



DES CATALOGUES AU WEB DES DONNÉES

DOREMUS et le futur des métadonnées musicales



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ANR-14-CE24-0020

PROGRAMME

1. Convertir les données
2. Explorer les données
3. Utiliser les données
4. De DOREMUS à Schema.org

1

CONVERTIR LES DONNÉES

FICHIER
MARC

001 FRBNF139081882FR

100 \$313891295\$w.0..b.....\$aBeethoven\$mLudwig van\$d1770-1827

144 \$w....b.fre.\$aSonates\$bPiano\$pOp. 27, no 2\$tDo dièse mineur

LANG

TITRE

MOP

OPUS

TONALITÉ

FICHIER
MARC

001 FRBNF139081882FR

100 \$313891295\$w.0..b.....\$aBeethoven\$mLudwig van\$d1770-1827

144 \$w....b.fre.\$aSonates\$bPiano\$pOp. 27, no 2\$tDo dièse mineur

—
NUM

—
SUB



CITÉ DE LA MUSIQUE
PHILHARMONIE DE PARIS



UNIMARC

- 2 variantes de format MARC
- choix différents pour représenter le contenu
 - “Op. 27 n. 2” - “Op. 27 no 2”



INTERMARC



Comment convertir ces données?

Règles de mapping

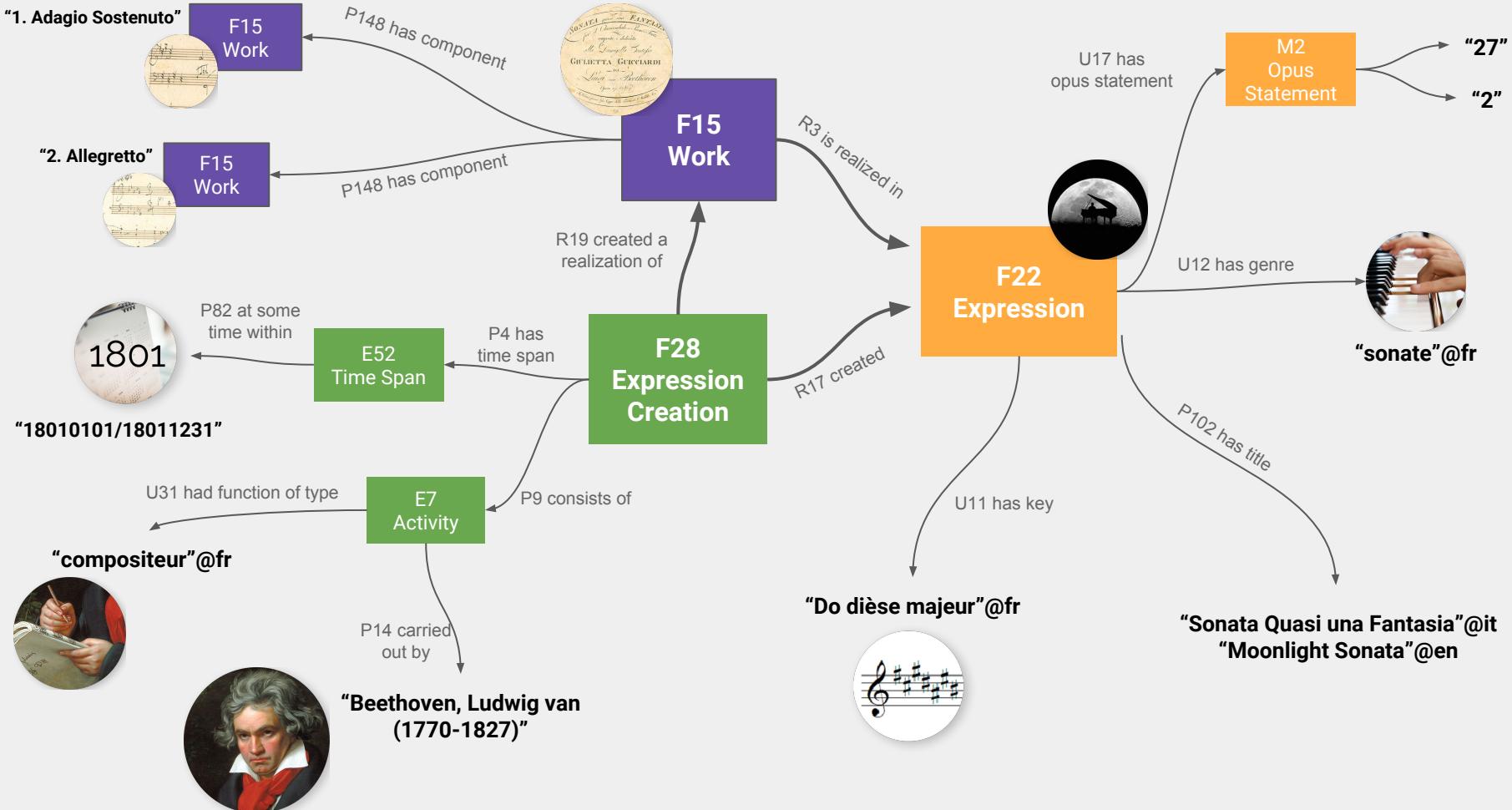
144 \$w....b.fre.\$aSonates\$bPiano\$pOp. 27, no 2\$tDo dièse mineur

