appendix 1 – Recommendation Typology

Article

Article presenting artists and music titles on QUB Musique.

qub
MUSIQUE

🏠 Accueil
🔍 Recherche
|\ Bibliothèque

Créer une liste
de lecture ➕

👤 Mon profil

Photo Martin Alarie

Guylaine Tanguay «passe la puck» à Etienne Dupuis

Mélissa Pelletier
21 mai à 17h05
MISE À JOUR 22 mai à 13h45

Passer la puck. Attirer l'attention sur un artiste québécois, juste parce que. Parce que le talent est là, parce que la musique est belle, parce que ça fait du bien un projecteur inattendu. C'est ce qu'on a proposé à des artistes d'ici.

Source: QUB Musique

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Concert

Spotify sends messages announcing nearby concerts related to a user's streaming history.

Expéditeur: "Spotify" <no-reply@spotify.com>
Date: 17 septembre 2019 à 15:00:00 UTC−4
Destinataire:
Objet: Upcoming shows near Québec: Alexandra Streliski, Céline Dion and more

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Apple Music in MacOS

Apple Music in MacOS

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
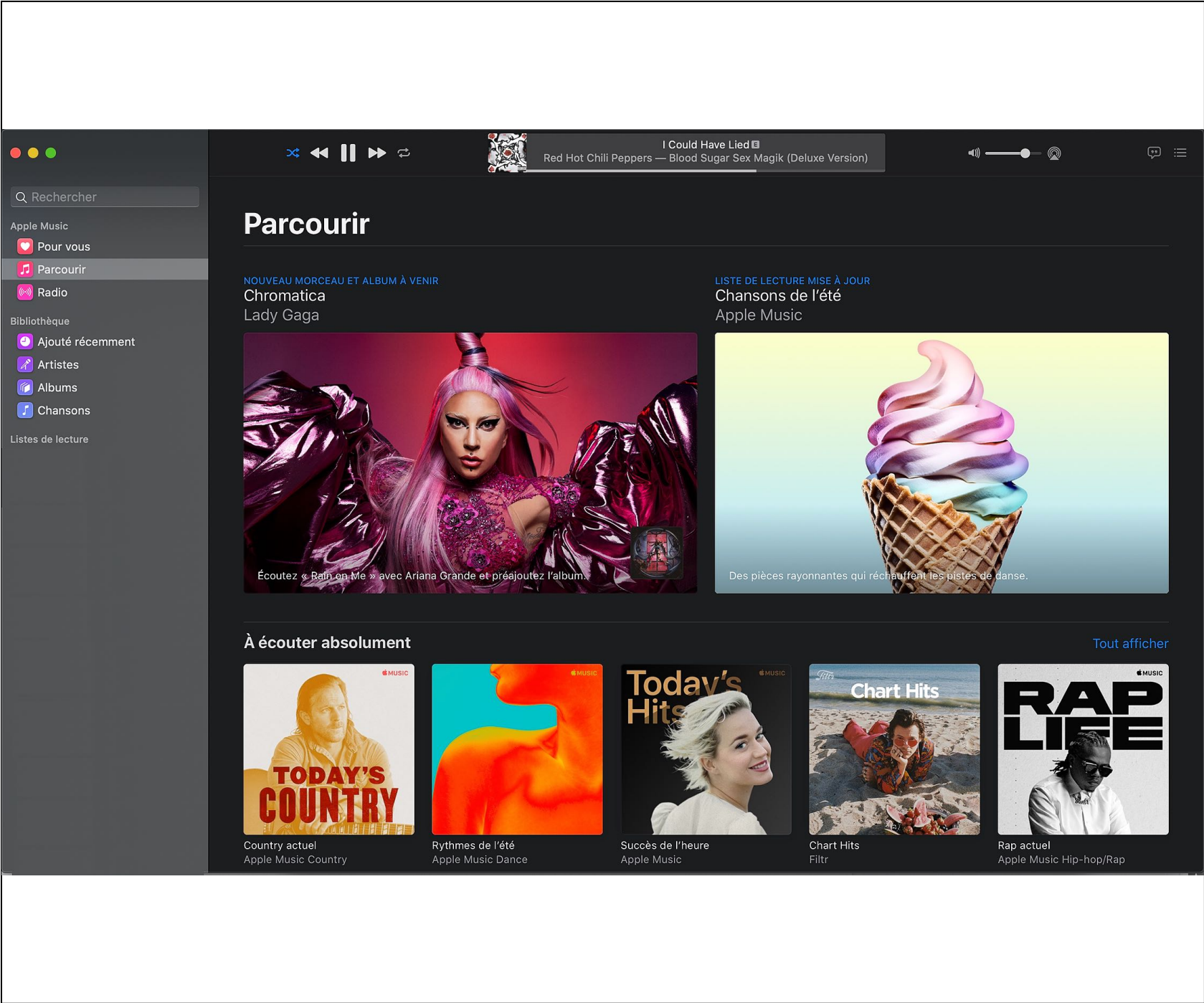
Appendix 1 – Recommendation Typology

Amazon Music on the web

Amazon Music on the web

Source: Amazon Music

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

YouTube in iOS

YouTube in iOS

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms
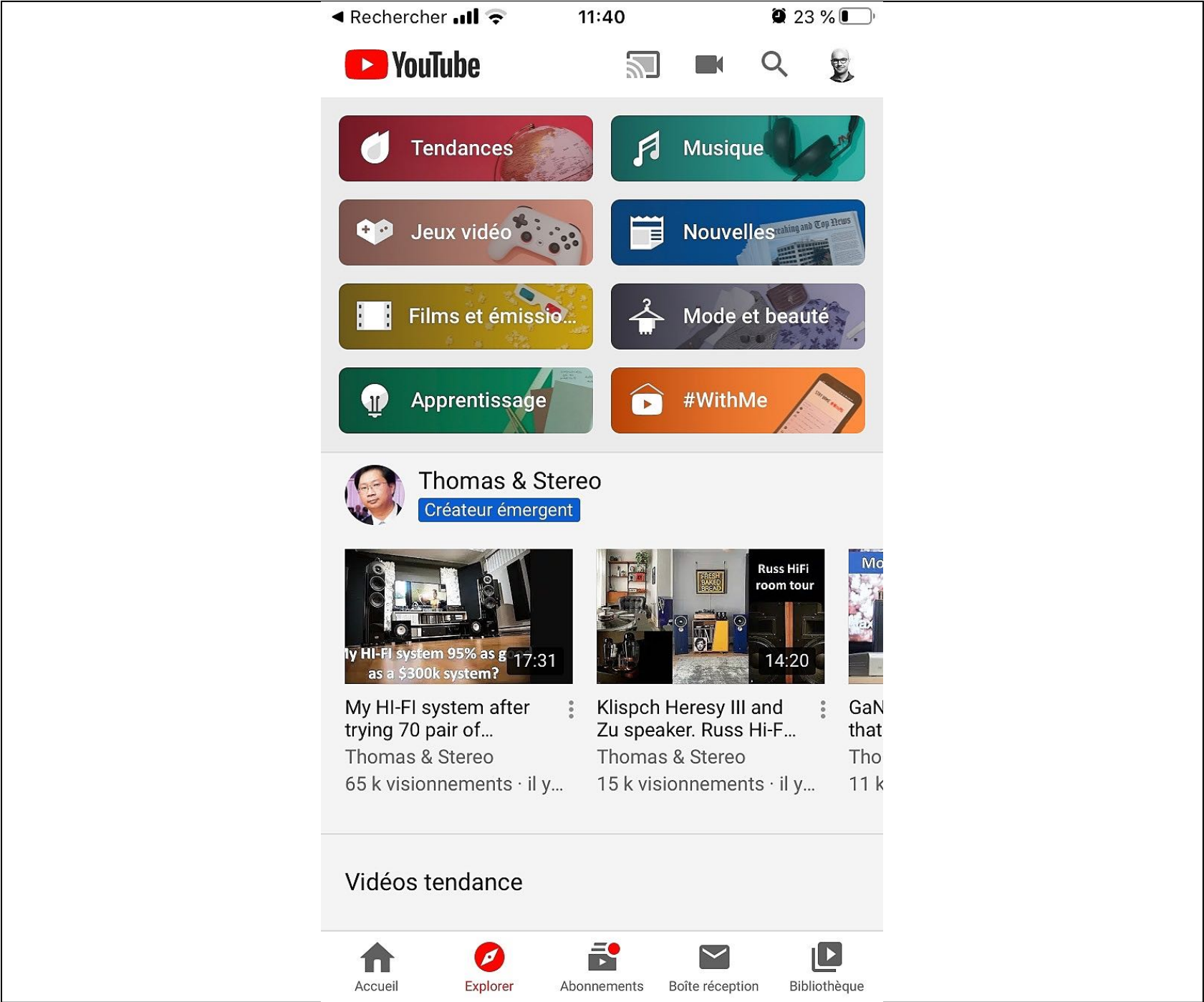
Appendix 1 – Recommendation Typology

Smart speakers

Several services including Amazon Music, Apple Music and Spotify, can be controlled using Alexa, the voice-controlled assistant available on Amazon's Echo devices.

Source: Amazon Music

Appendix 1 – Recommendation Typology

Other "smart" devices

Spotify is available on several smart watches, including Garmin's.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

API, or programming interfaces for other apps

The content available for consumers on YouTube can also be accessed with software or robots using YouTube's API which presents the contents of playlists and recommended videos.

▶ YouTube › Data API   🔍 Search   Français ▾

Overview
▸ Activities
▸ Captions
▸ ChannelBanners
▸ Channels
▸ ChannelSections
▸ Comments
▸ CommentThreads
▸ GuideCategories
▸ i18nLanguages
▸ i18nRegions
▸ Members
▸ MembershipsLevels
▸ PlaylistItems
▸ Playlists
▸ Search
▸ Subscriptions
▸ Thumbnails
▸ VideoAbuseReportReasons
▸ VideoCategories
▸ Videos
▸ Watermarks
   Standard Query Parameters
▸ YouTube Data API Errors

Playlists

A `playlist` resource represents a YouTube playlist. A playlist is a collection of videos that can be viewed sequentially and shared with other users. A playlist can contain up to 200 videos, and YouTube does not limit the number of playlists that each user creates. By default, playlists are publicly visible to other users, but playlists can be public or private.

YouTube also uses playlists to identify special collections of videos for a channel, such as:

- uploaded videos
- positively rated (liked) videos
- watch history
- watch later

To be more specific, these lists are associated with a channel, which is a collection of a person, group, or company's videos, playlists, and other YouTube information. You can retrieve the playlist IDs for each of these lists from the `channel resource` for a given channel.

You can then use the `playlistItems.list` method to retrieve any of those lists. You can also add or remove items from those lists by calling the `playlistItems.insert` and `playlistItems.delete` methods.

For more information about this resource, see its resource representation and list of properties.

Method	HTTP request	Description
URIs relative to `https://www.googleapis.com/youtube/v3`		
delete	DELETE / `playlists`	Deletes a playlist.
list	GET / `playlists`	Returns a collection of playlists that match the API request parameters. For example, you can retrieve all playlists that the authenticated user owns, or you can retrieve one or more playlists by their unique IDs.

Contents
Calling the API
Resource types
  Activities
  Captions
  ChannelBanners
  ChannelSections
  Channels
  CommentThreads
  Comments
  GuideCategories
  I18nLanguages
  I18nRegions
  Members
  MembershipsLevels
  PlaylistItems
  Playlists
  Search
  Subscriptions
  Thumbnails
  VideoAbuseReportR…
  VideoCategories
  Videos
  Watermarks

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Search engines

The platforms' music referencing efforts have made it so that their recommendations now show up in search engines such as Google. As we see here, YouTube and Spotify lists appear in search results.

Source: Spotify, YouTube

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Email

Spotify sends us streaming recommendations via email.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

Email

The platform QUB sends streaming suggestions by email in the form of a newsletter where there are several recommendations.

Source: QUB Musique

Technical paper on the Canadian content recommendation for online music platforms
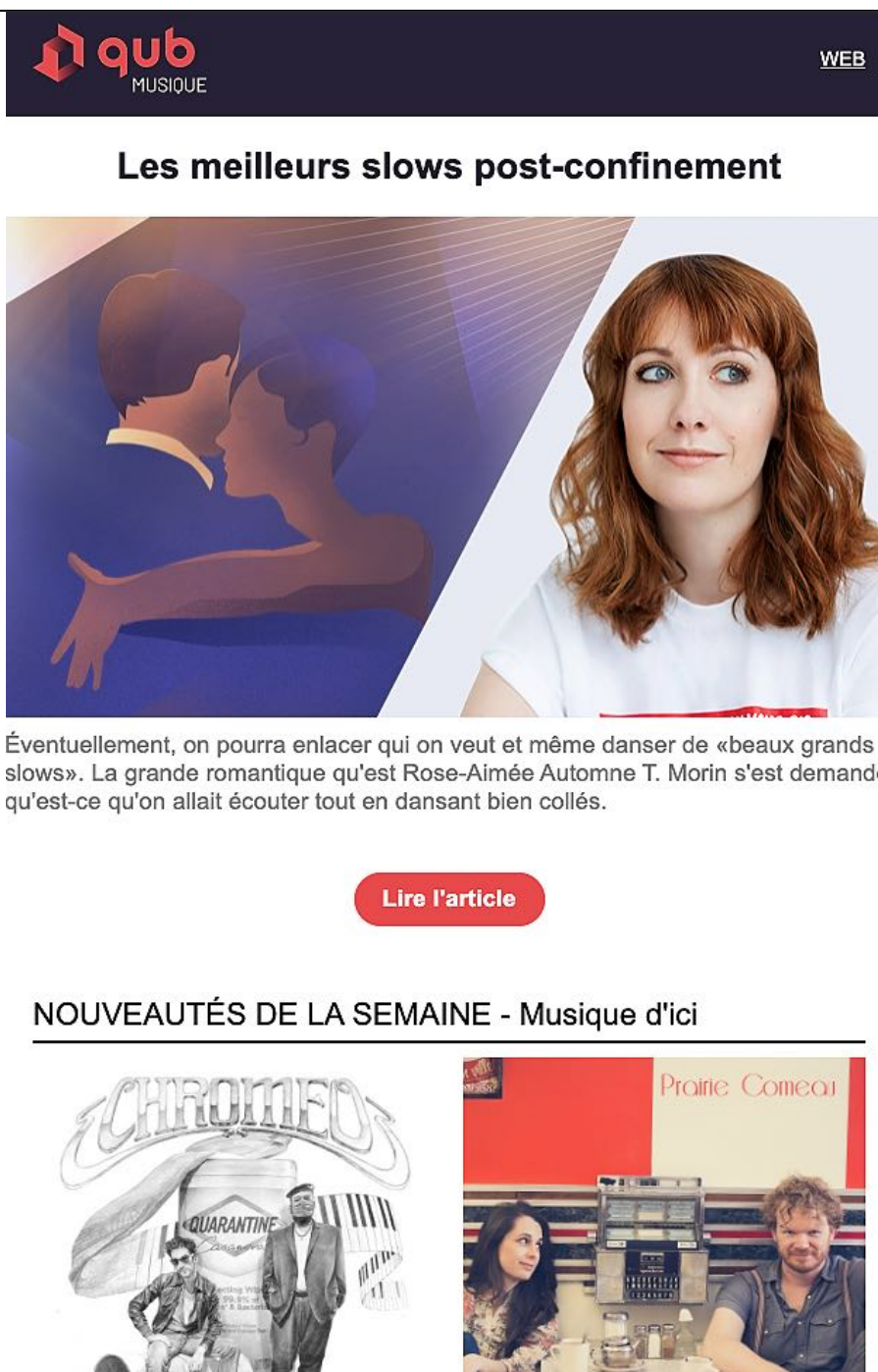
Appendix 1 – Recommendation Typology

Prior to or outside of the user path

Spotify promotes its discovery list by email.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms
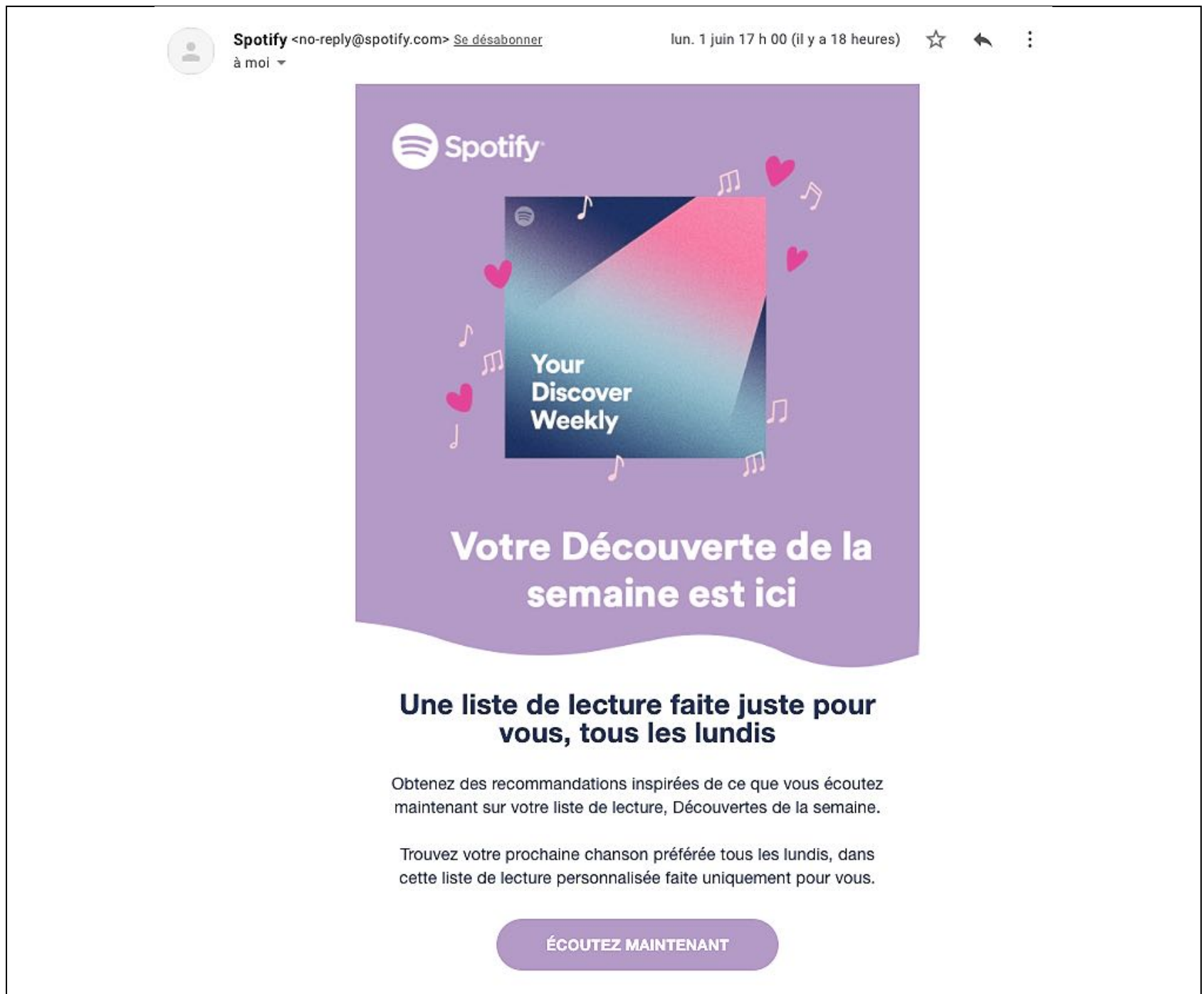
Appendix 1 – Recommendation Typology

