

# Music Recommendation Use Case

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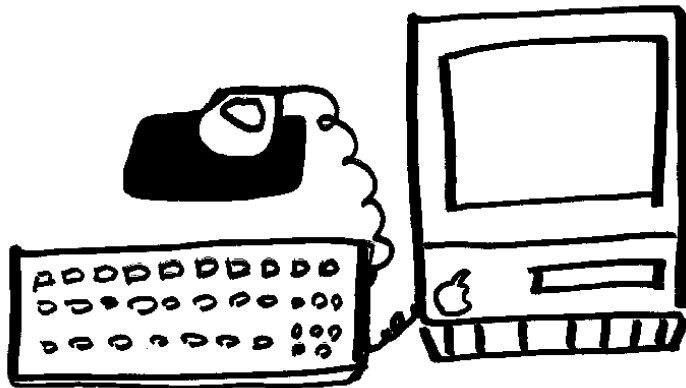
# Outline

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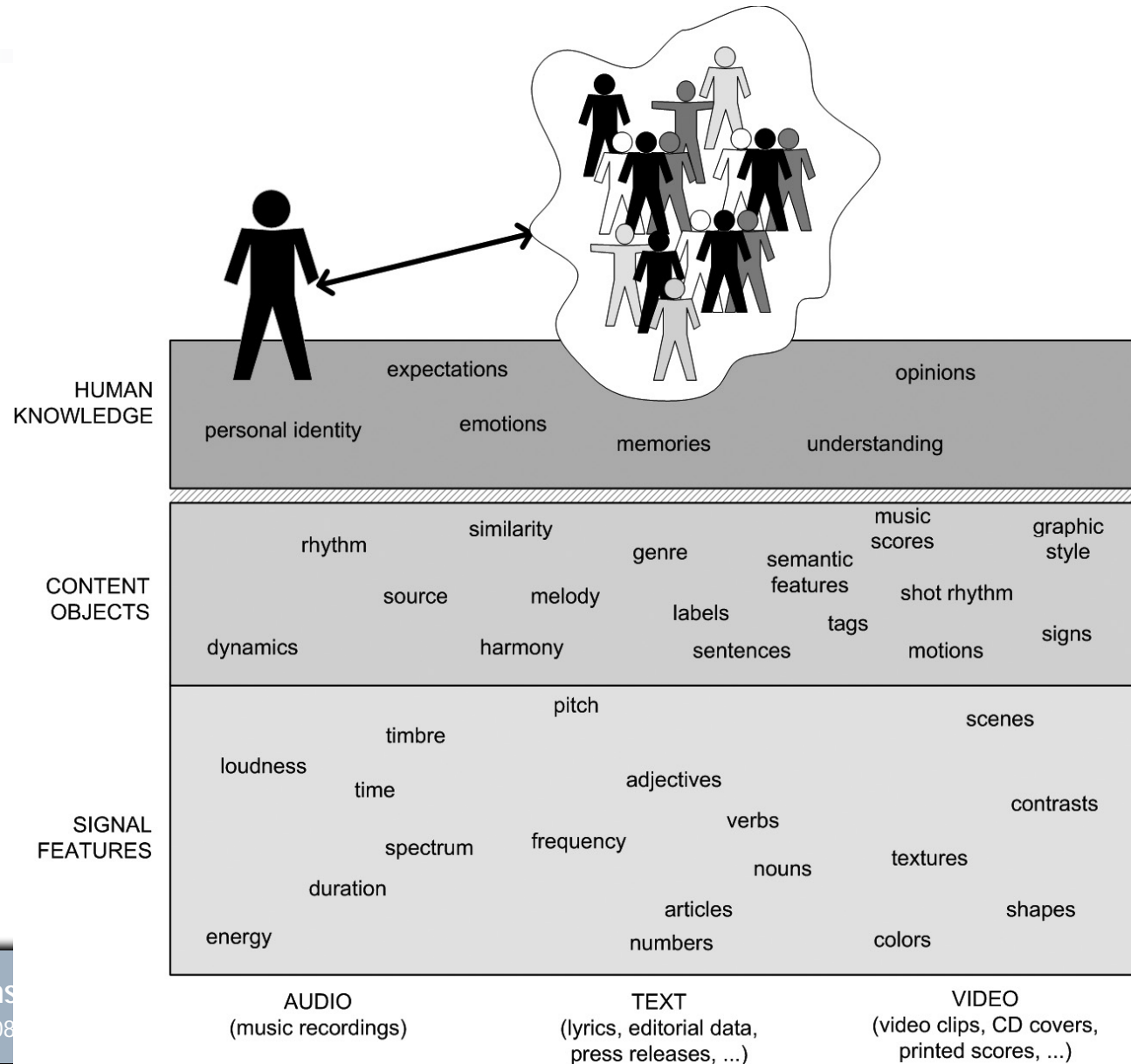
1. Introduction
  1. Music Information Plane
2. Music Use Case
  1. Interoperability problem
  2. Solution
  3. Concrete example
  4. Other possible scenarios

## Introduction. Context and motivation

- In recent years the typical music consumption behavior has changed dramatically.
- Personal music collections have grown favored by technological improvements in networks, storage, portability of devices, Internet services and peer-to-peer networks.