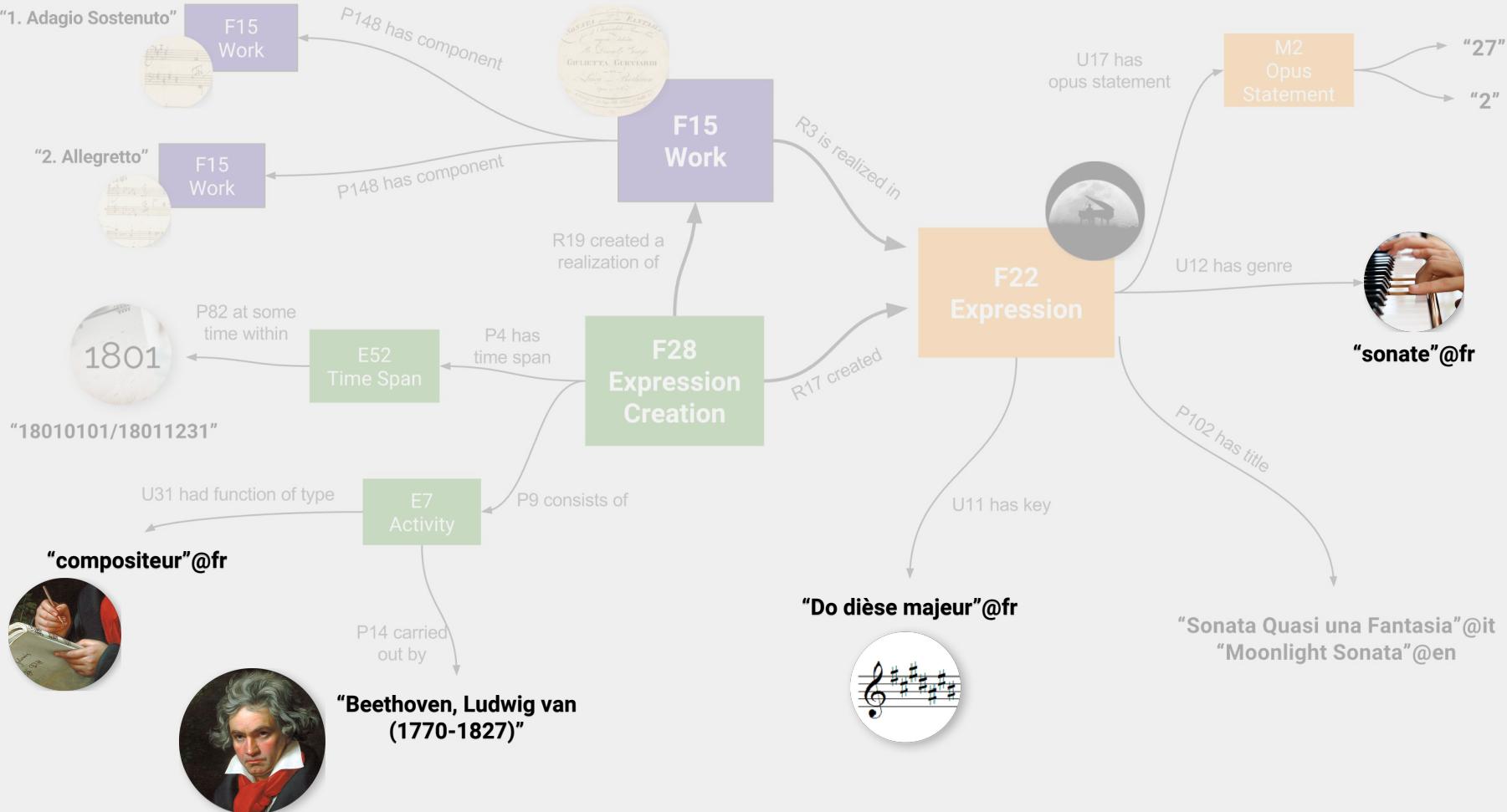
UNIT OF INFORMATION	F22 Expression: Opus Number
PATH	F22 Self-Contained Expression U17 has opus statement M2 Opus Statement [U42 has opus number M12 Opus Number] + [U43 has opus subnumber M13 Opus Subnumber]
INTERMARC BNF	TUM : 144 \$p, chain of digits TUM : 144 \$p, chain of digits before the comma
TRANSFER RULE	Remove the abbreviation "Op." before the number
EXAMPLE	144 \$pOp. 352 --> M12 = 352 144 \$pOp. 27, no 2 --> M12 = 27, M13 = 2