At the beginning of a streaming session

Spotify home screen proposes several pieces of musical content: personalized lists, recently played, suggestions based on our streaming history.
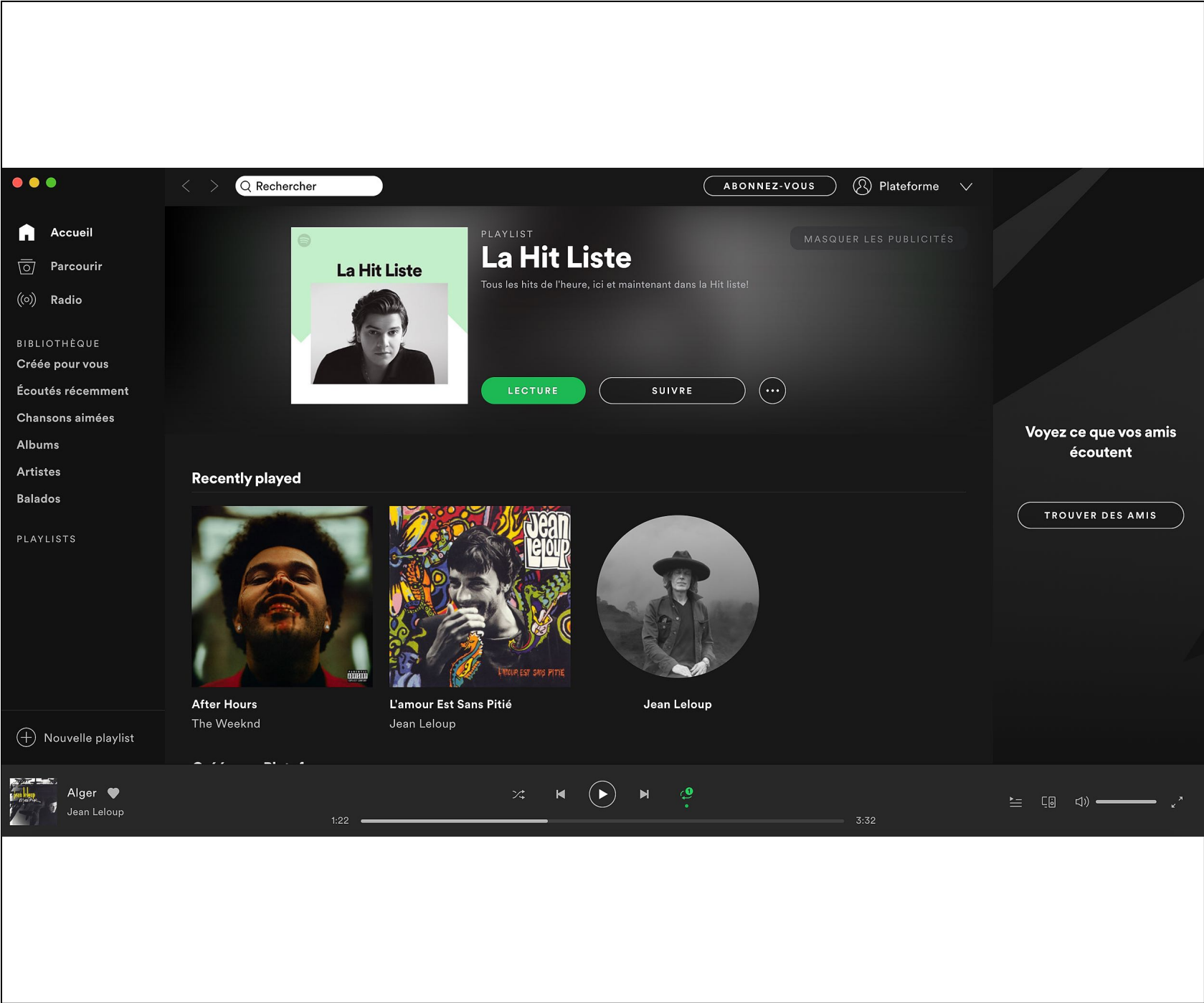
Source: Spotify

Appendix 1 – Recommendation Typology

During playback

Most platforms, such as Apple Music in the example below, allow us to navigate and peruse the available musical content (bottom of the screen) while we play music (the progress of which is visible in the control bar at the top of the screen, in the case of Apple Music).

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
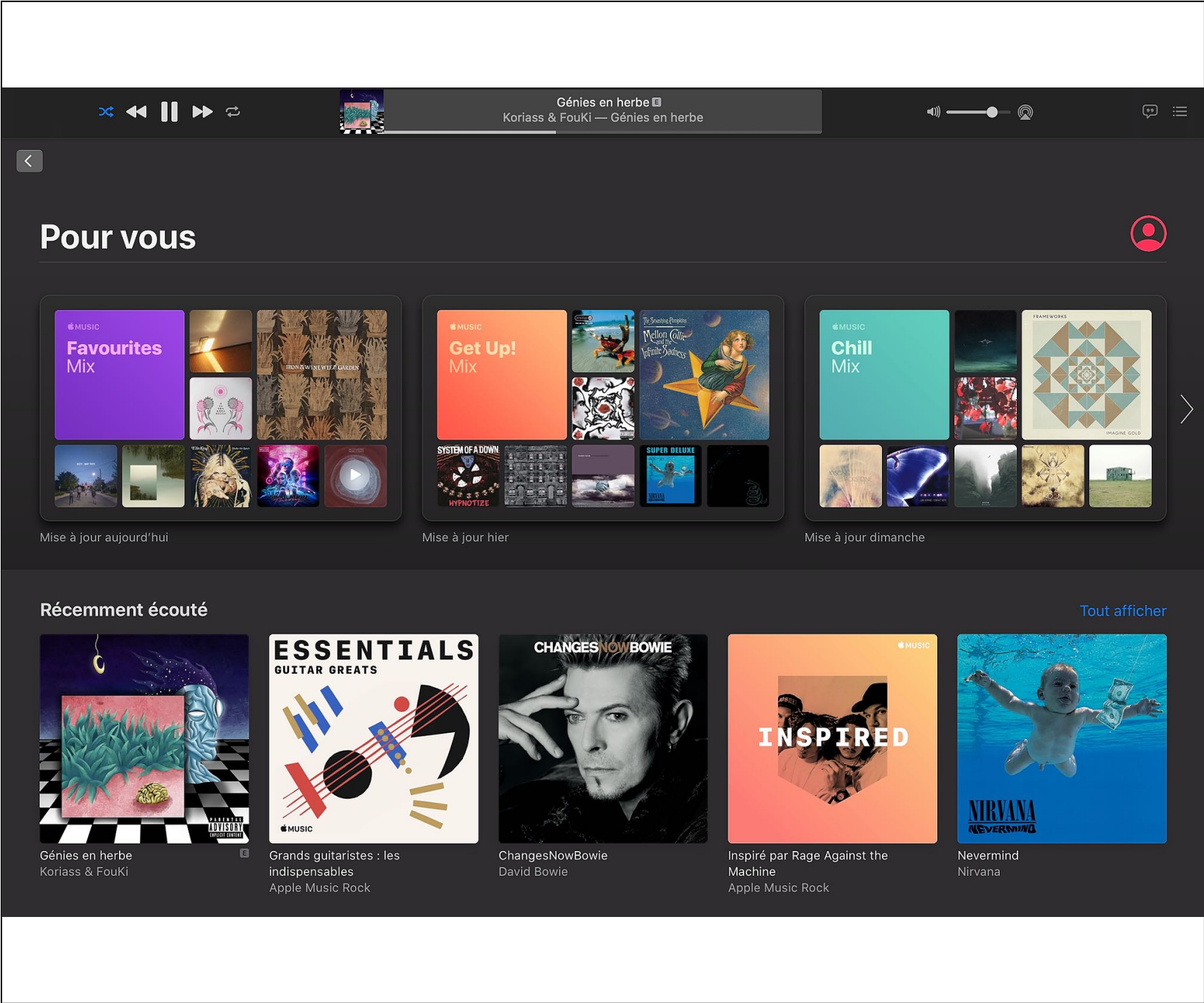
Appendix 1 – Recommendation Typology

Explicitly, after a stream

Each platform behaves differently after a stream, and that behaviour depends on the previous choices. On Amazon Music, the app generally stops playback after streaming the title or album chosen by the user. On Apple Music, a list of titles to listen to next is automatically prepared if the user chose to listen to a title that corresponded to a search result (the "Next" bar on the right in the image below).

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
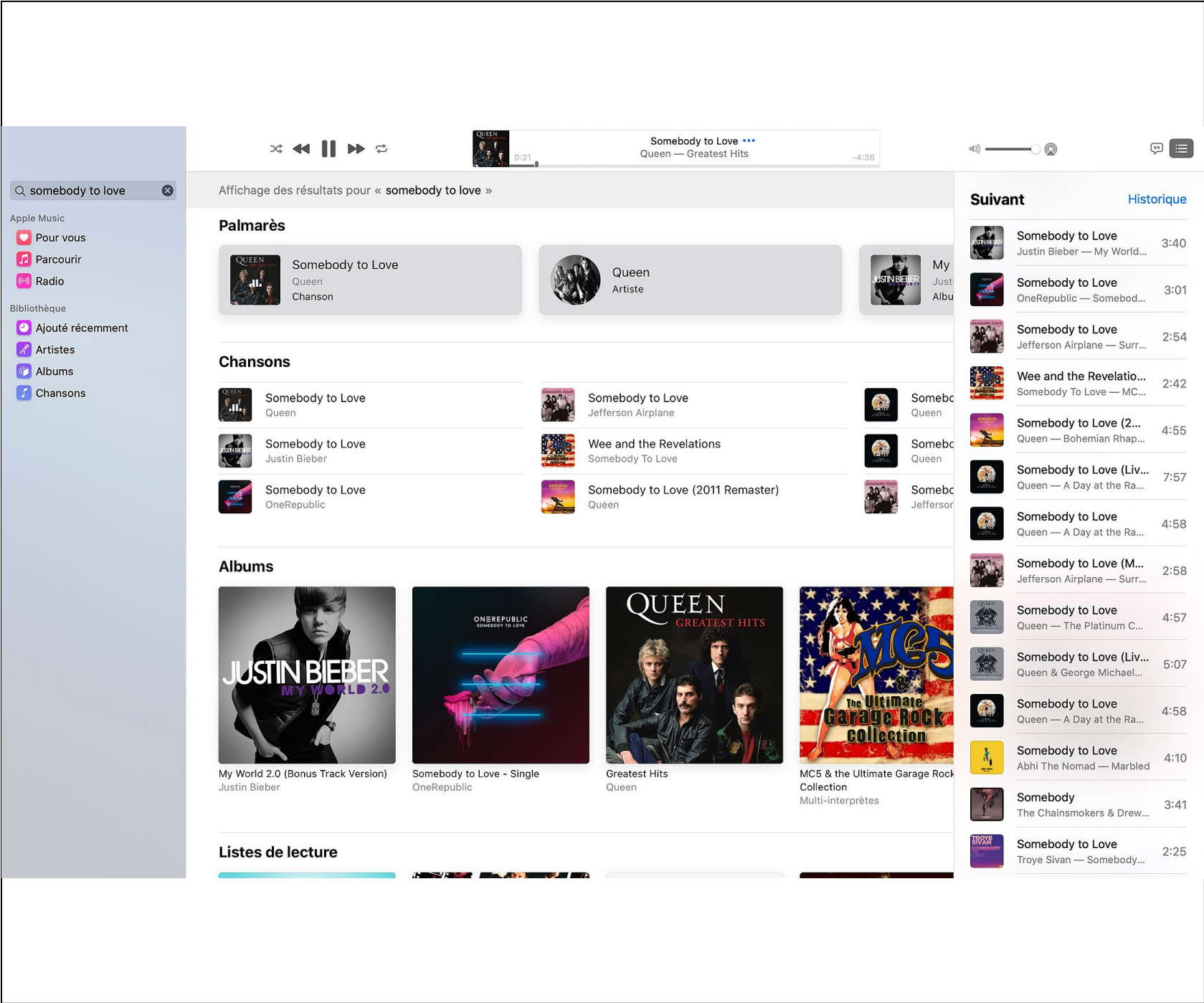
Appendix 1 – Recommendation Typology

Implicitly, after a stream

On YouTube, once a playback is over, regardless of whether it was a list or a single video, a new stream is proposed, unless the user turns autoplay off. Similar options exist on other platforms such as Spotify.

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms
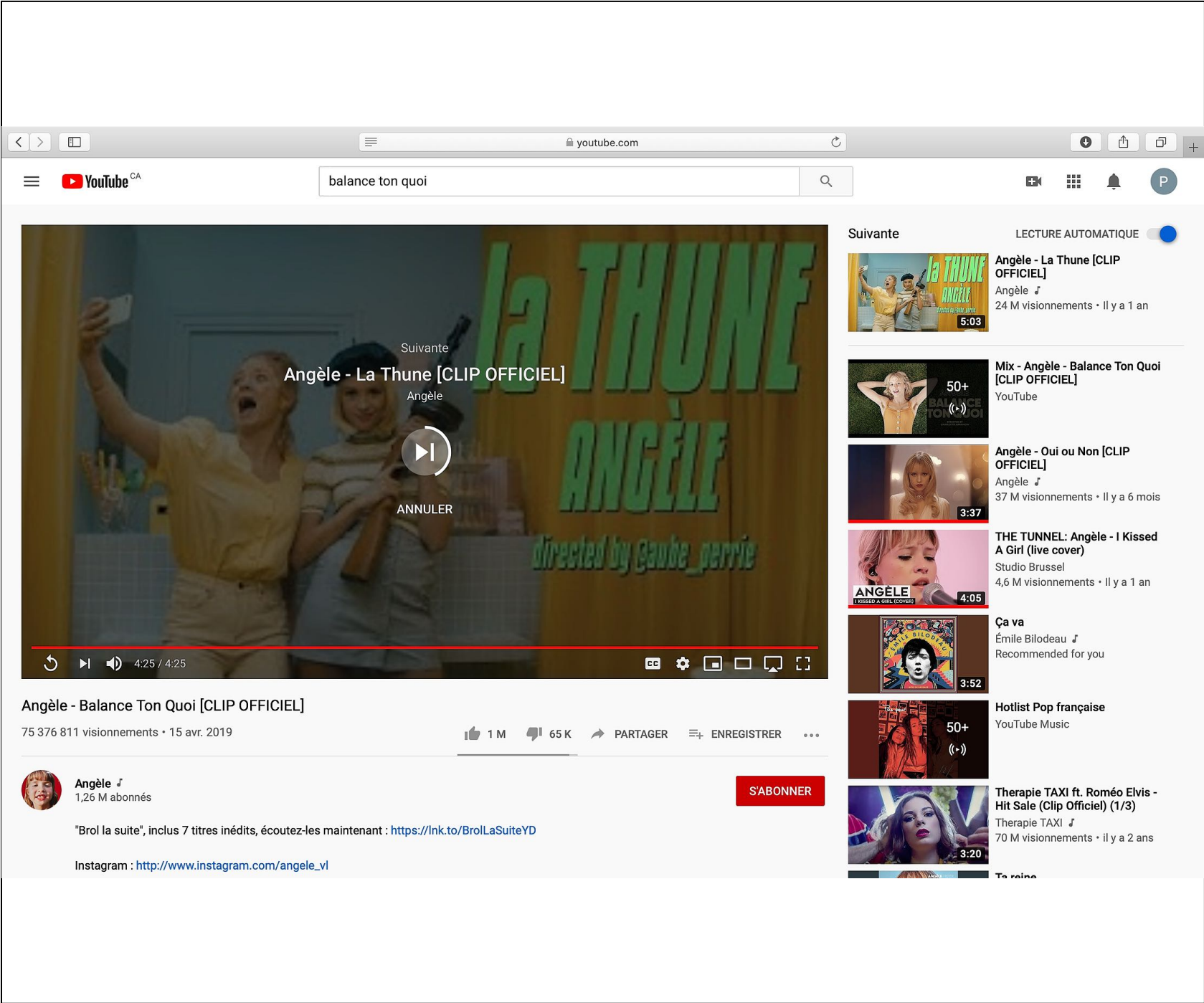
Appendix 1 – Recommendation Typology

How?

Human curation

Apple Music's "Inspired by…" lists.

Source: Apple Music

Appendix 1 – Recommendation Typology

How?