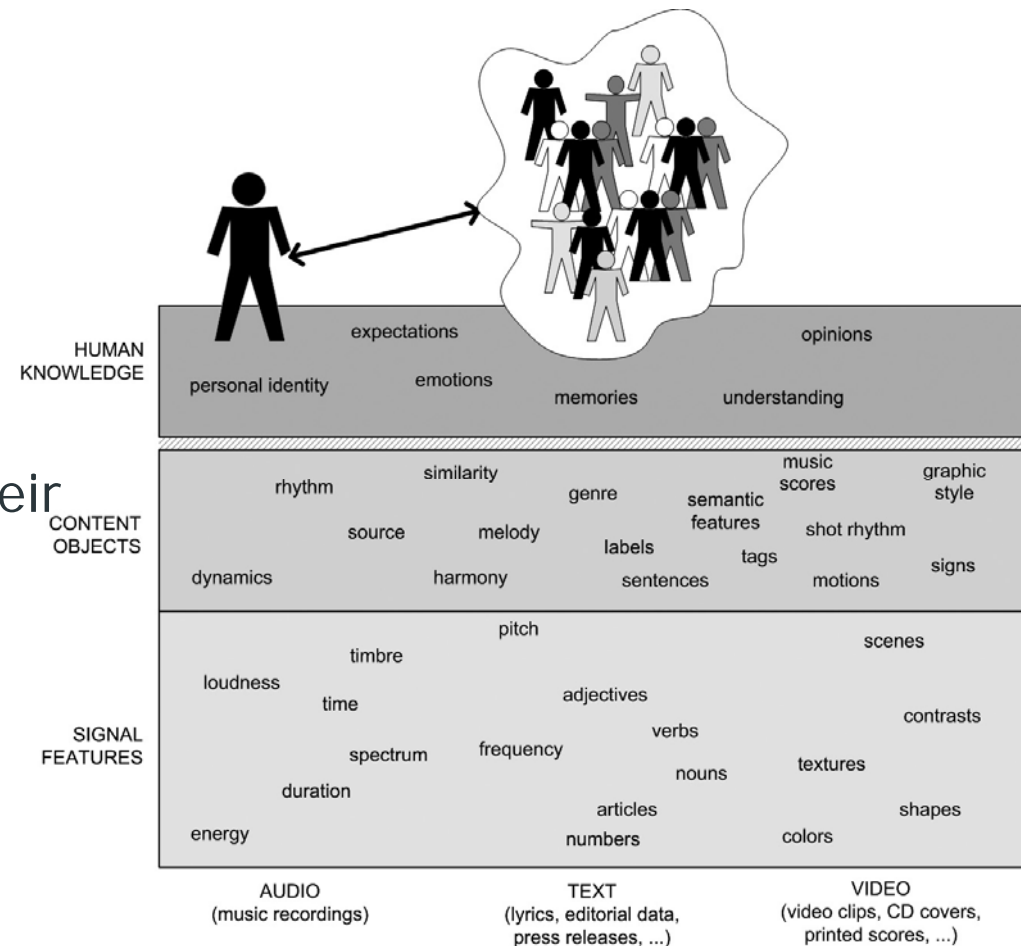


# Introduction. Music Information Plane: Describing music titles



# Introduction. Music Information Plane: Describing music titles

- Song metadata includes [Pachet, 05]
  - Editorial information
  - Acoustic information
  - Cultural information
  
- Users are represented by their profiles. Includes:
  - Demographic,
  - Geographic, and
  - Psychographic information
    - Music preferences, user listening habits, etc.



# Music Use Case

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## 1. Introduction

1. Music Information Plane

## 2. Music Use Case

1. Interoperability problem
2. Solution
3. Concrete example
4. Other possible scenarios

## Music use case. Metadata initiatives for Audio Content

- MM *standards* for describing Audio Content
  - ID3v2, <http://www.id3.org/id3v2.3.0.html>
  - OGG Vorbis, <http://www.xiph.org/vorbis/doc/v-comment.html>
    - Unstructured key/value pairs
  - APEv2, [http://en.wikipedia.org/wiki/APEv2\\_tag](http://en.wikipedia.org/wiki/APEv2_tag)
    - Unstructured key/value pairs
  - MusicBrainz Metadata Initiative 2.1, <http://musicbrainz.org/MM/>
    - RDF data (not yet supported!)