marc2rdf

<https://github.com/DOREMUS-ANR/marc2rdf>

```
<http://data.doremus.org/expression/d72301f0-0aba-3ba6-93e5-c4efbee9c6ea>
  a efrbroo:F22_Self-Contained_Expression ;
  mus:U10_has_order_number "14" ;
  mus:U11_has_key "Do majeur"@fr ;
  mus:U12_has_genre "sonate"@fr ;
  mus:U17_has_opus_statement [ a mus:M2_Opus_Statement ;
    mus:U42_has_opus_number "27" ;
    mus:U43_has_opus_subnumber "2" ;
    ecrm:P3_has_note "Op. 27, no 2"
  ] ;
  ecrm:P102_has_title "Quasi una fantasia" , "Au clair de lune" , "Moonlight sonata";
```





Langues différentes



“Do dièse majeur”@fr
“Do diesis maggiore”@it
“C sharp major”@en

Synonymes



“sonate”@fr
“sonatine”@fr
“sonate d'église”@fr

Désambiguïsation



Ludwig van
Beethoven



Johann van
Beethoven



Description



“compositeur”@fr
“une personne musicienne qui élabore de
la musique (source: Wikipedia)”@fr

Référentiels

RÉFÉRENTIEL
DE GENRES

<<http://data.doremus.org/vocabulary/genre/sn>> a skos:Concept ;
skos:altLabel "sonate d'église"@fr,
"sonatine"@fr,
"canzona da sonar"@it,
"sonata da camera"@it,
"sonata da chiesa"@it,
"sonatina"@it,
"suonata"@it ;
skos:prefLabel "Sonate"@de,
"sonata"@en,
"sonata"@es,
"sonate"@fr,
"sonata"@it ;
skos:topConceptOf <<http://data.doremus.org/vocabulary/genre/>> .

Référentiels

- genres

IAML, RAMEAU

- dérivations

- tonalités

- media of performances

MIMO, RAMEAU, IAML,
Hornbostel & Sachs, Radio France

- modes

- personnes et collectivités

ISNI

- lieux géographiques

- types de titres

- types de parties d'une œuvre

- catalogues

- fonctions

- Ethnic groups

CREM, RAMEAU

- Rhythrical form

- Responsibility

- ...