Individual streaming history

Spotify's "Recently played" lists.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms
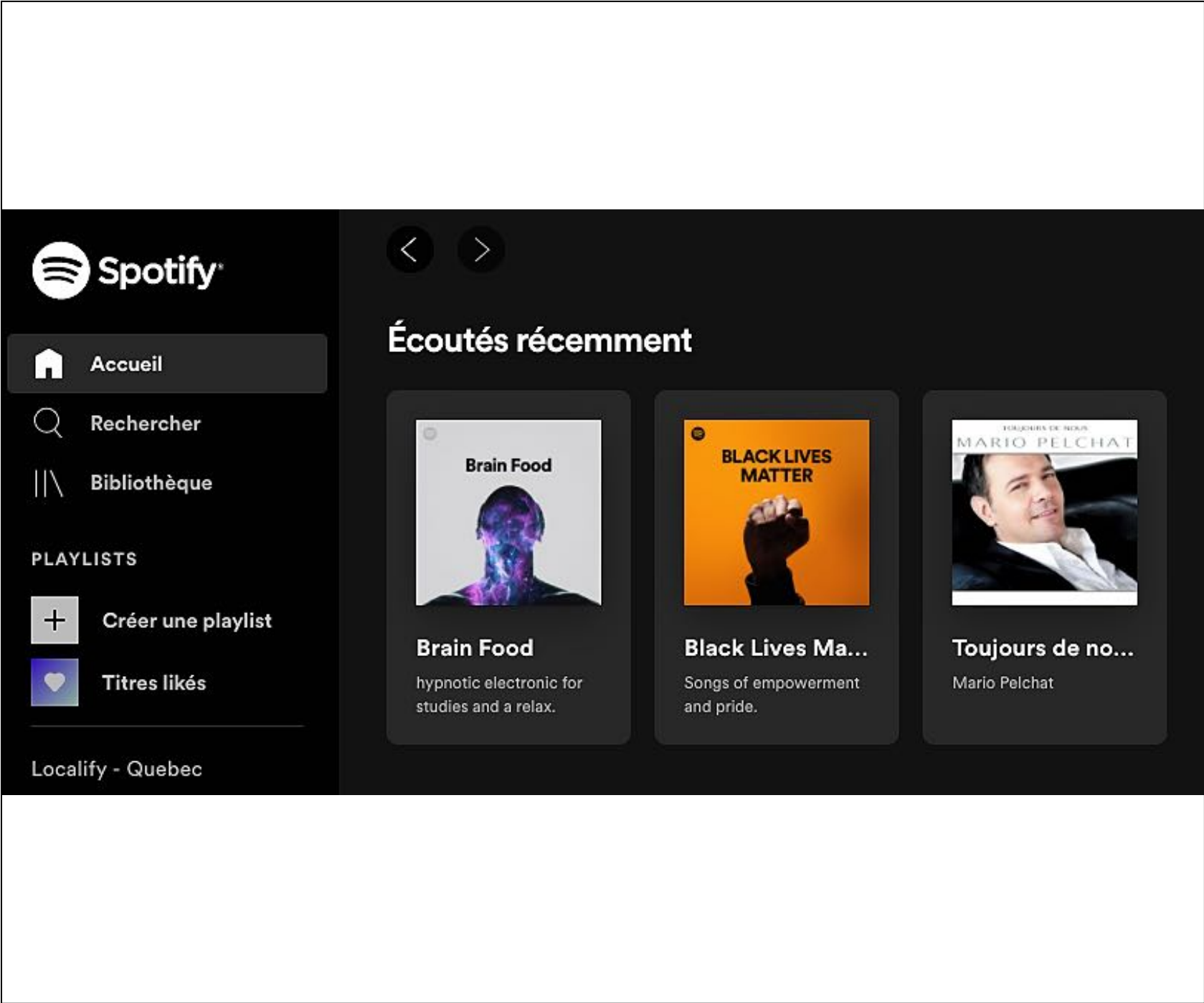
Appendix 1 – Recommendation Typology

Search tools and metadata

Indexing and search tools applied to the textual elements of metadata can be used for promotion and recommendations purposes. For example, when a service proposes more albums by the same artist, it "simply" relies on those albums' metadata.

Source: QUB Musique

Technical paper on the Canadian content recommendation for online music platforms
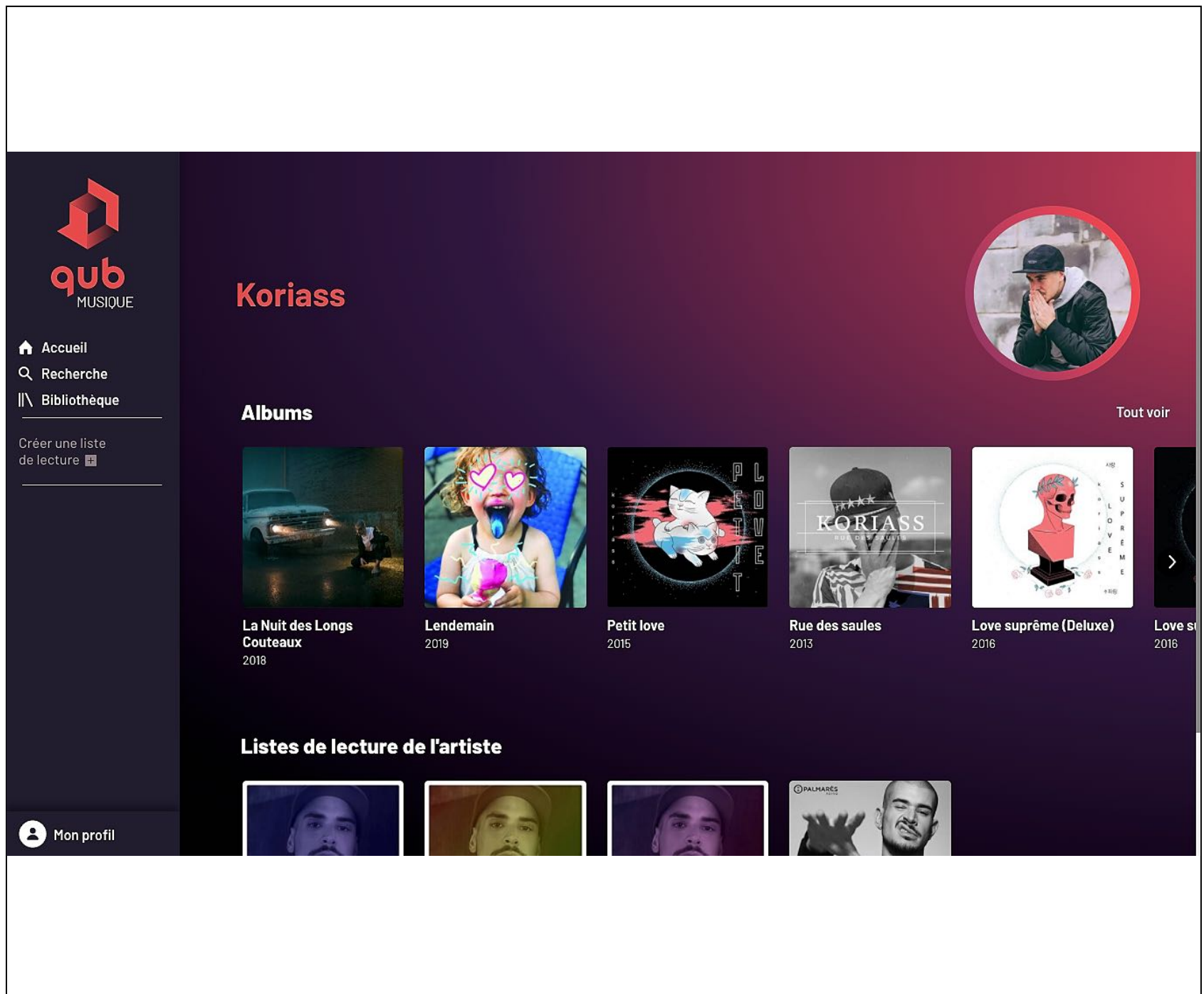
Appendix 1 – Recommendation Typology

Streaming statistics

Platforms create charts based on the number of streams for a given genre, geographic set and period of time. For example, YouTube's "Trending" section is a type of chart that "displays the same list of trending videos in each country to all users displays the same list of trending videos in each country to all users" and takes into account "the view count and how quickly the video is generating views" (https://support.google.com/youtube/answer/7239739?hl=en&authuser=0).

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms

Appendix 1 – Recommendation Typology

User preferences

When a consumer creates a profile on Apple Music, they are able to specify their music genre preferences that will "inspire the recommendations you will find in the For You section."

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
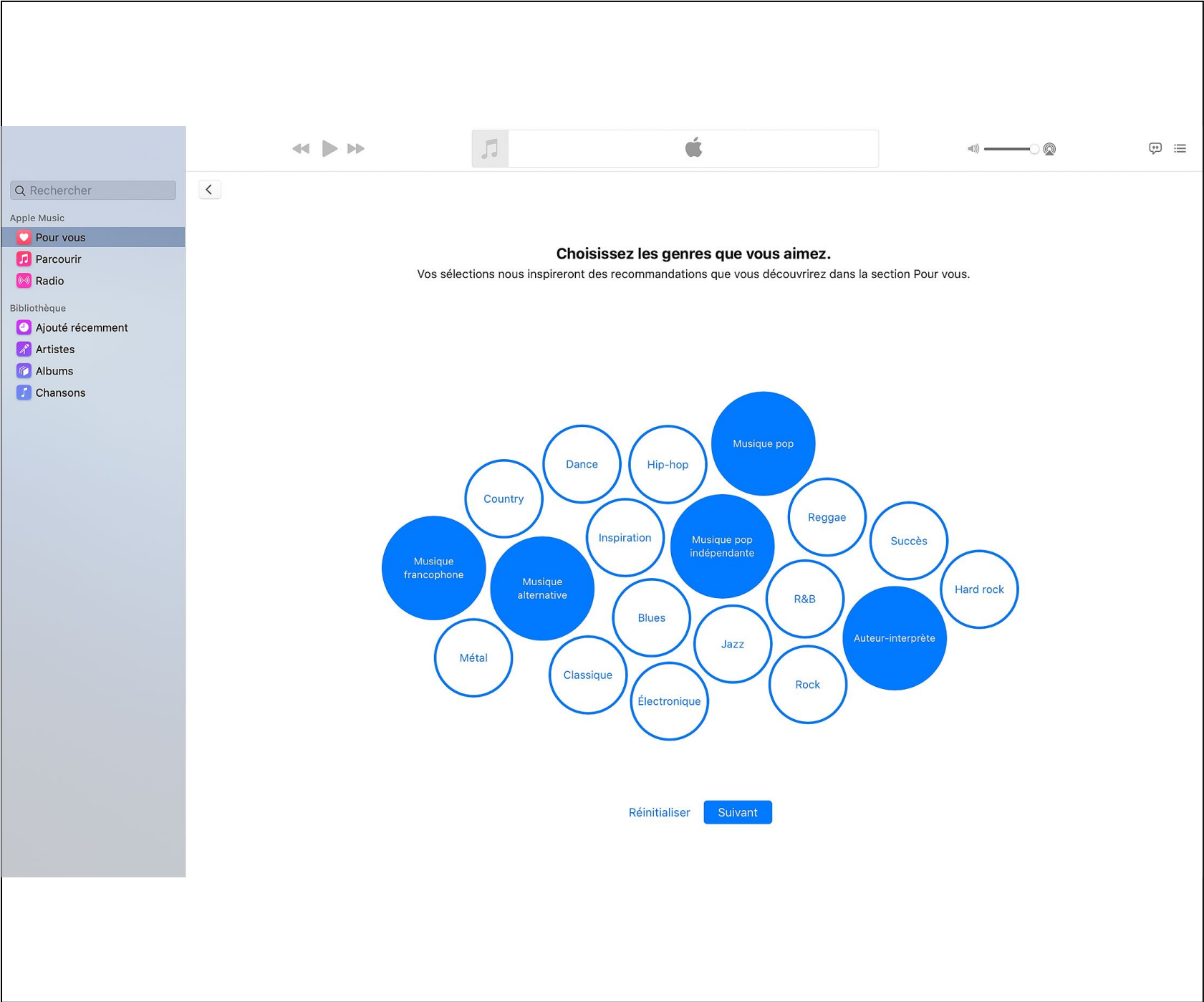
Appendix 1 – Recommendation Typology

Crowdsourcing

YouTube's music lists are created by the platform's users.

Source: YouTube

Technical paper on the Canadian content recommendation for online music platforms
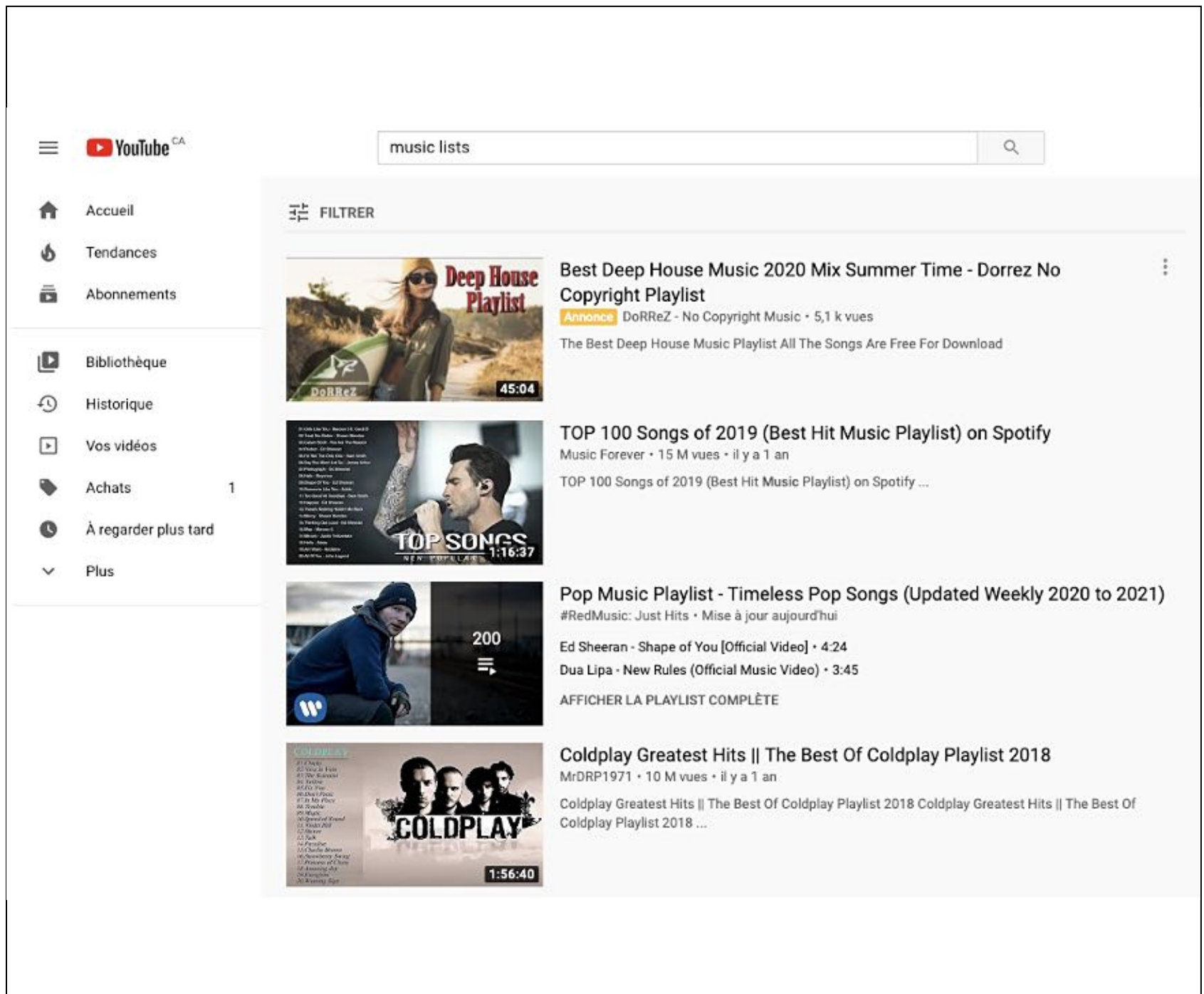
Appendix 1 – Recommendation Typology

Social

Apple Music's Music + Friends tool allows users to obtain music recommendations associated to what "friends" listen to.

Source: Apple Music

Technical paper on the Canadian content recommendation for online music platforms
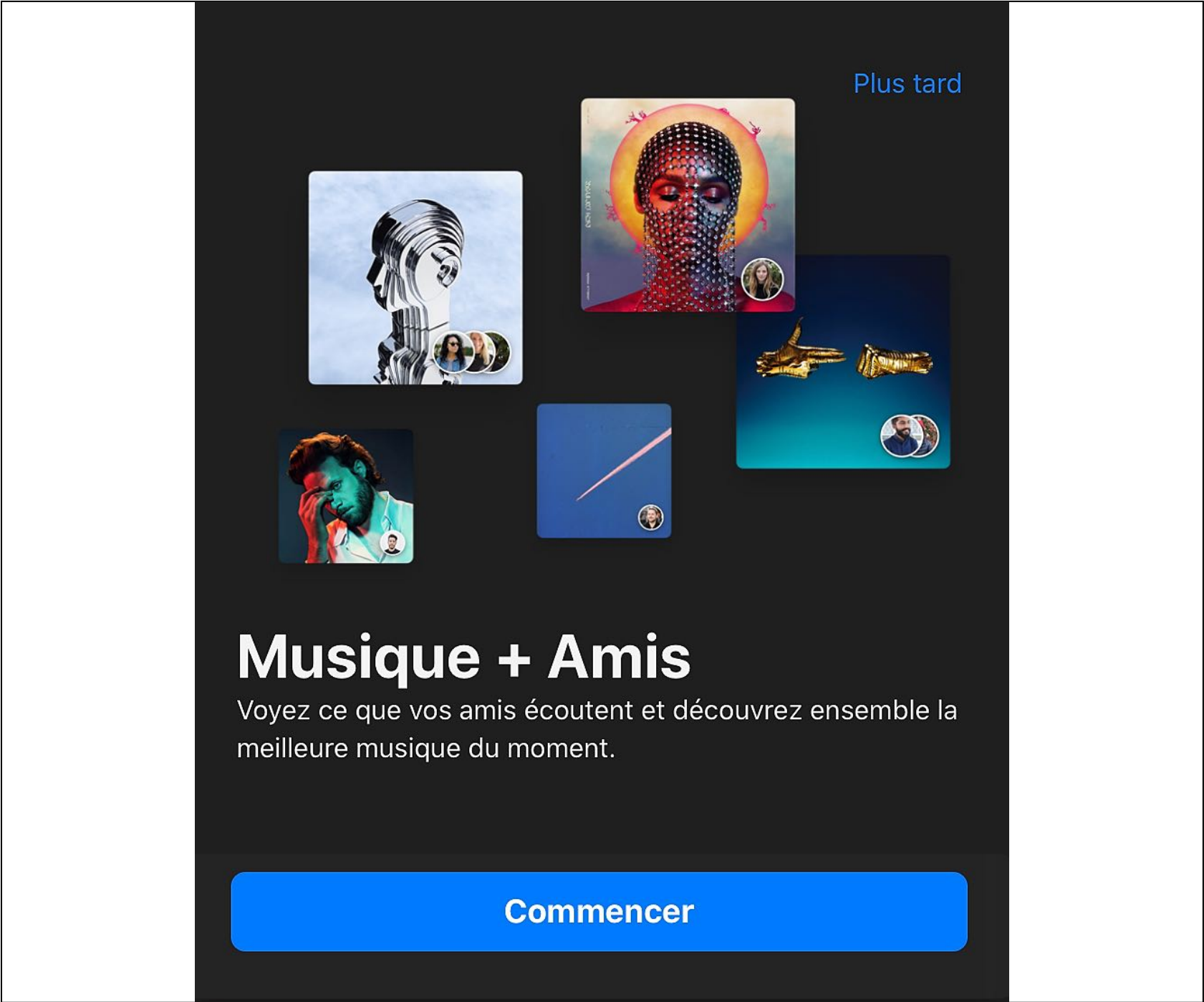
Appendix 1 – Recommendation Typology

How?

Complex algorithms

Spotify's discovery lists are based on complex algorithms.