-> ID3, OGG, APE are tag based (*free* attribute value pairs)  
-> All these approaches focus on editorial information
- Audio Ontologies (OWL)
  - Kanzaki, <http://www.kanzaki.com/ns/music>
    - describe classic music performances
  - Music Production, <http://moustaki.xtr3m.org/musicont/>
    - describe music production process
  - Music Recommendation, <http://foafing-the-music.iaa.upf.edu/ISWC2006>
    - describe artists, relationships, and songs (editorial, plus acoustic metadata)

## Music use case. *OGG Vorbis proposed elements*

- TITLE: Track/Work name
- VERSION: The version field may be used to differentiate multiple versions of the same track title
- ALBUM: The collection name to which this track belongs
- TRACKNUMBER: The track number of this piece if part of a specific larger collection or album
- ARTIST
- PERFORMER: The artist(s) who performed the work.
- COPYRIGHT: Copyright attribution (e.g., '1999 Jack Moffitt')
- LICENSE: License information, eg, 'All Rights Reserved', 'Any Use Permitted', a URL to a license such as a Creative Commons license
- ORGANIZATION: Name of the organization producing the track (i.e 'a record label')
- DESCRIPTION: A short text description of the contents
- GENRE: A short text indication of music genre
- DATE
- LOCATION: Location where track was recorded

## Music use case. **Solution**

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- Two general approaches
  - Integration at RDF level (song & artist instances)
  - Ontology mapping?

## Music use case. Concrete example

```
<rdf:Description rdf:about="http://www.garageband.com/artist/randycoleman">
  <rdf:type rdf:resource="&music;Artist"/>
  <music:name>Randy Coleman</music:name>
  <music:decade>1990</music:decade>
  <music:decade>2000</music:decade>
  <music:genre>Pop</music:genre>
  <music:city>Los Angeles</music:city>
  <music:nationality>US</music:nationality>
  <geo:Point>
    <geo:lat>34.052</geo:lat>
    <geo:long>-118.243</geo:long>
  </geo:Point>
  <music:influencedBy rdf:resource="http://www.coldplay.com"/>
  <music:influencedBy rdf:resource="http://www.jeffbuckley.com"/>
  <music:influencedBy rdf:resource="http://www.radiohead.com"/>
</rdf:Description>

<rdf:Description rdf:about="http://www.garageband.com/song?|pe1|S8LTM0LdsaSkaFeyYG0">
  <rdf:type rdf:resource="&music;Track"/>
  <music:title>Last Salutation</music:title>
  <music:playedBy rdf:resource="http://www.garageband.com/artist/randycoleman"/>
  <music:duration>T00:04:27</music:duration>
  <music:key>D</music:key>
  <music:keyMode>Major</music:keyMode>
  <music:tonalness>0.84</music:tonalness>
  <music:tempo>72</music:tempo>
</rdf:Description>
```

## Music use case. **Other scenarios**

- **Possible ideas/scenarios**
  - Create personalized playlists
    - > exploit song metadata (RDF), plus user profile
  - Upcoming gigs
    - > User FOAF profile (geolocation), geonames, RDF data about venues and events
  - Simplify navigation in music collections through personalized views
    - > Integrate RDF song instances into /facet
  - Semi-automatic annotation of music
    - > Link with Tagging UC
  - Semantic Podcast

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Home My Artists My Music My Playlists Logout

my artists >> similar music (beta)

- related artists ::
- similar music ::
- new releases ::
- reviews ::
- incoming gigs ::
- podcasts ::
- MP3-blogs ::
- newsfeeds ::

Automatic generation of a playlist based on (overall) audio similarity with songs:

**DEEP BLUE DAY** (Brian Eno), **SILVER MORNING** (Brian Eno), **HERESY, PT. 1** (Lustmord), **PA TANAK** (Robert Rich), **MATTA** (Brian Eno)

*(these 5 songs are at the begining of the playlist, then there are all the similar songs)*