Certains référentiels sont déjà en ligne

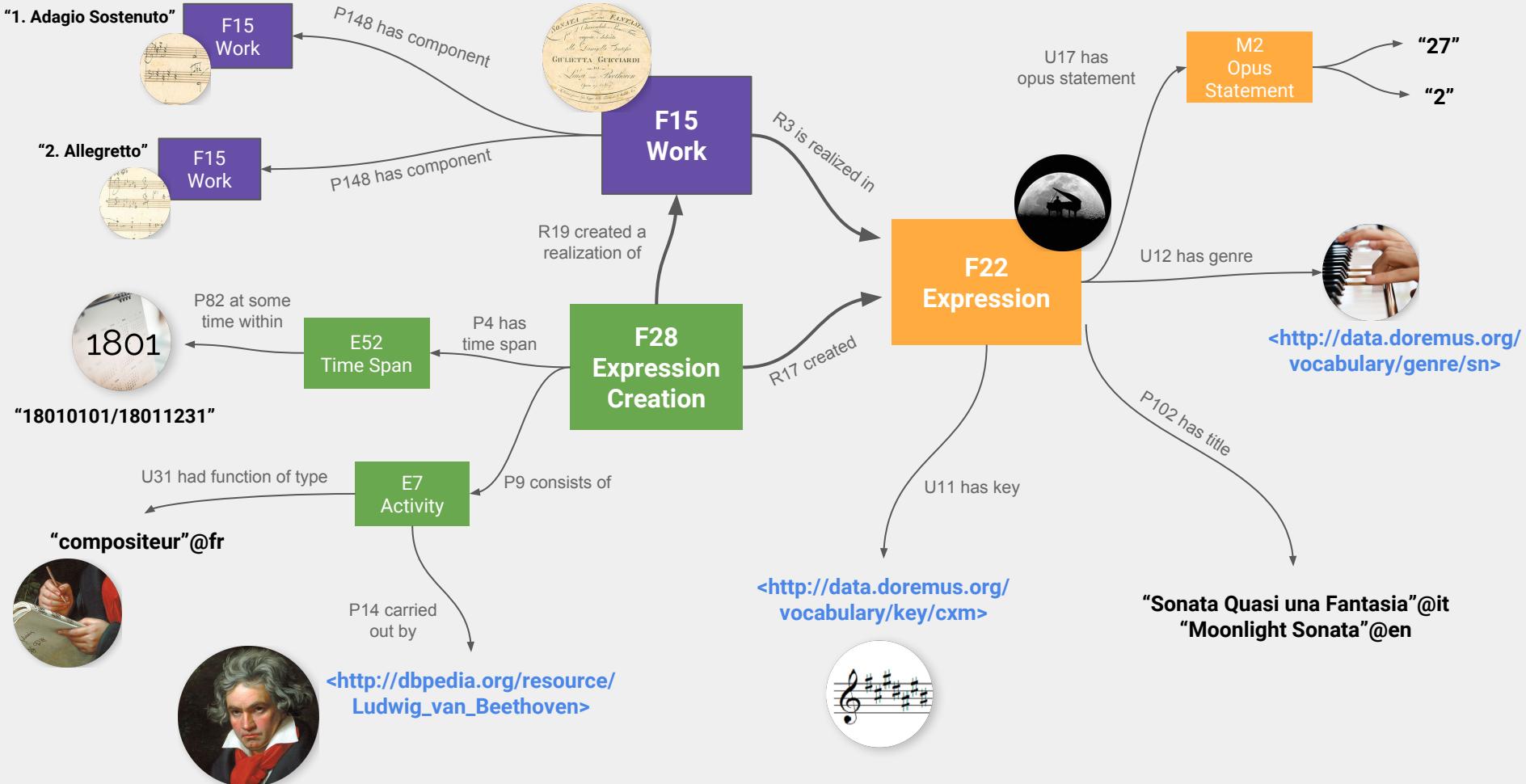
<https://github.com/DOREMUS-ANR/knowledge-base>

mus:U12_has_genre "sonate"@fr



STRING2URI

mus:U12_has_genre <<http://data.doremus.org/vocabulary/genre/sn>>



A photograph of a library aisle showing multiple white bookshelves filled with books. The books are organized by color, with many spines being yellow or blue. The titles on the visible books include "FASCISTS", "GLOBAL SHIFT", "THE BEST SOUNDS", "THE POLITICAL HISTORY OF MARXISM", and "THEORY AND PRACTICE".

2

EXPLORER LES DONNÉES

data.doremus.org



SPARQL Endpoint

Virtuoso SPARQL Query Editor

[About](#) | [Namespace Prefixes](#) | [Inference rules](#)

Default Data Set Name (Graph IRI)

Query Text

```
select * where { ?s ?p ?o }
```

<http://data.doremus.org/sparql>

(Security restrictions of this server do not allow you to retrieve remote RDF data, see [details](#).)