Source: Spotify

Technical paper on the Canadian content recommendation for online music platforms
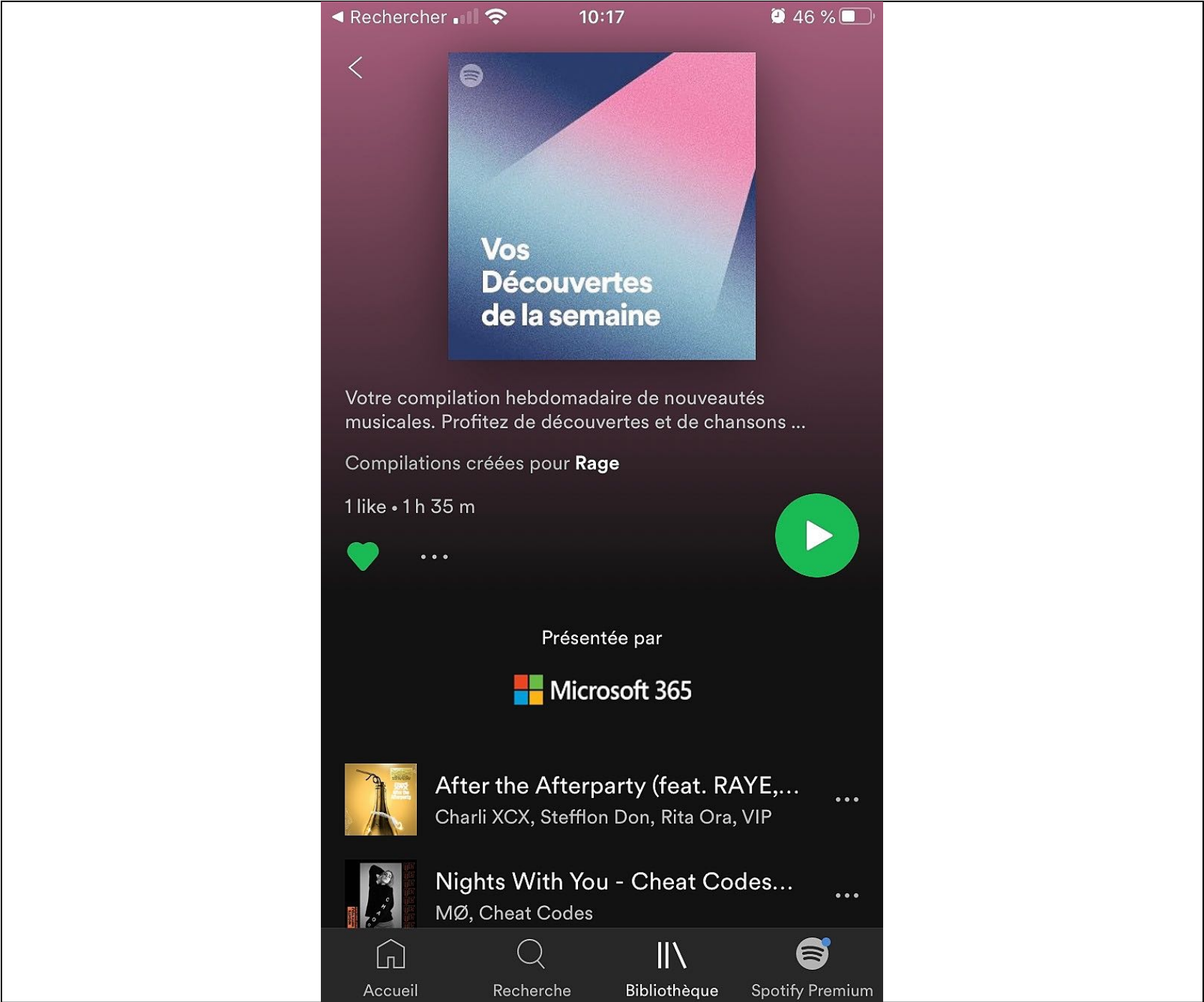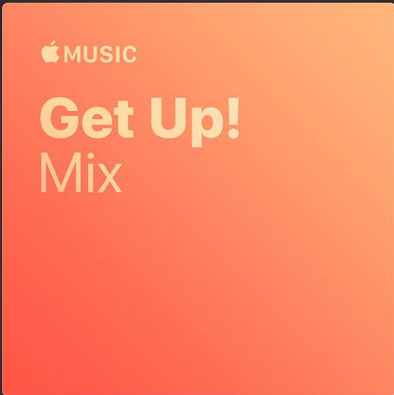
Appendix 1 – Recommendation Typology

Hybrid

In 2020, Apple launched the Get up! Mix which is based on a hybrid approach. According to Techcrunch, "the playlist of a couple of dozen songs is built using a combination of machine learning and human curation. Algorithms determine what sort of music you may prefer, but the playlist will also be interspersed with high-energy, all-time favourites and a few newer songs selected by Apple Music's editors." (https://techcrunch.com/2020/03/24/apple-music-adds-a-personalized-playlist-of-happy-songs-to-cheer-you-up-plus-a-work-from-home-mix/)

Mix énergie
Apple Music pour Christian
MISE À JOUR LUNDI

▶ Écouter   ⤬ Lecture aléatoire   + Ajouter   •••

Notre avis Que ce soit lundi matin ou vendredi soir, activez-vous avec ce mix entraînant et personnalisé!

CHANSON	ALBUM		
Attack System Of A Down	Hypnotize	+	3:06
Bodies The Smashing Pumpkins	Mellon Collie and the Infinite Sadness (Deluxe E…	+	4:12
The Wanton Song Led Zeppelin	Physical Graffiti (Deluxe Edition)	+	4:08
What People Are Made Of Modest Mouse	The Moon & Antarctica	+	2:14
Dive (Smart Sessions) Nirvana	Nevermind (Super Deluxe)	+	3:54
Don't Tread On Me Metallica	Metallica	+	4:00
Funky Shit The Prodigy	The Fat of the Land	E +	5:16

Source: Apple Music

Appendix 2 - User experience - Amazon Music

Description

The home page is composed of several sections: charts, themed lists, streaming history, lists inspired by the streaming history, etc.

Analysis

Certain elements of the home page such as the streaming history are clearly outside the realm of recommendations. Other are inside that realm.

Who/What	When	Where	How
Several elements	At the beginning of a stream	Web app	Several techniques

Examples
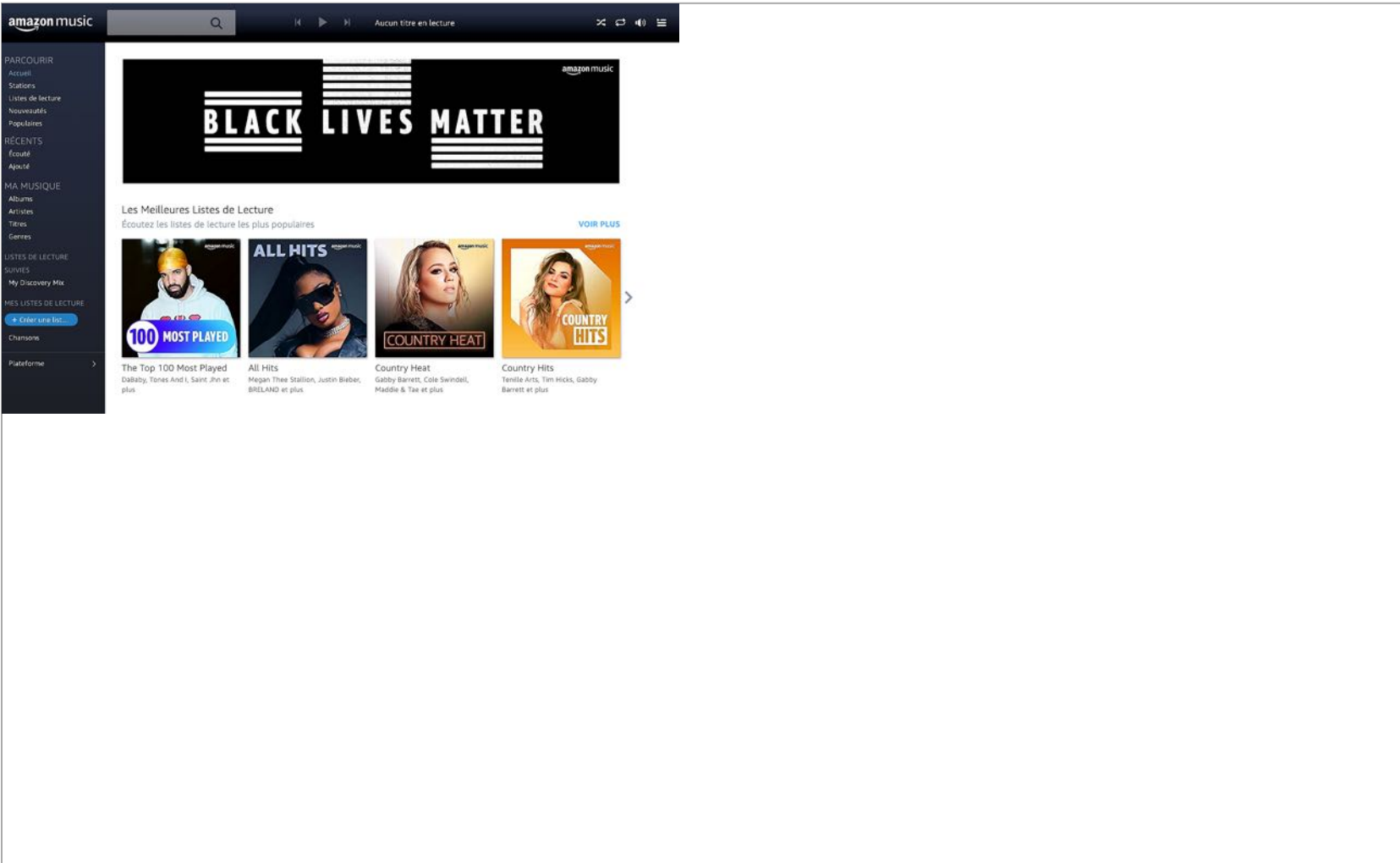
Appendix 2 - User experience - Amazon Music

Description

The application allows users to view charts of the most streamed songs, albums and lists on the service.

Analysis

Since the content displayed is associated with the choices made by consumers (number of streams), we could posit that they are not recommendations.

Who/What	When	Where	How
Several elements	At the beginning of a stream	Web app	Streaming statistics

Examples
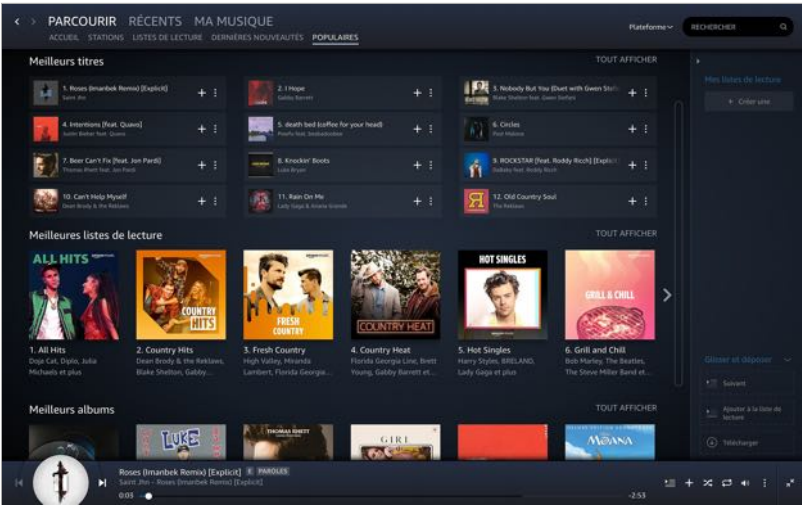
Appendix 2 - User experience - Amazon Music

Description

The My Discovery Mix list is a set of personalized recommendations.

Analysis

All the choices are made by the platform and they do not follow an explicit and specific request by the consumer, it therefore is an example of recommendation.

Who/What	When	Where	How
Title	At the beginning of a stream Web app		Complex algorithms

Examples
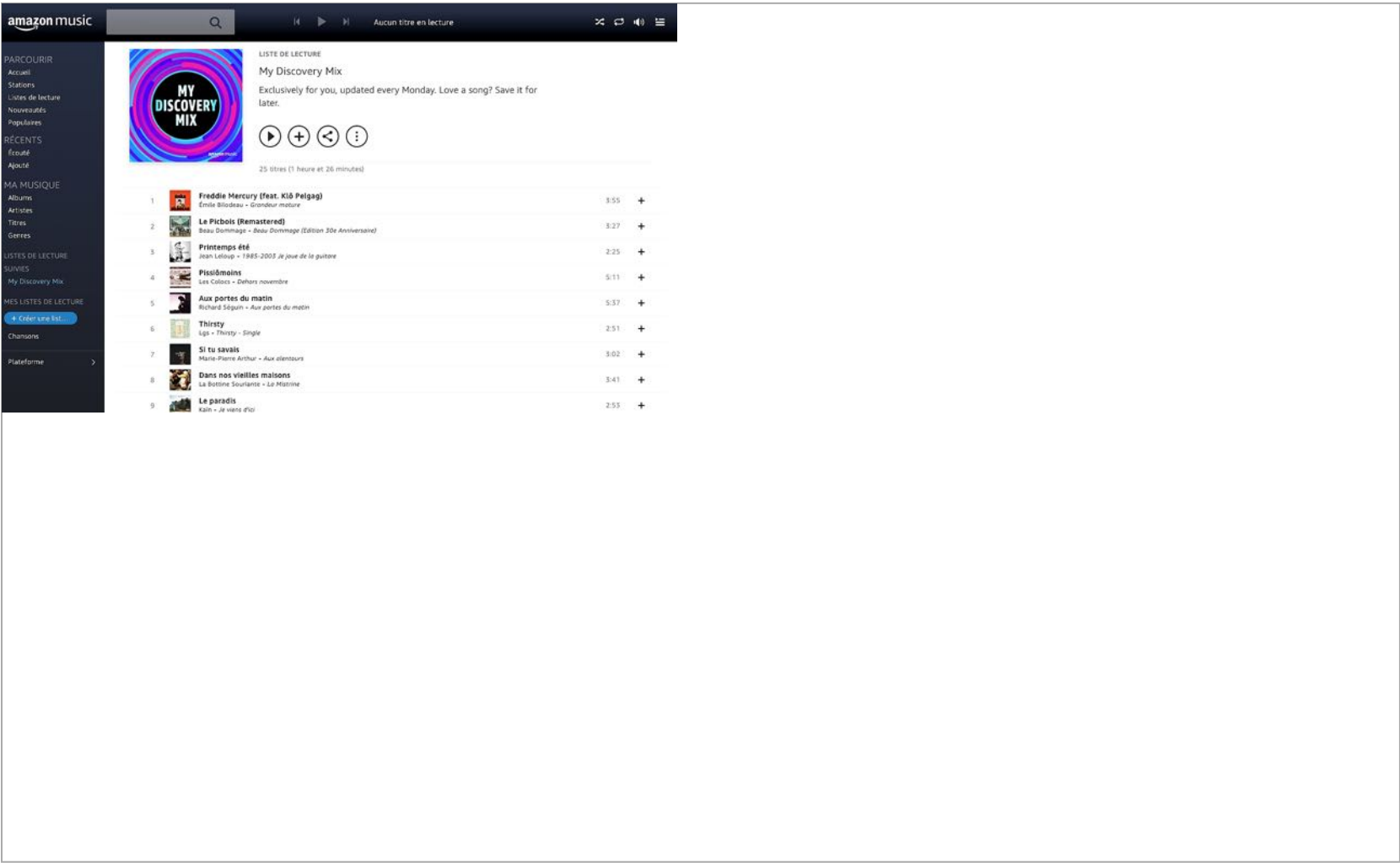
Appendix 2 - User experience - Amazon Music

Description

One section lists all the songs ever streamed.

Analysis

Since this section is based on past choices by the consumer, this is not a recommendation.

Who/What	When	Where	How
Title	At the beginning of a stream Web app		Streaming history

Examples
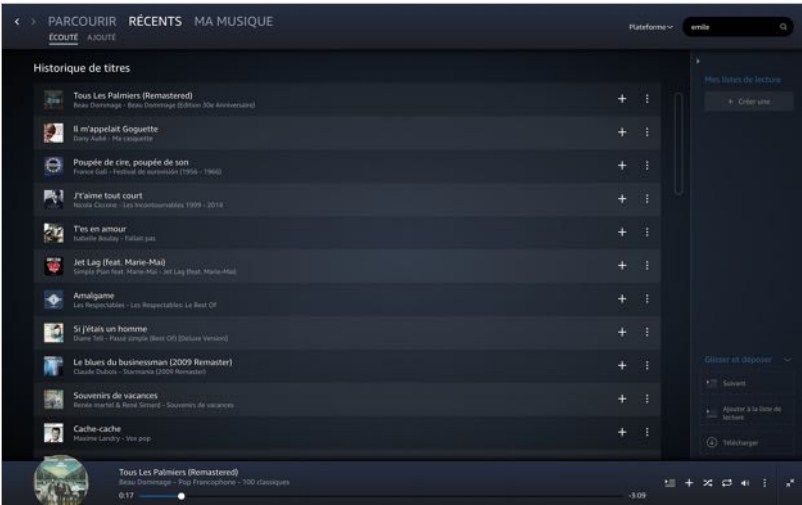
Appendix 2 - User experience - Amazon Music

Description

The search results are directly linked to the terms used by the consumer in their search.

Analysis

Since these results are linked to the user's request, they are not recommendations.