Generate another playlist >>

4. ROBERT RICH - PA TANAK

1. BRIAN ENO - DEEP BLUE DAY
2. BRIAN ENO - SILVER MORNING
3. LUSTMORD - HERESY, PT. 1
4. ROBERT RICH - PA TANAK
5. BRIAN ENO - MATTA
6. ACCADEMIA DI MONTEGRAL, GUSTAV KUHN, MICHELE PERTUSI, ORCHESTRA E CI
7. THE FLYING BURRITO BROTHERS - WILD HORSES
8. BERLINER PHILHARMONIKER AND HERBERT VON KARAJAN - NUTCRACKER SUITE
9. THE GREEN FIELDS OF AMERICA - GAN AINM / MULHAIRES / WALSHS / THE BU
10. KING DIAMOND - INSANITY
11. LOUISA JOHN-KROL - FORTRESS
12. THE GREEN FIELDS OF AMERICA - THE KERRY JIG / SEAMUS COOLEYS / PADD
13. HARRY JAMES AND HIS ORCHESTRA - SLEEPY LAGOON
14. HAWAIIAN STYLE BAND - THE FIRST HAWAIIAN
15. VIRGIL FOX - THE PRINCE OF DENMARKS MARCH, TRUMPET VOLUNTARY IN D
16. COLLECTIVE SOUL - IN A MOMENT
17. JOHN M. - YOURE STILL HERE
18. FREEDY JOHNSTON - DOWN IN LOVE
19. THE FLYING BURRITO BROTHERS - WILD HORSES
20. RALPH VAUGHAN WILLIAMS - A SEA SYMPHONY, BEHOLD, THE SEA ITSELF
21. JAIME MURRELL - MI ALMA ANHELA ESTAR
22. FREEDY JOHNSTON - REMEMBER ME
23. JOHN M. - YOURE STILL HERE
24. JIMMY CLIFF - SITTING IN LIMBO
25. VARIOUS ARTISTS - HALLELUJAH CHORUS
26. UNCLE TUPELO - BLACK EYE
27. DAVID GRISMAN - IM MY OWN GRANDPA

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Welcome to YourNextGig!

Keywords

ZoomTo

Search

Map | Satellite | Hybrid

General | Description | Tags

**The Tabernacle**

152 Luckie St.  
Atlanta  
30303 Georgia  
United States

[No phone number yet]  
[No url yet]  
Capacity: unknown

500 ft  
200 m

Map data ©2006 TeleAtlas - Terms of Use

**Venue list:**

- [The Tabernacle](#)

[a State University](#)

YourNextGig

powered by **evdb** *upcoming.org*

**EVENT LIST:**

- 2006-11-03: [Gov't Mule](#) [\[ Artist info >> \]](#)

No tag found

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# Music use case. Other scenarios






[Basic Search](#) | [Advanced Search](#) | [/facet](#) | [Relation Search](#) | [My Collection](#) | [Tutorial \(en nl id\)](#)

[Type](#) [Title](#) [Creator](#) [Style/Period](#) [Material](#) [Location](#) [Date](#) [Subject](#) [Description](#) >>

Type	Creator	subject type	Style/Period	Constraints
Work 58	All (2798 Creator)	All (8 subject type)	All (1 Style/Period)	Work
SVCN Concept	Gogh, Vincent van 58	landscapes (represent ... 13	Post-Impressionist 19	Creator Gogh, Vincent van
AAT Concept	mw. Irmgard W. Johnson >1000	self-portraits 9		
Place	jhr. Ph.F.B. von Siebold >1000	still lifes 6		
Person	dr Brigitte Menzel >1000	portraits 6		
	Musée National du Mali >1000	townscapes (represent ... 2		
	Koninklijk Kabinet va ... >1000	cityscapes 2		
	▼ facet options	▼ facet options	▼ facet options	

▼ Results grouped by [Type](#)

**Work (58)**

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First Steps (after Mi ...

Gogh, Vincent van

Branches with Almond ...

Gogh, Vincent van

Olive Trees with the ...

Gogh, Vincent van

Trees in the Asylum G ...

Gogh, Vincent van

La chambre de Van Gog ...

Gogh, Vincent van

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## Music use case. **Other scenarios**

- Tag propagation based on audio similarity
- Aim: to semi-automatically annotate a music collection
  - Pandora example: 400 attributes, manually annotation

## Music use case. **Other scenarios**

- 1- Extract mid-level features from the audio. (i.e: beats per minute (BPM), tonality (Key and mode), timbre characteristics, etc.)
- 2- User tags his collection
- 3- The system could propose a set of tags newly incoming songs, based on audio similarity metrics
- 4- The user can accept or reject the tags proposed by the system.

## Music use case. **Other scenarios**

- Examples of music tagging (from Last.fm)
  - <http://www.audioscrobbler.net/data/webservices/>
  - <http://ws.audioscrobbler.com/1.0/tag/toptags.xml>
  - <http://ws.audioscrobbler.com/1.0/artist/U2/toptags.xml>
  - <http://ws.audioscrobbler.com/1.0/tag/Rock/topartists.xml>
  - <http://ws.audioscrobbler.com/1.0/tag/Rock/toptracks.xml>
  - <http://ws.audioscrobbler.com/1.0/user/RJ/tags.txt>



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