Results Format:

HTML

Execution timeout:

0 milliseconds (values less than 1000 are ignored)

Options:

Strict checking of void variables Log debug info at the end of output (has no effect on some queries and output formats)

(The result can only be sent back to browser, not saved on the server, see [details](#))

[Run Query](#) [Reset](#)

donnez-moi la liste des **titres**
de toutes les **sonates**
composées par **Beethoven**



?titre

SPARQL Endpoint

QUERY
SPARQL

PREFIX ecrm: <http://erlangen-crm.org/current/>
PREFIX efrbroo: <http://erlangen-crm.org/efrbroo/>
PREFIX mus: <http://data.doremus.org/ontology#>

```
SELECT ?title
FROM <http://data.doremus.org/>
WHERE {
    ?expression a efrbroo:F22_Self-Contained_Expression ;
        ecrm:P102_has_title ?title;
        mus:U12_has_genre <http://data.doremus.org/vocabulary/genre/sn> .
    ?expCreation efrbroo:R17_created ?expression ;
        ecrm:P9_consists_of ?activity .
    ?activity ecrm:P14_carried_out_by ?person .
    ?person ecrm:P1_is_identified_by "Beethoven, Ludwig van(1770-1827)".
}
```

RESULTS

title
"3 sonates"
"Hammerklavier"
"Pathétique"
"Grande sonate pathétique"
"Sonate pathétique"
"2 sonates"
"3 sonates"
"La primavera"
"Frühlingssonne"
"Spring sonata"
"Le printemps"
"Quasi una fantasia"
"Sonata quasi una fantasia"
"Sonata quasi una fantasia"
"Clair de lune"
"Mondschein-Sonate"
"Sonate Clair de lune"
"Quasi una fantasia"
"Sonate au clair de lune"
"Moonlight sonata"
"Pastorale"
"Sonate pastorale"
"Sonates (3)"
"3 sonates"
"The tempest"
"La tempête"
"Der Sturm"
"L'aurore"
"Waldstein-Sonate"
"Sonata appassionata"
"Appassionata"
"Sonate à Thérèse"
"À Thérèse"
"Les adieux, l'absence et le retour"

Navigateur à facettes



Text Search

Entity Label Lookup

Entity URI Lookup

[Featured](#) | [Demo Queries](#) | [About](#)

Precision Search & Find

Search Text

Hint: You can [add this engine](#) in search bar of an OpenSearch - capable browser

Faceted Search & Find service v1.13.91 as of Jul 29 2016



[OpenLink Virtuoso](#) version 07.20.3217 as of Jul 29 2016, on Linux (x86_64-unknown-linux-gnu), Single-Server Edition (62 GB total memory)

Data on this page is owned by its respective rights holders.

Virtuoso Faceted Browser Copyright © 2009-2016 OpenLink Software

<http://data.doremus.org/fct>

About: <http://data.doremus.org/expression/d72301f0-0aba-3ba6-93e5-c4efbee9c6ea>[Goto Sponge](#)[NotDistinct](#)[Permalink](#)An Entity of Type : http://erlangen-crm.org/efrbroo/F22_Self-Contained_Expression, within Data Space : data.doremus.org associated with source [document\(s\)](#)Type: http://erlangen-crm.org/efrbroo/F22_Self-Contained_Expression Command: [Start New Facet](#) [Go](#)**Attributes**[rdf:type](#)**Values**http://erlangen-crm.org/efrbroo/F22_Self-Contained_Expression[U17 has opus statement](#)[nodeID://b22456](#)[U11 has key](#)[Do diesis minore](#)[http://erlangen-cr...ent/P67_refers_to](#)<http://data.doremus.org/expression/d72301f0-0aba-3ba6-93e5-c4efbee9c6ea/dedication>[U13 has casting](#)<http://data.doremus.org/expression/d72301f0-0aba-3ba6-93e5-c4efbee9c6ea/casting/1>[U12 has genre](#)[sonata](#)[http://erlangen-cr...nt/P102_has_title](#)

Sonate Clair de lune
Clair de lune
Quasi una fantasia
Sonata quasi una fantasia
Moonlight sonata
[»more»](#)

[U10 has order number](#)

14

is [http://erlangen-cr...P165_incorporates](#) of <http://data.doremus.org/publication/d85fd2e1-d36c-3395-9edb-24934f629396>is [http://erlangen-cr...rbroo/R17_created](#) of <http://data.doremus.org/event/3f9d2fae-da75-3c66-902d-fa3a0755d892>is [http://erlangen-cr...R9_is_realised_in](#) of <http://data.doremus.org/work/30256b51-d277-3688-ad62-560ae982ff2f>is [http://erlangen-cr...broo/R51_assigned](#) of <http://data.doremus.org/event/a86a5fa5-741c-39ff-8192-7fe64efe969d>is [http://erlangen-cr...tative_expression](#) of <http://data.doremus.org/work/bde624b9-ae05-3ce5-b8db-67f6fa133d85>