Who/What	When	Where	How
Several elements	At the beginning of a stream Web app		Search and metadata

Examples
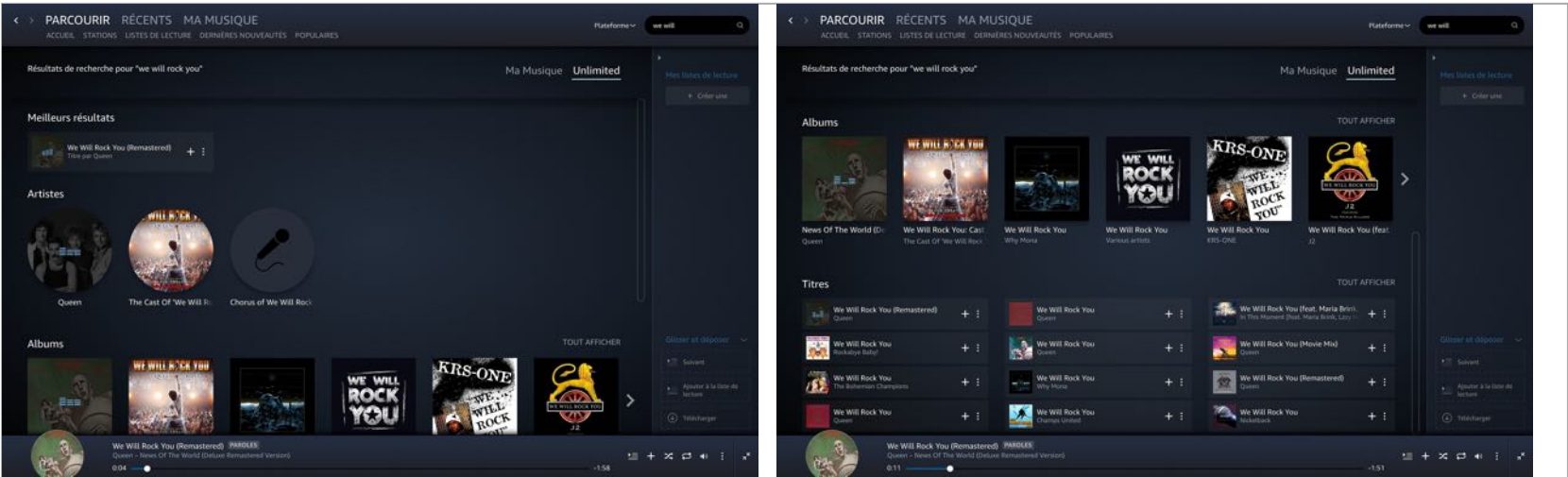
Appendix 2 - User experience - Amazon Music

Description

The email received after subscribing proposes playlists.

Analysis

Since these elements are not the result of an explicit user request, they are recommendations.

Who/What	When	Where	How
List	Prior to or outside of the use	Email	Human curation

Examples
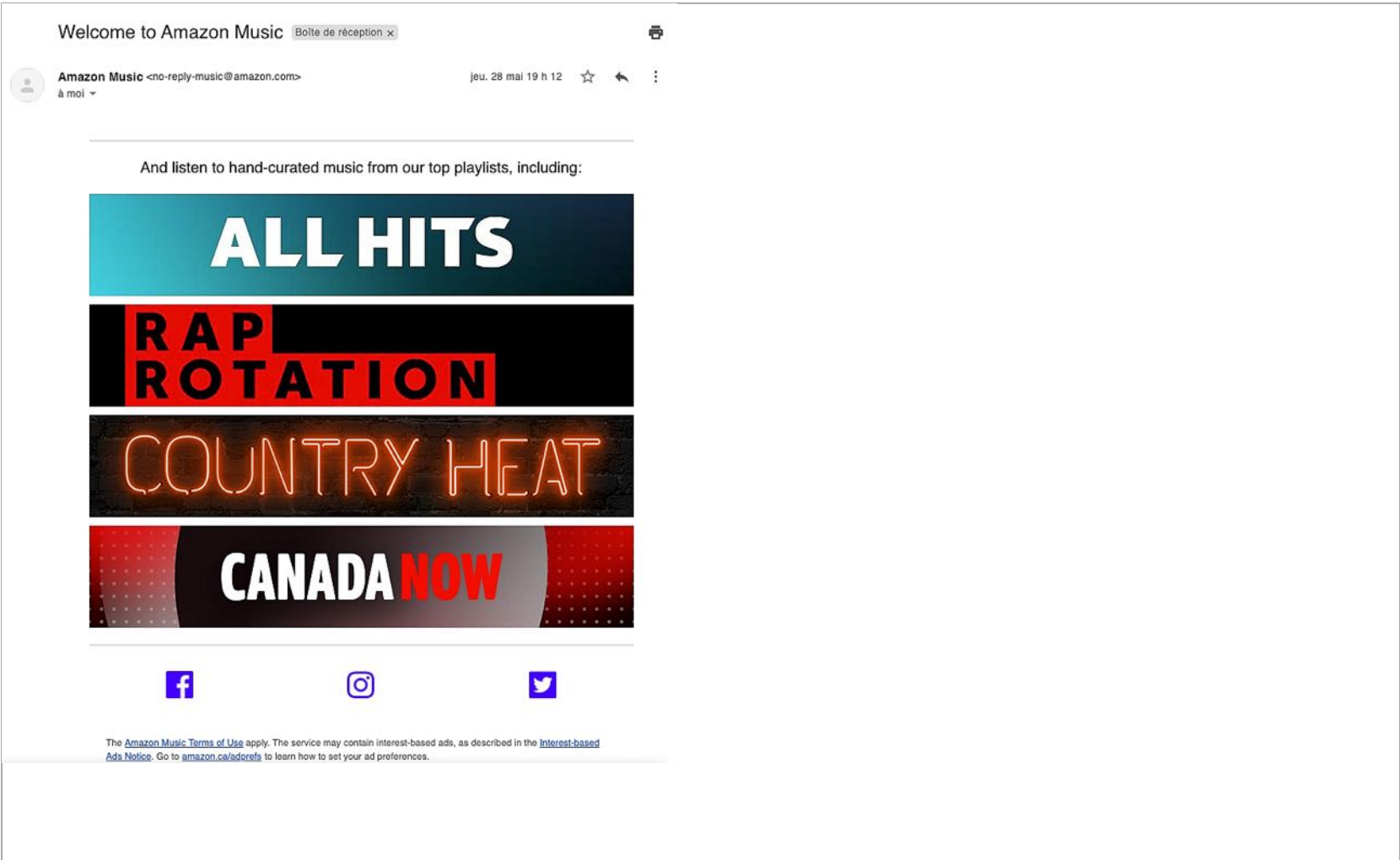
Appendix 2 - User experience - Apple Music

Description

When creating a profile, the app allows the user to identify the music genres that will be used to recommend content in the For You section.

Analysis

This screen is not within the realm of recommendations since it does not propose music content.

Who/What	When	Where	How
Undetermined	Prior to or outside of the use	Computer native app	User preferences

Examples
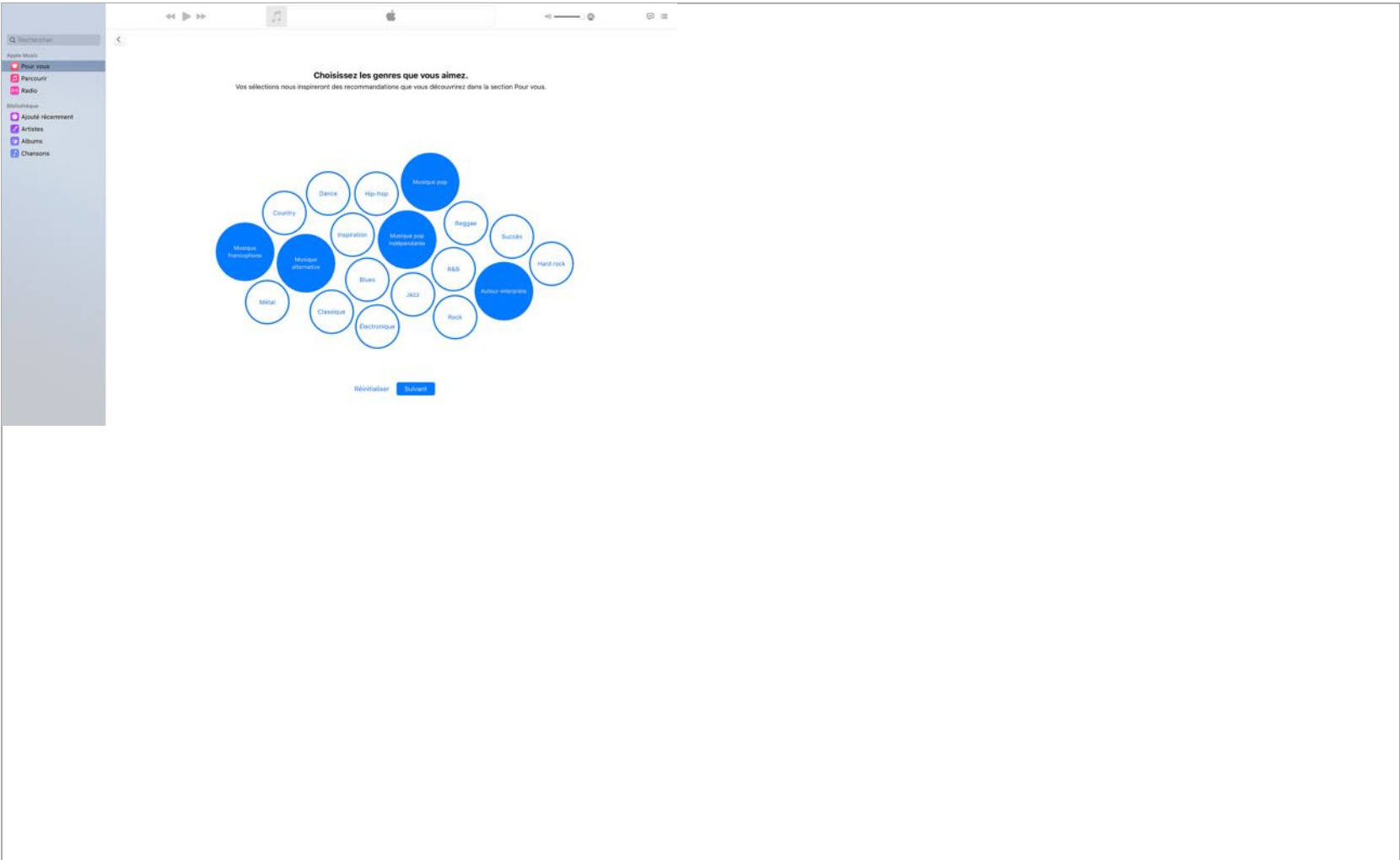
Appendix 2 - User experience - Apple Music

Description

The app presents various charts of the most played songs. These charts are sometimes country-specific but they can be displayed to a user from a different country.

Analysis

All the content presented is within the realm of recommendation, since none of the content is explicitly chosen by the user.
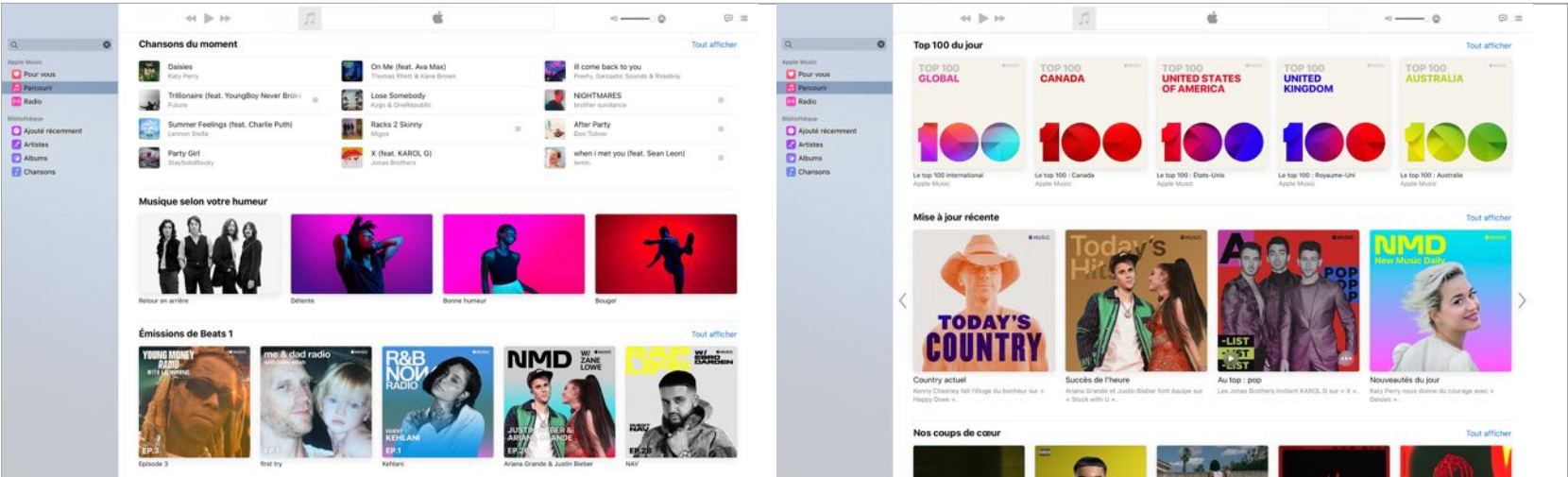
Who/What	When	Where	How
Title	At the beginning of a stream	Computer native app	Streaming statistics

Examples

Appendix 2 - User experience - Apple Music

Description

The For You page contains albums or lists recommendations based on several promotion and recommendation techniques.

Analysis

Except for the streaming history section (not illustrated), all of the musical content presented on the For You page are recommendations.

Who/What	When	Where	How
Several elements	At the beginning of a stream	Computer native app	Several techniques

Examples
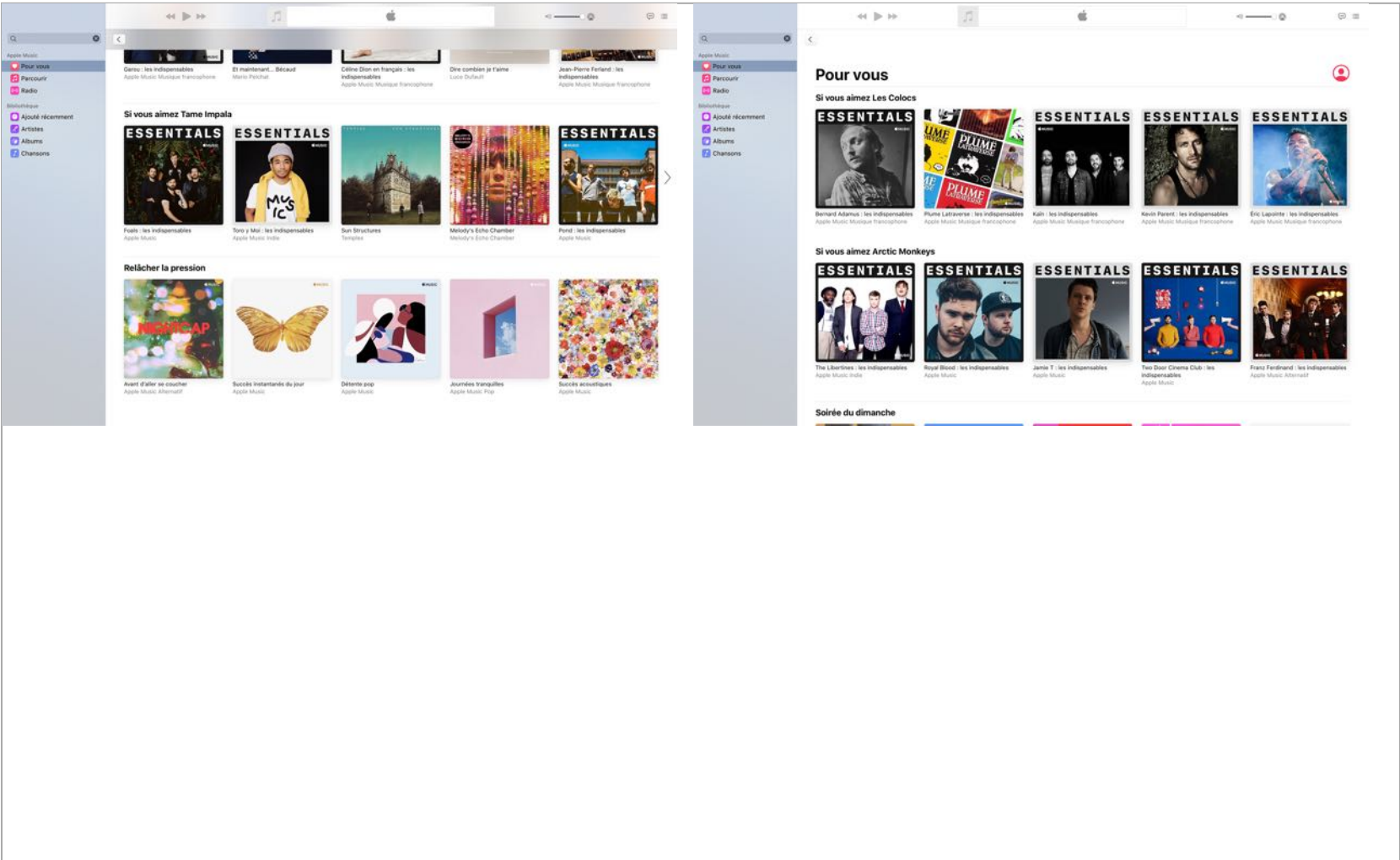
Appendix 2 - User experience - Apple Music

Description

The Browse page contains albums or lists recommendations stemming from the curation process by Apple Music's teams.

Analysis

All the content presented is within the realm of recommendation, since none of the content is explicitly chosen by the user.

Who/What	When	Where	How
Several elements	At the beginning of a stream	Computer native app	Human curation

Examples
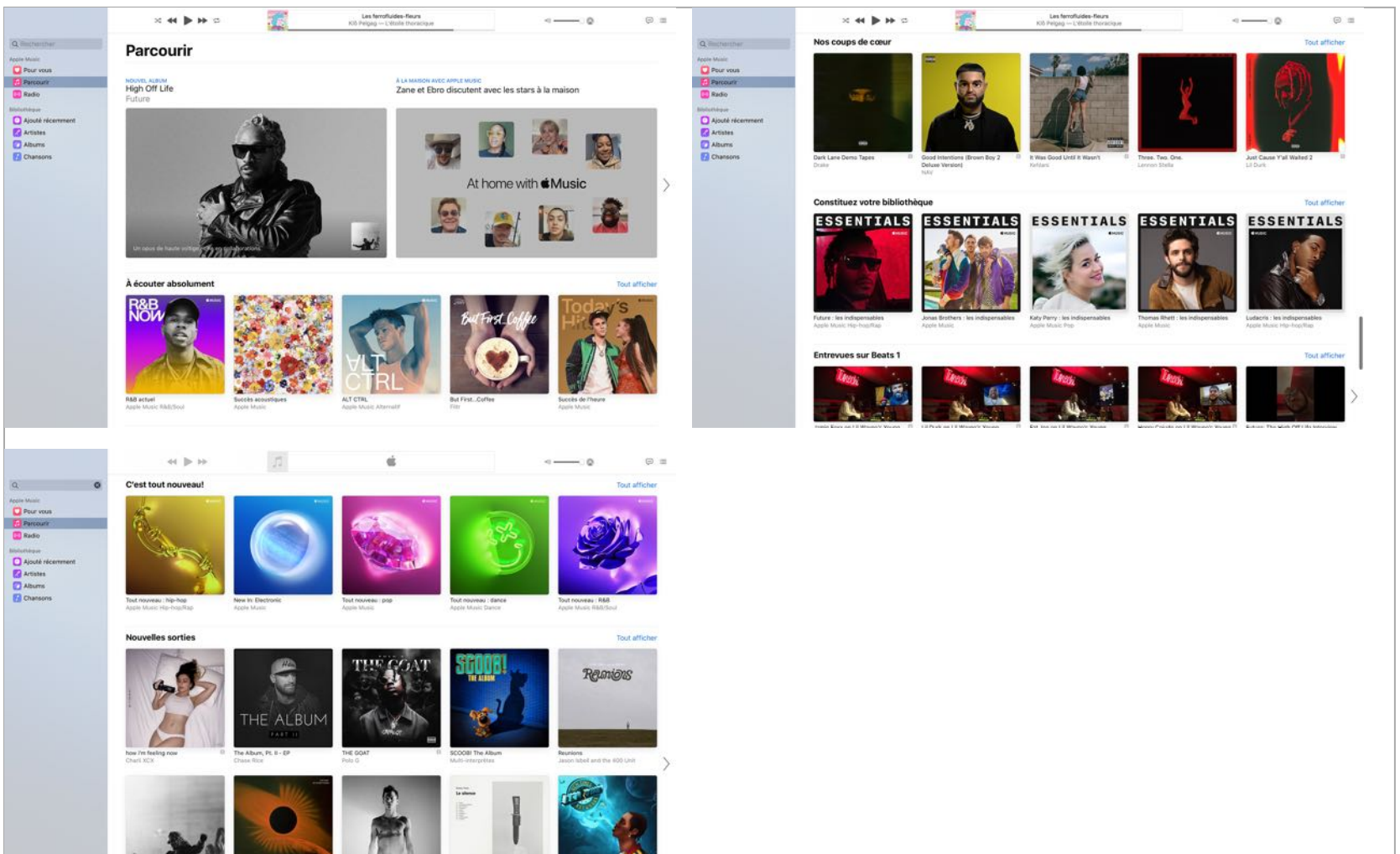
Appendix 2 - User experience - Apple Music

Description

The streaming history is used in various places like the For You page. Here, it becomes a navigation tool within the app.

Analysis

The content of the streaming history does not fall within the realm of recommendation since it exclusively contains choices made by the consumer.
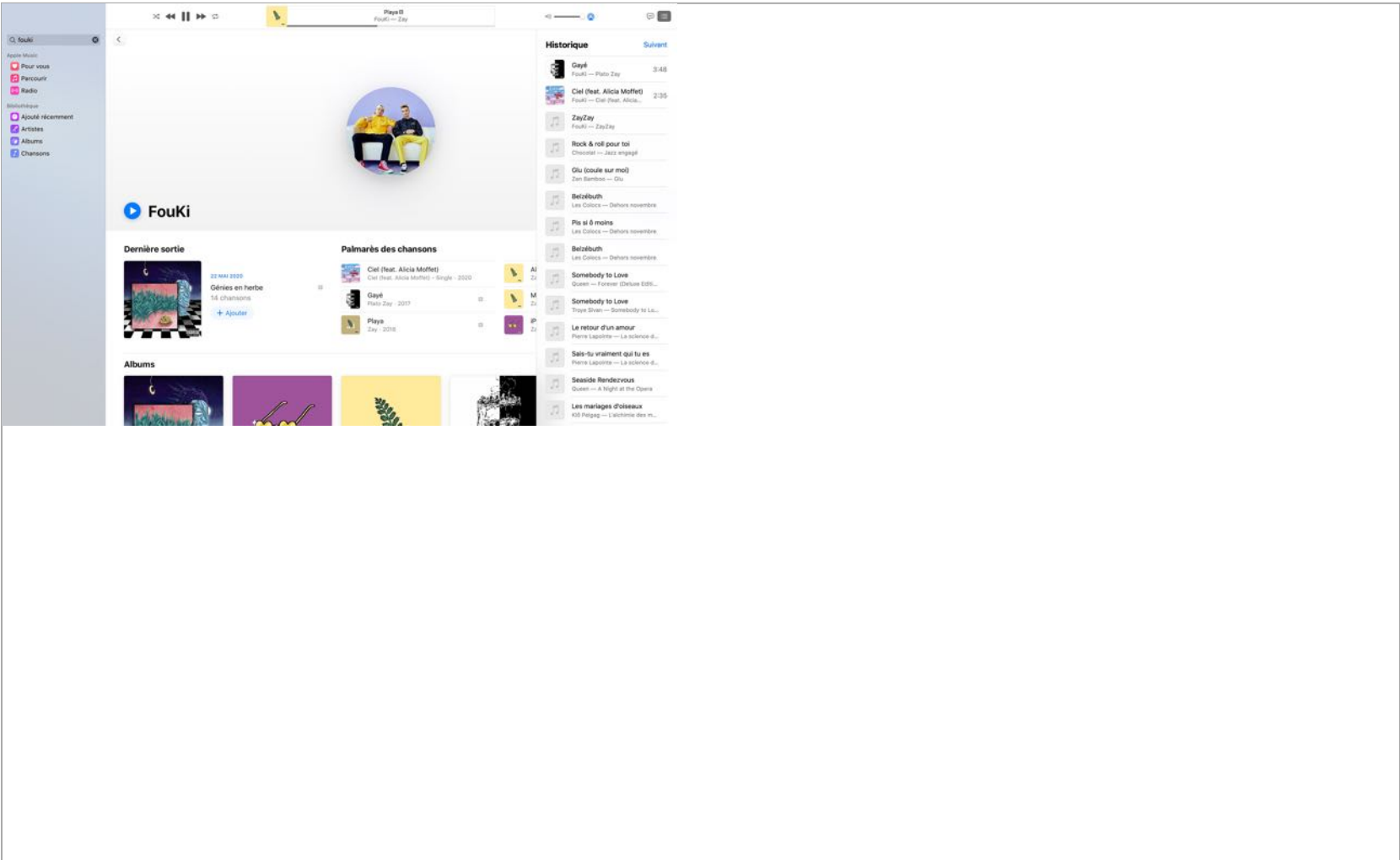
Who/What	When	Where	How
Title	During playback	Computer native app	Streaming history

Examples

Appendix 2 - User experience - Apple Music

Description

Search results are an opportunity to present titles, artists and lists related to the search terms.

Analysis

Search results do not fall within the realm of recommendation since they are generated after an explicit request by the user. The content of the playlists associated to the request will fall within that realm if the consumer elects to play that list.

| Who/What	When	Where	How
Several elements	At the beginning of a stream	Computer native app	Search and metadata

Examples
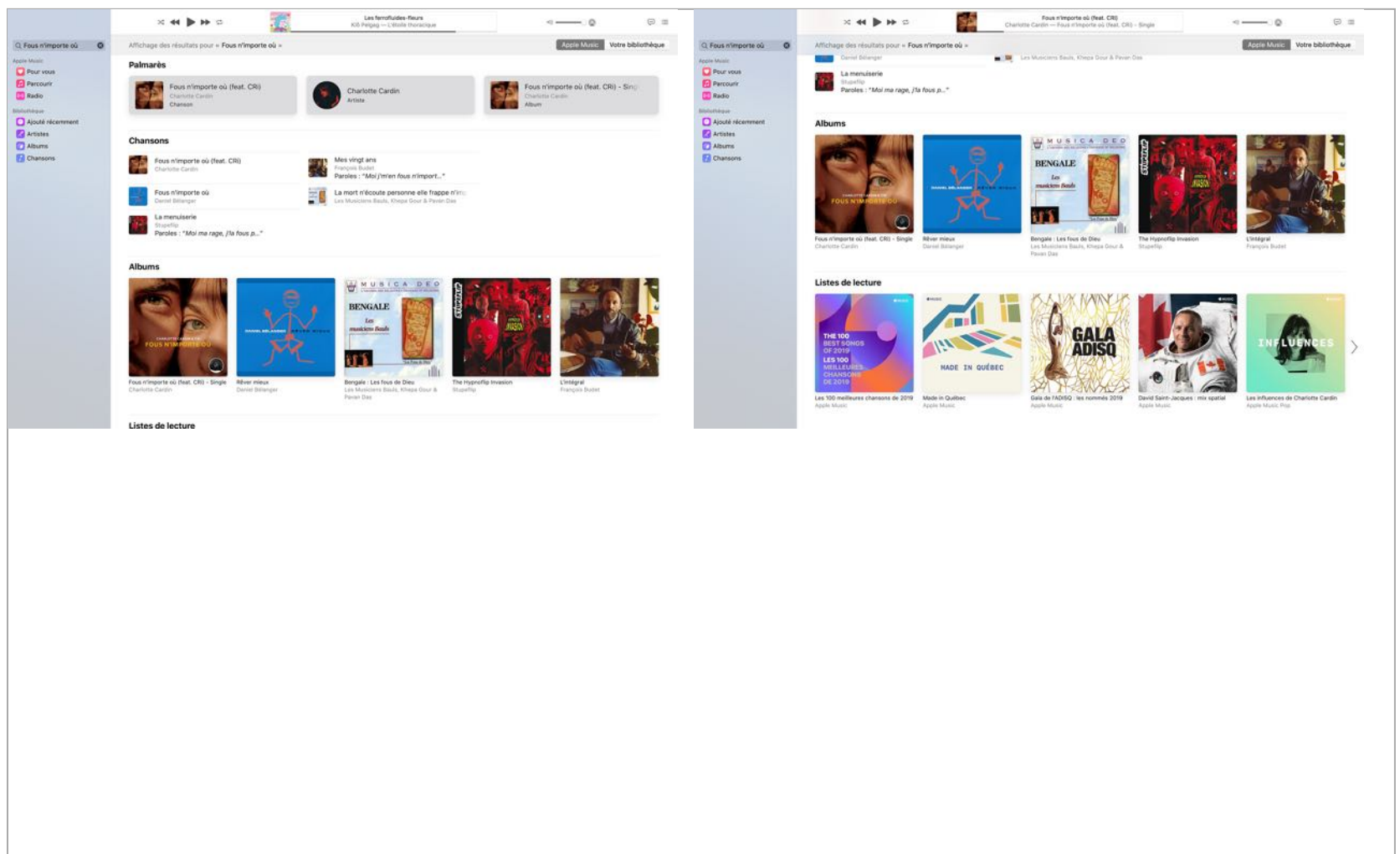
Appendix 2 - User experience - Apple Music

Description

When a request in the search tool corresponds to several results, not only are several titles proposed, but albums and lists that contain these songs are also displayed. The playback sequence ("Next" list) contains the various songs that correspond to the request.

Analysis

Search results do not fall within the realm of recommendation since they are generated after an explicit request by the user. The content of the playlists associated to the request will fall within that realm if the consumer elects to play that list.

Who/What	When	Where	How
Title	At the beginning of a stream	Computer native app	Search and metadata

Examples
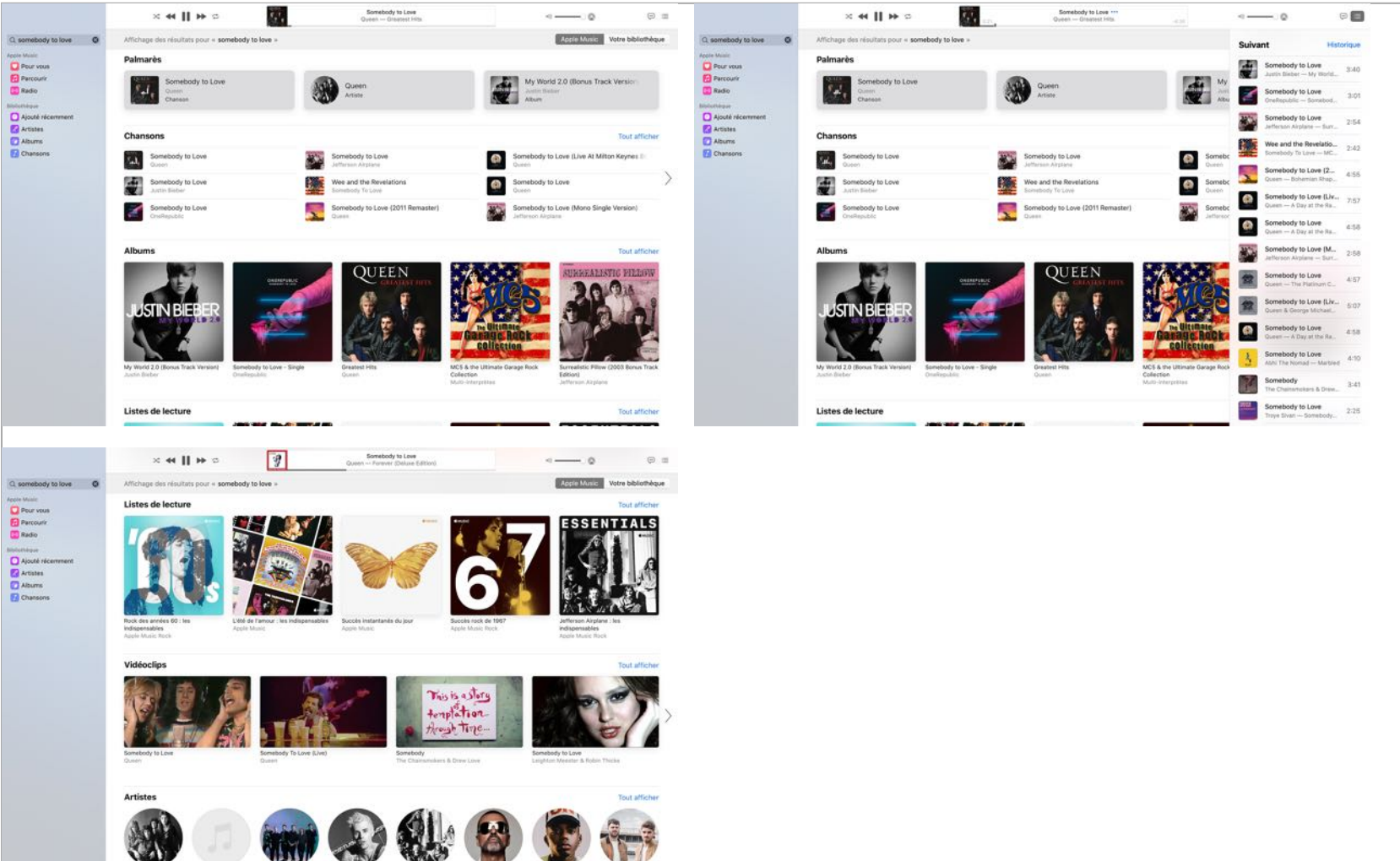
Appendix 2 - User experience - Apple Music

Description

In the context of a playlist containing songs from several artists, those artists are highlighted in the lists playback interface.

Analysis

The case of lists is more subtle. The content of a playlist can fall within the realm of recommendation, depending on the nature of the list. A list based on a very specific theme, such as the one shown here (independent Francophone music) could be closer to a search result. In the case of a more general list associated with a mood (i.e., relaxation, sports, etc.), the content proposed is recommended by the platform.

Who/What	When	Where	How
Artist	During playback	Computer native app	Search and metadata

Examples
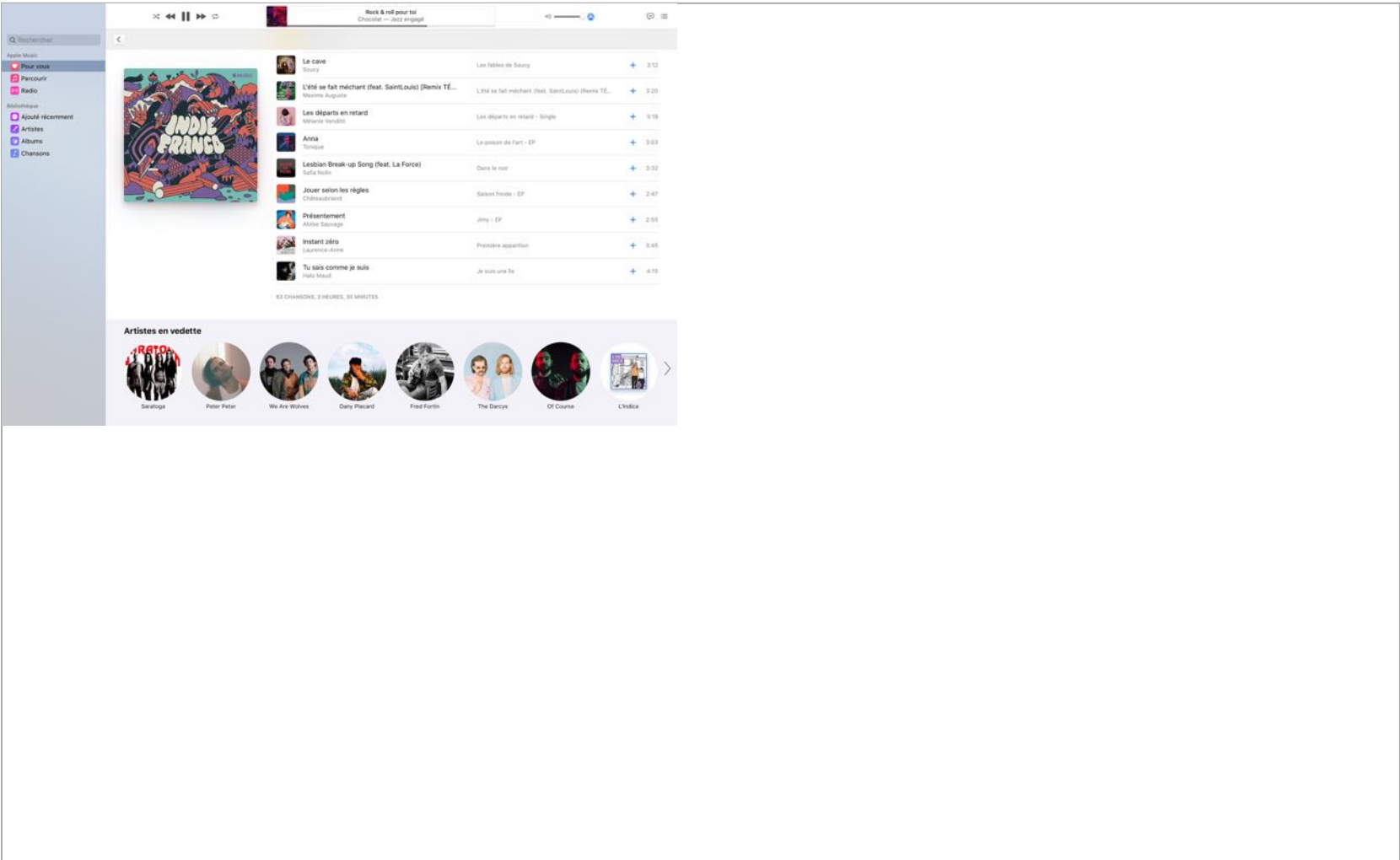
Appendix 2 - User experience - Apple Music

Description

The Music + Friends feature allows users to obtain recommendations based on what our "friends" are listening to.

Analysis

Inasmuch as the content suggested by the social features of the platforms are based on choices made by consumers (the "friends"), they are not within the realm of recommendation.
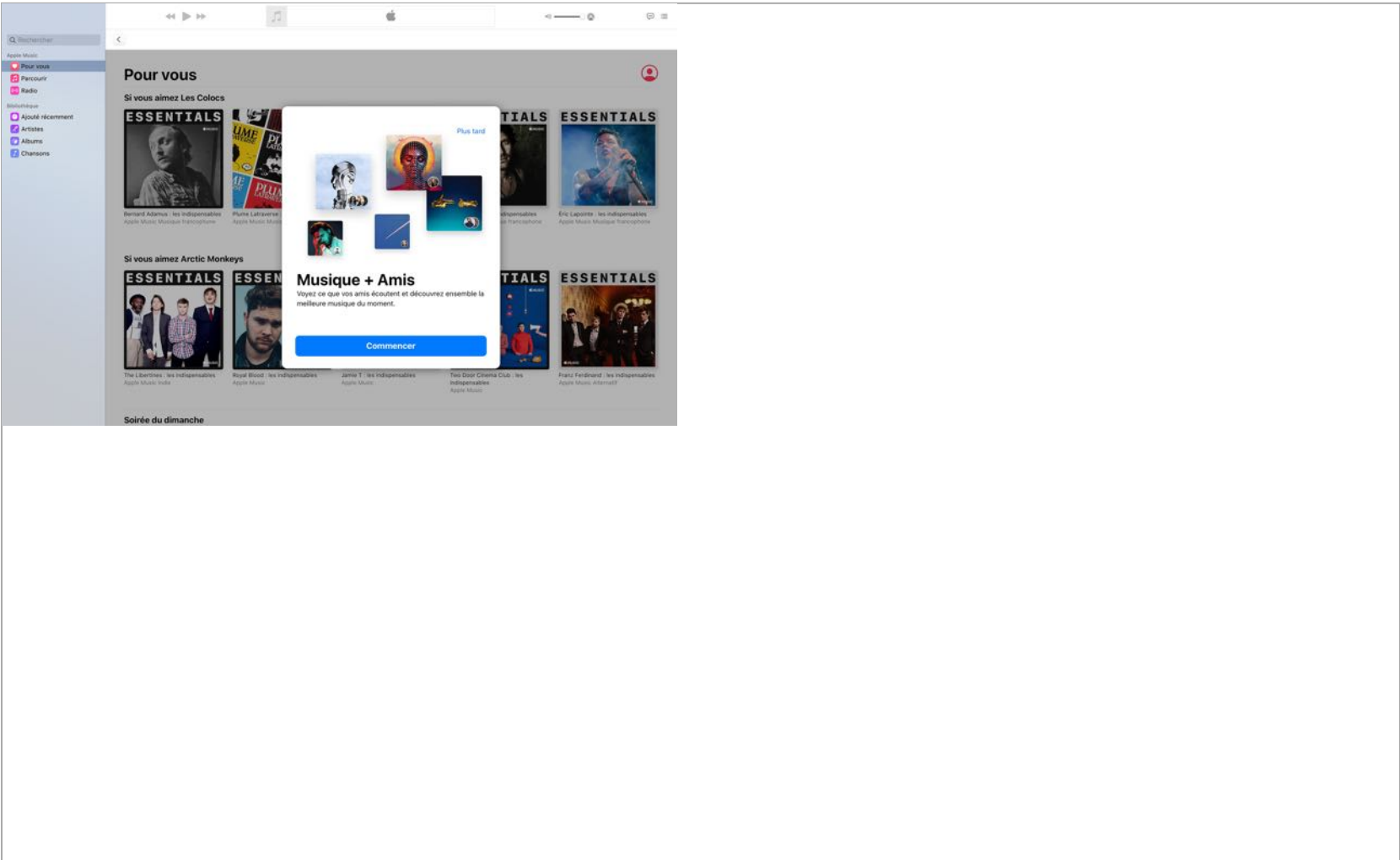
Who/What	When	Where	How
Several elements	Undetermined	Computer native app	Social

Examples

Appendix 2 - User experience - Spotify

Description

Spotify's home page has several sections displaying various elements, including lists and artists.

Analysis

Recently played elements are not within the realm of recommendation. Other elements, including those inspired by what was recently played, are within the realm of recommendation.

Who/What	When	Where	How
Several elements	At the beginning of a stream Web app		Several techniques

Examples
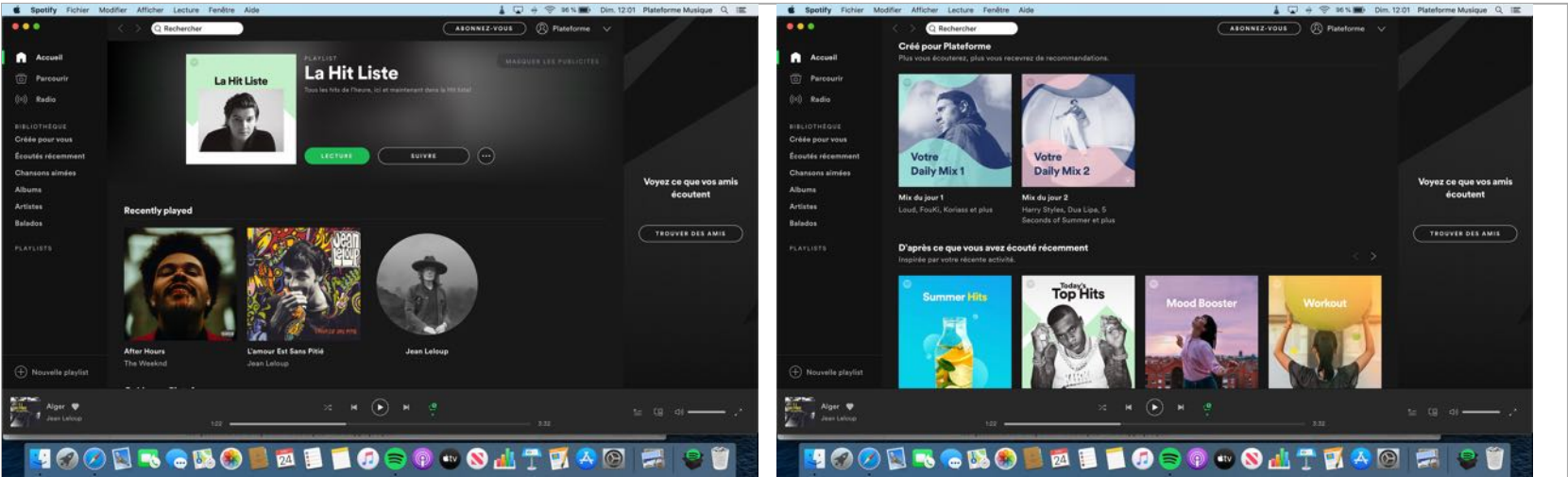
Appendix 2 - User experience - Spotify

Description

The recently played section shows titles that were streamed by the consumer.

Analysis

They are choices made by the consumer and are therefore not recommendations.

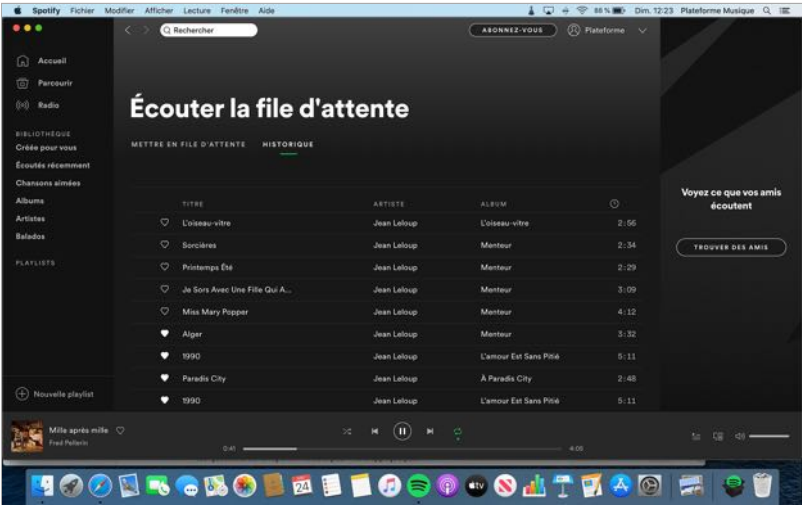| Who/What	When	Where	How
Title	During playback	Web app	Streaming history

Examples

Appendix 2 - User experience - Spotify

Description

The Discovery subsection of the Browse section suggests musical content to discover.

Analysis

Those are recommendations since the consumer did not specifically request them.

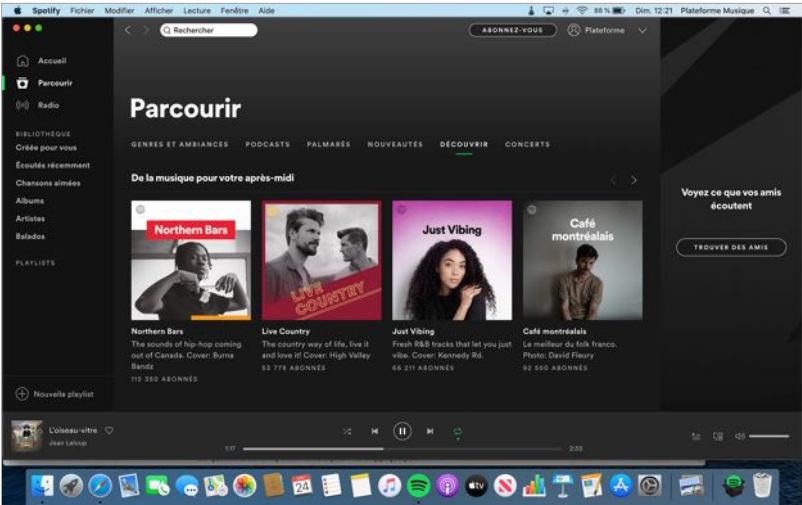| Who/What	When	Where	How
Several elements	During playback	Web app	Undetermined

Examples

Appendix 2 - User experience - Spotify

Description

Search results include several elements, including titles, albums and artists.

Analysis

The results correspond to a specific request by the consumer and are therefore not recommendations.

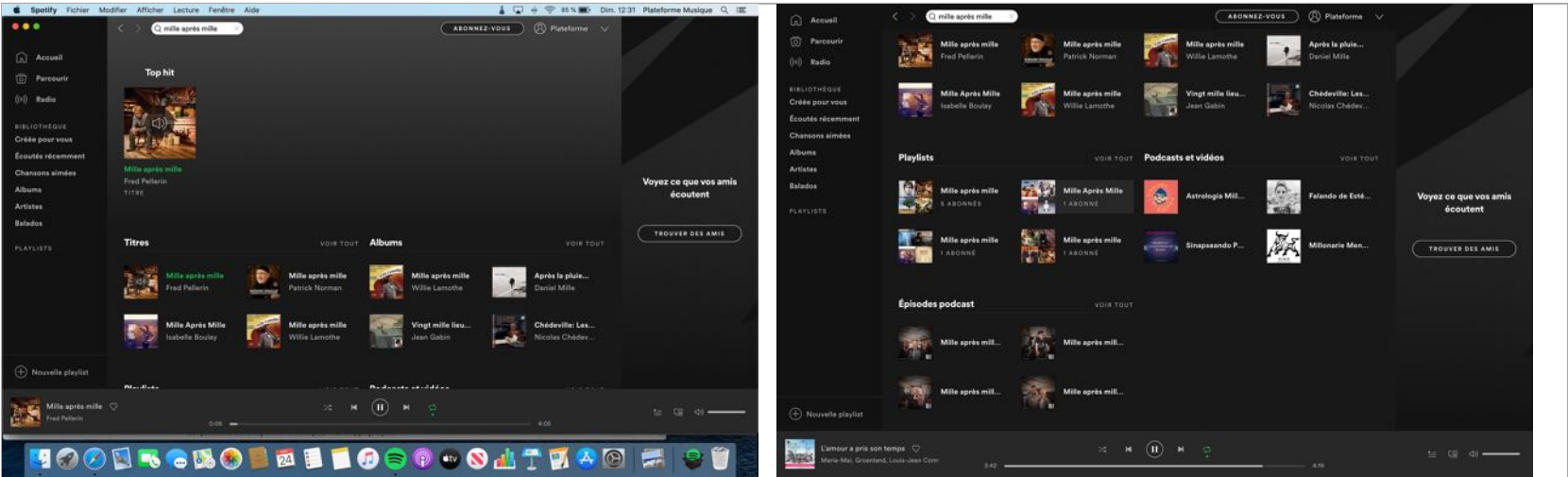| Who/What	When	Where	How
Several elements	During playback	Web app	Search and metadata

Examples

Appendix 2 - User experience - Spotify

Description

When streaming a piece of music, the platform generates an up-to-date list of titles that will play next. Those titles will play automatically after the current stream.

Analysis

Pieces of music that were not specifically chosen by the user are recommendations.
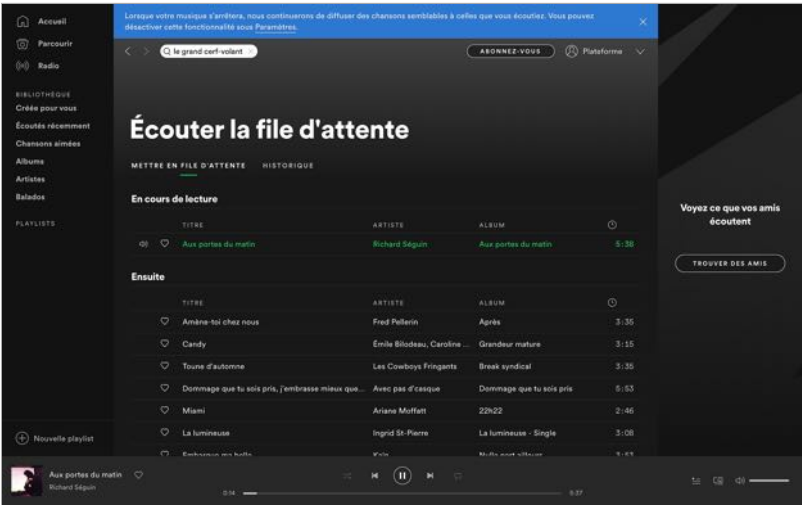
Who/What	When	Where	How
Title	Implicitly, after a stream	Web app	Search and metadata

Examples

Appendix 2 - User experience - Spotify

Description

The platform allows users to "like" or "follow" titles and albums which are then added to the consumer's library.

Analysis

Since all of those pieces of content are choices made by the consumer, they are not recommendations.

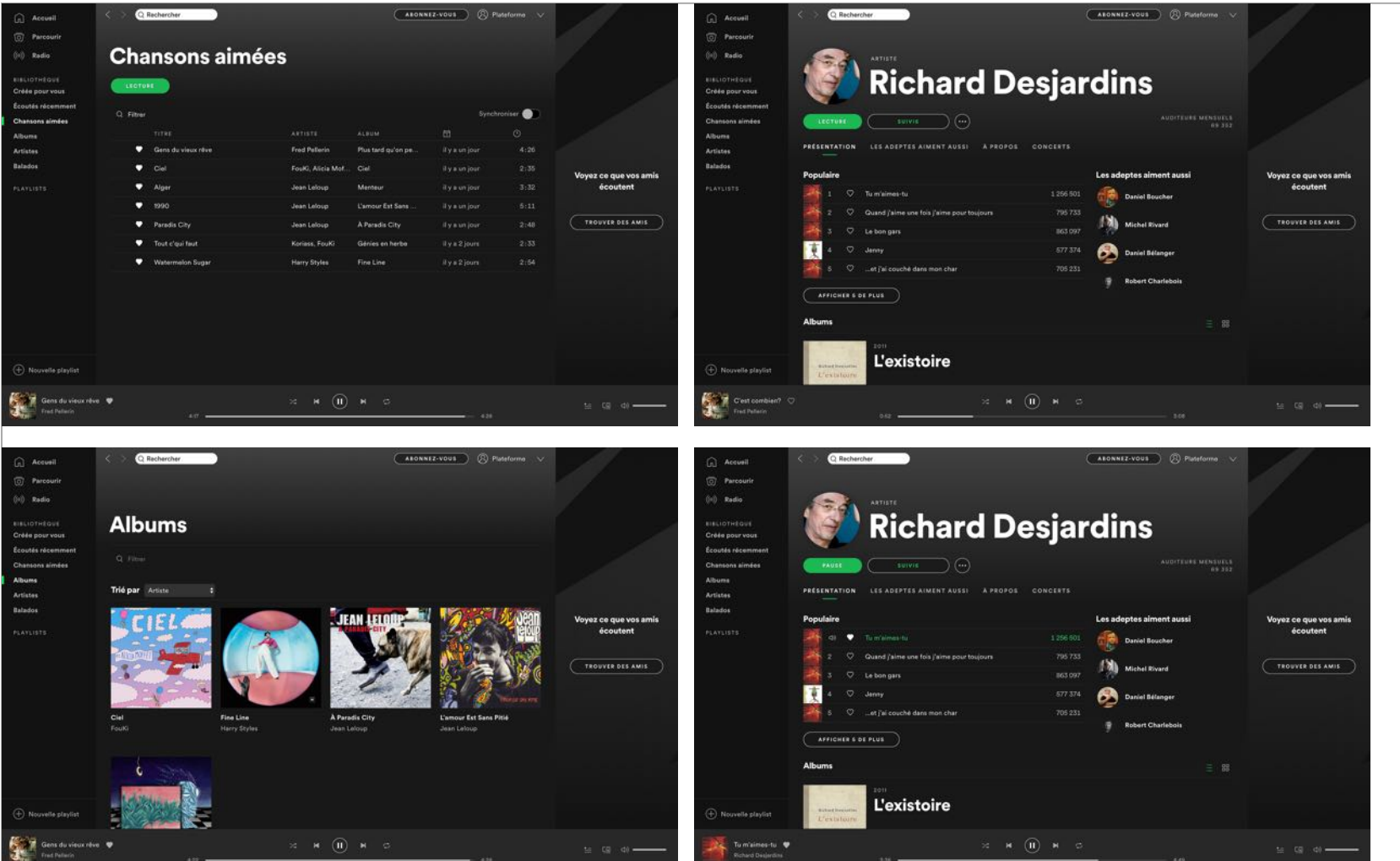| Who/What	When	Where	How
Several elements	At the beginning of a stream	Web app	User preferences

Examples

Appendix 2 - User experience - YouTube

Description

Since it is a video platform, a lot of content presented by YouTube is not musical content.

Analysis

They are recommendations, but only one of the items shown in this screen is a musical content.

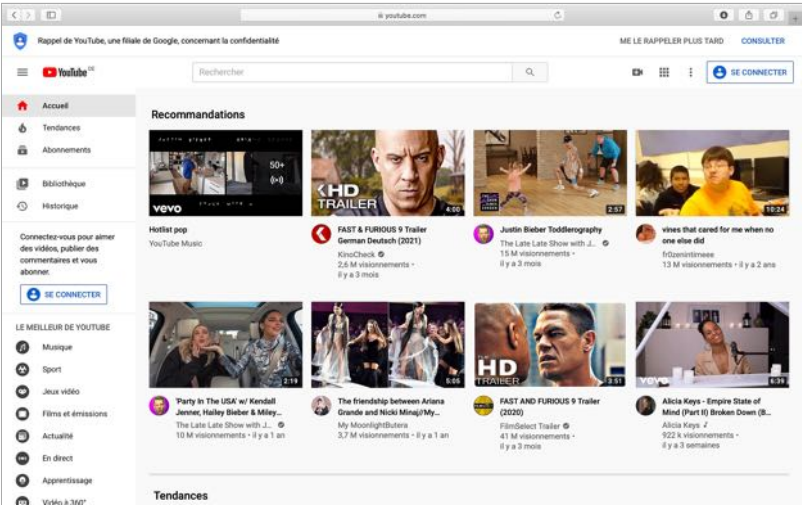| Who/What	When	Where	How
Title	At the beginning of a stream	Web app	Complex algorithms

Examples

Appendix 2 - User experience - YouTube

Description

The History page displays all of the videos watched recently in antechronological order.

Analysis

Since these are choices made by the consumer, the content displayed on this page is not within the realm of recommendation.

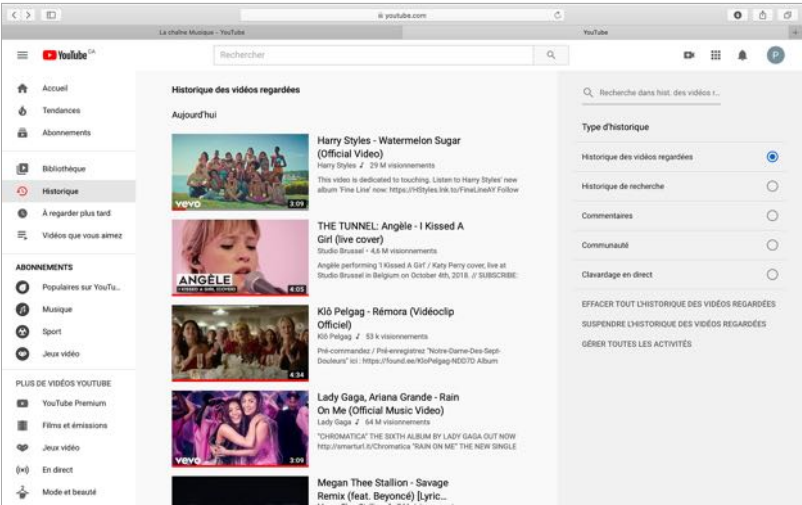| Who/What	When	Where	How
Title	Explicitly, after a stream	Web app	Streaming history

Examples

Appendix 2 - User experience - YouTube

Description

The search results page displays videos, lists, albums or channels that correspond to the consumer's request.

Analysis

Since these are choices made by the consumer, the content displayed on this page is not within the realm of recommendation.

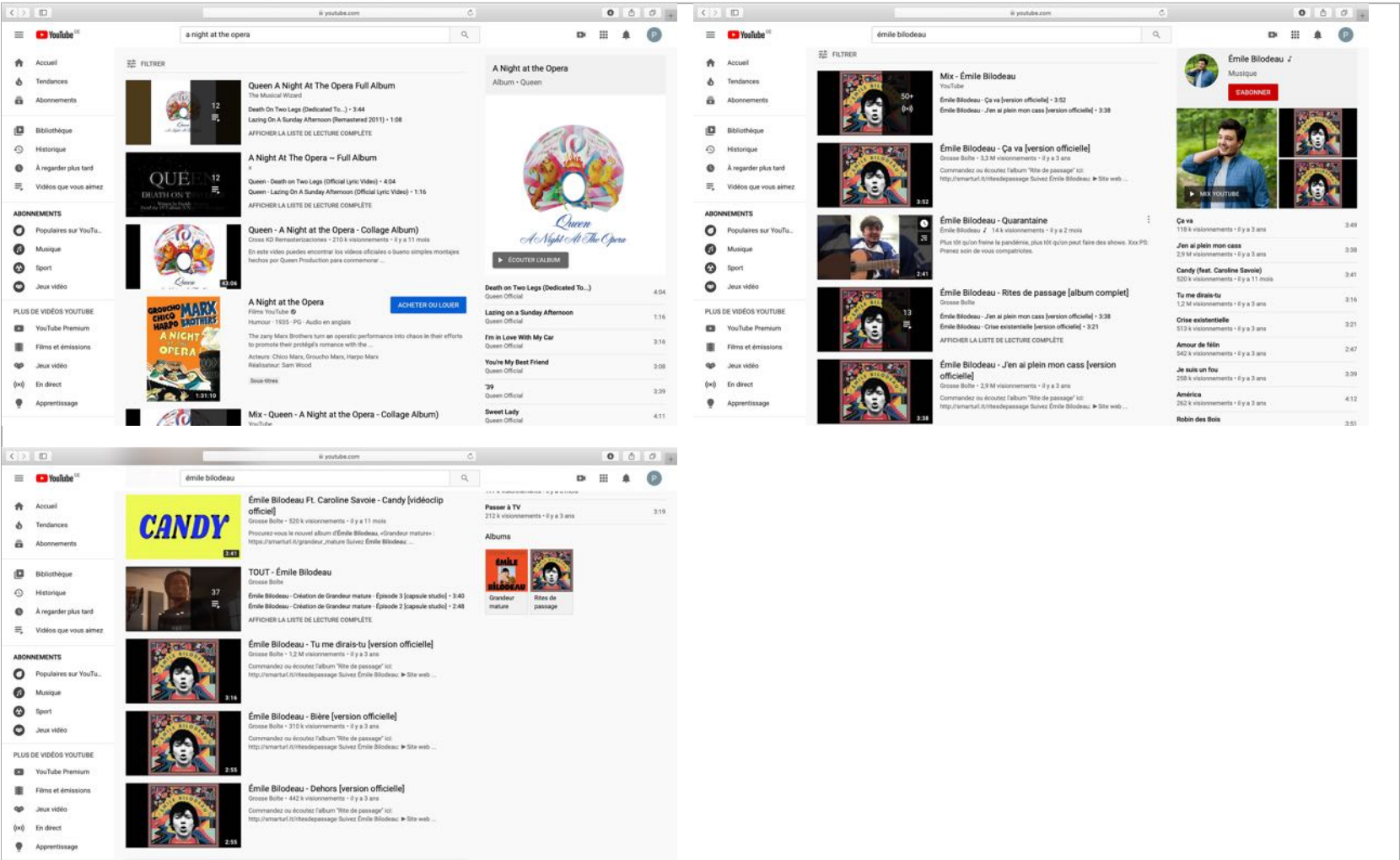| Who/What	When	Where		How
Several elements	At the beginning of a stream	Web app		Search and metadata

Examples

Appendix 2 - User experience - YouTube

Description

On YouTube, the right side of the screen, when playing a video, displays several more videos. These videos will play automatically one after the other if the Autoplay feature is on.

Analysis

The content displayed in this section on the right is recommendations because they are not linked specifically to the consumer's search.

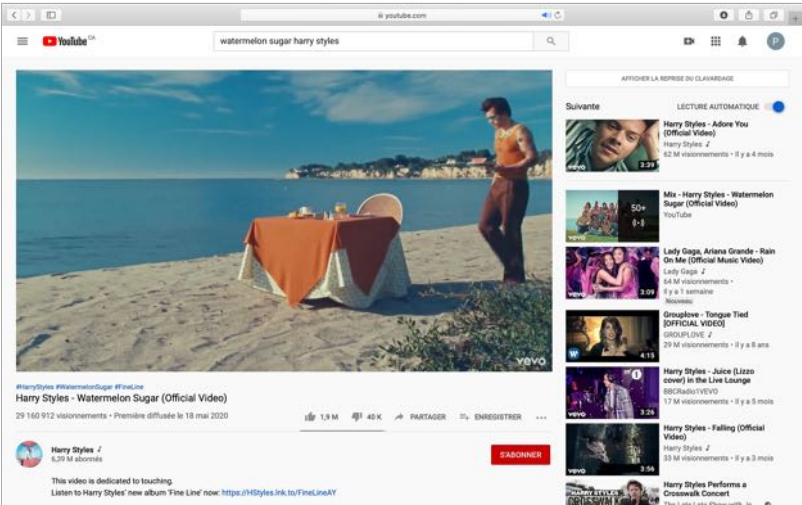| Who/What	When	Where	How
Title	During playback	Web app	Complex algorithms

Examples

Appendix 2 - User experience - YouTube

Description

The right-hand side of the screen on YouTube, when playing a video, can also display several pieces corresponding to a search done by the consumer (an album, in this case).

Analysis

All of the album's songs are therefore the result of the consumer's search and they are not considered recommendations.

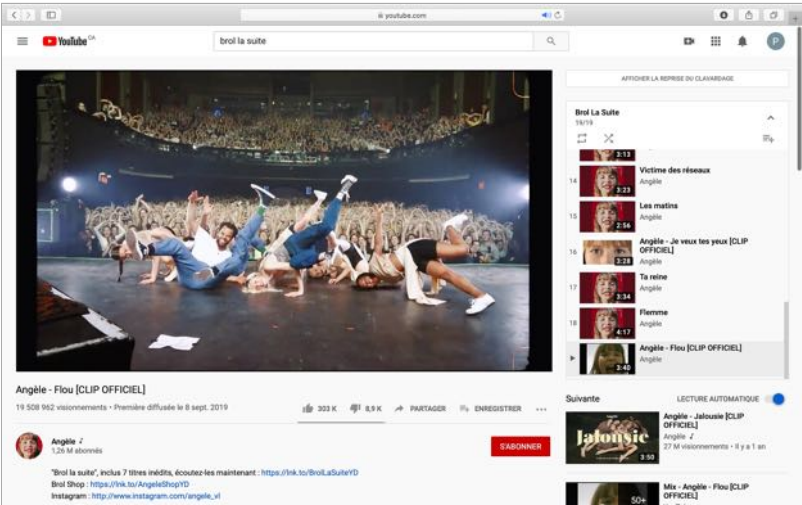| Who/What	When	Where	How
Title	During playback	Web app	Search and metadata

Examples

Appendix 2 - User experience - YouTube

Description

The YouTube Music channel page (not to be confused with the YouTube Music service) presents musical suggestions.

Analysis

All of this content is considered a recommendation because it is not linked to a specific request by the consumer.

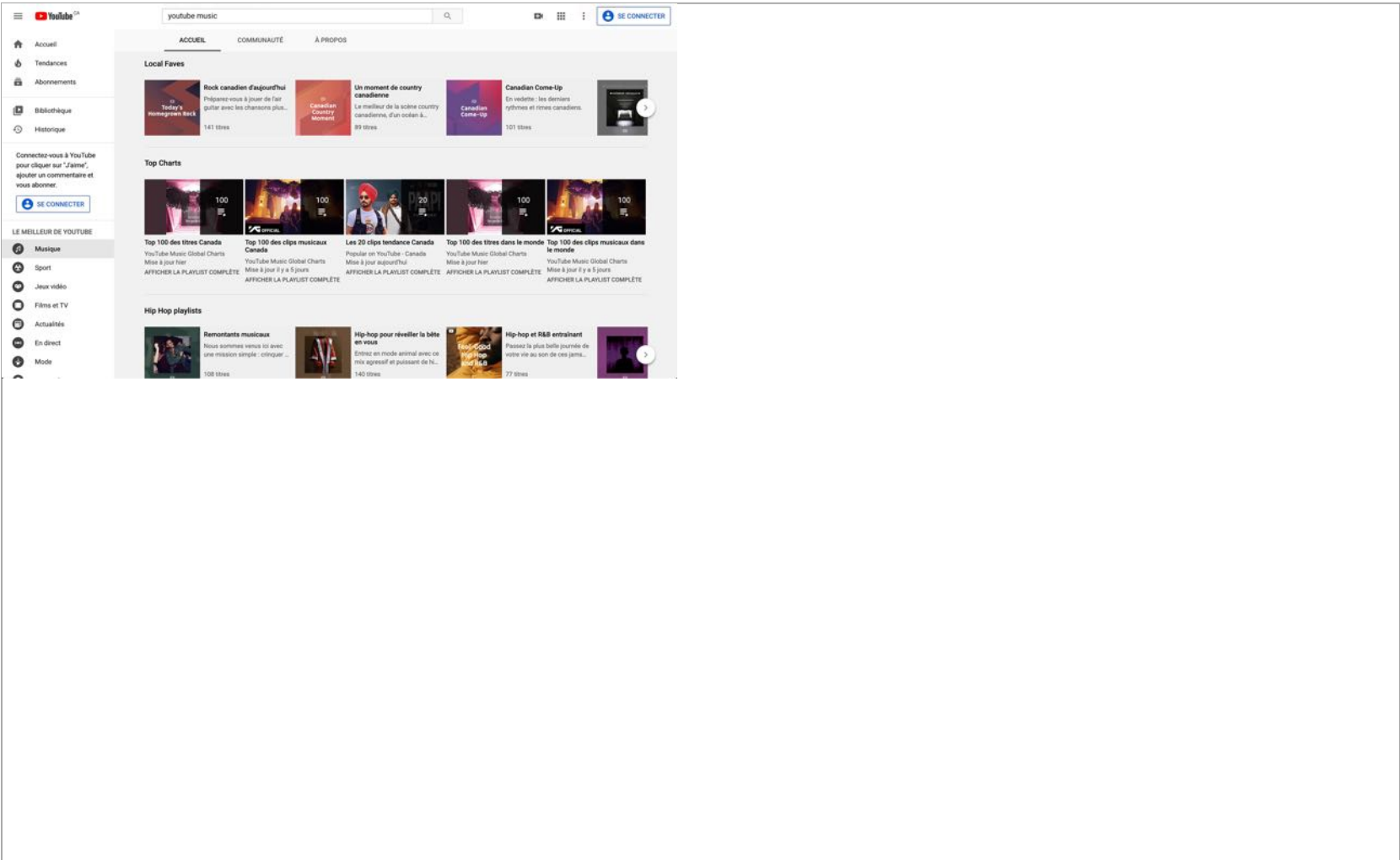| Who/What	When	Where	How
Several elements	At the beginning of a stream Web app		Several techniques

Examples

Appendix 2 - User experience - YouTube

Description

The Music subsection of the Trending section on YouTube presents music videos that have generated the most views.

Analysis

Those are recommendations since the consumer did not specifically request them.

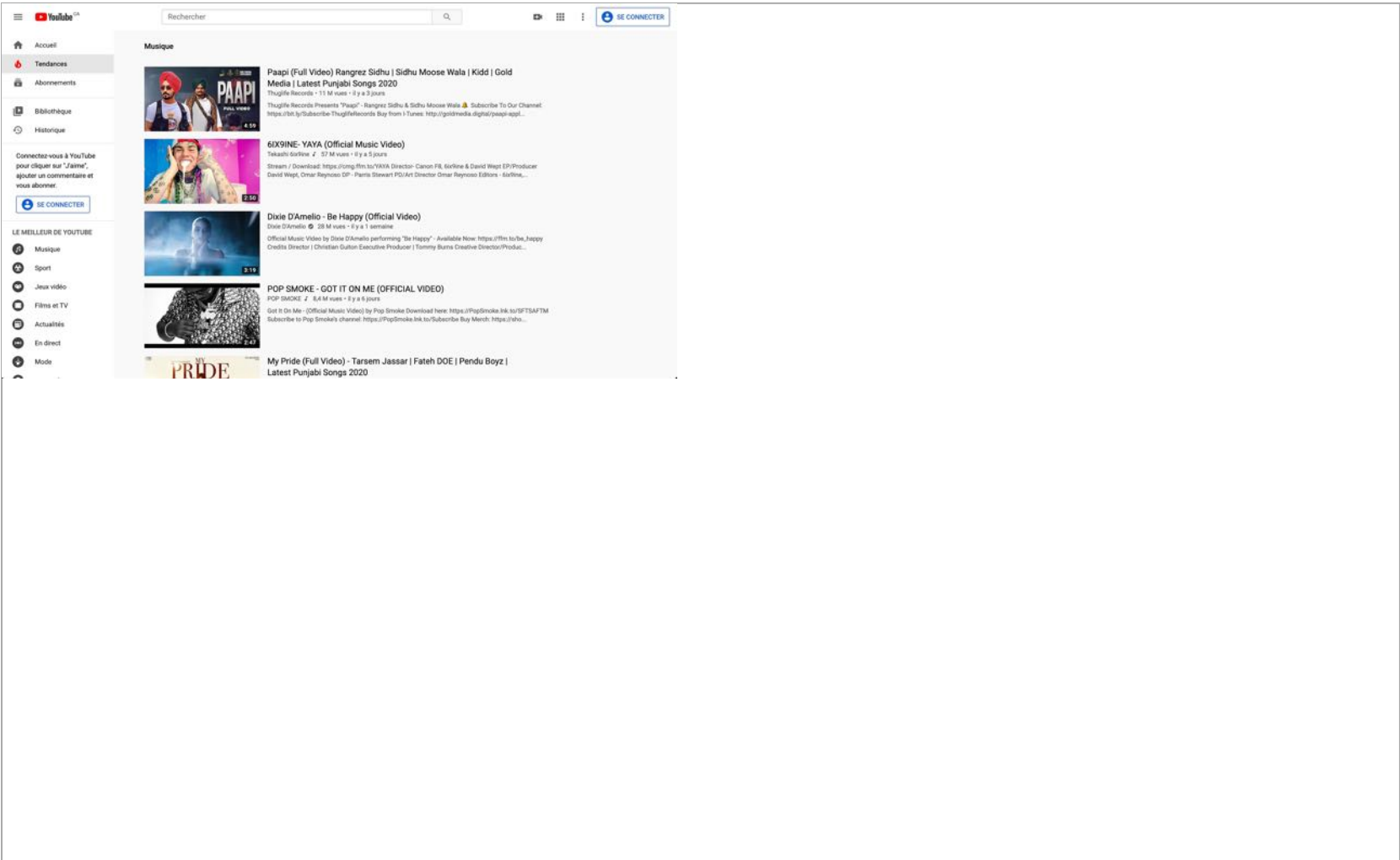| Who/What	When	Where	How
Title	At the beginning of a stream	Web app	Streaming statistics

Examples

Appendix 2 - User experience - YouTube

Description

YouTube allows consumers to subscribe to channels such as an artist's channel.

Analysis

Since the consumer elects to subscribe to that channel, the content it proposes is not considered a recommendation.

Who/What	When	Where	How
Several elements	At the beginning of a stream	Web app	User preferences

Examples