URIs Déréférençables



<http://data.doremus.org/vocabulary/genre/sn>



Screenshot of the Doremus RDF Data Browser showing the genre/sn vocabulary page. The page displays various attributes and their values, such as 'name' (sonata), 'type' (classical music), and 'example' (Sonata No. 14 in C major by Beethoven).

ressources

URIs

pages



<http://data.doremus.org/expression/d72301f0-0aba-3ba6-93e5-c4efbee9c6ea>

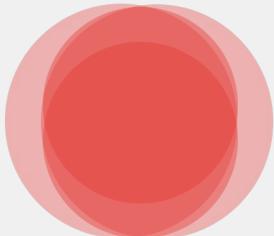


Screenshot of the Doremus RDF Data Browser showing the expression page for the piano sonata. It lists various properties and their values, including 'label' (Sonate à piano en ut majeur, op. 14, n° 1 de Ludwig van Beethoven), 'type' (Score), and 'hasPart' (multiple entries for measures 1 through 30).



3

UTILISER LES DONNÉES



OVERTURE

BY DOREMUS.ORG

<http://overture.doremus.org>

source <https://github.com/DOREMUS-ANR/overture>



Discover the catalog of DOREMUS

Explore the Expressions



OVERTURE allows you to explore a thematic corpus of data about the works of Ludwig van Beethoven and Henry Dutilleux. This data is also available in our triplestore at data.doremus.org/sparql.

Title**Key**

All keys

Genre

All genres

Beethoven, Ludwig van(1770-1827)
7 variations

Beethoven, Ludwig van(1770-1827)
Nei campi e nelle selve

Beethoven, Ludwig van(1770-1827)
They bid me slight my Dermot dear

Vidal, Paul(1863-1931)
Cantique

Beethoven, Ludwig van(1770-1827)
Musique pour piano

Beethoven, Ludwig van(1770-1827)
The fair maid of Mona

Beethoven, Ludwig van(1770-1827)
Das Schöne zu dem Guten

Beethoven, Ludwig van(1770-1827)
FidelioActe 1, FinaleChor der Gefangenen

Beethoven, Ludwig van(1770-1827)

Beethoven, Ludwig van(1770-1827)

Corigliano, John(1938-....)

Beethoven, Ludwig van(1770-1827)

Title**Key**

All keys

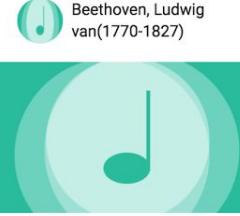
Genre

sonata



Tansman,
Alexandre(1897-
1986)

Sonatine
transatlantique



Beethoven, Ludwig
van(1770-1827)

Sonate à Thérèse



Beethoven, Ludwig
van(1770-1827)

Sonatinas



Beethoven, Ludwig
van(1770-1827)

La primavera



Beethoven, Ludwig
van(1770-1827)

Quasi una
fantasia



Beethoven, Ludwig
van(1770-1827)

Pathétique



Beethoven, Ludwig
van(1770-1827)

Kurfürstensonaten

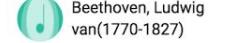


Manoury,
Philippe(1952-...)

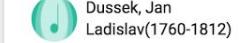
Veränderungen



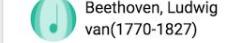
Beethoven, Ludwig
van(1770-1827)



Beethoven, Ludwig
van(1770-1827)



Dussek, Jan
Ladislav(1760-1812)



Beethoven, Ludwig
van(1770-1827)



Sonate Clair de lune

Clair de lune,Quasi una fantasia,Sonata quasi una fantasia,Moonlight sonata,Mondschein-Sonate,Sonate au clair de lune

Key C sharp Minor, C-sharp Minor**Genre** sonata**Opus** Op. 27, no 2**Composer** Beethoven, Ludwig van(1770-1827)**Casting**

► piano



Tansman,
Alexandre(1897-
1986)

Sonatine
transatlantique

Beethoven, Ludwig
van(1770-1827)

Sonate à Thérèse



Beethoven, Ludwig
van(1770-1827)

Sonatinas



Beethoven, Ludwig
van(1770-1827)

La primavera



Beethoven, Ludwig
van(1770-1827)

Quasi una



Beethoven, Ludwig
van(1770-1827)

Poétique



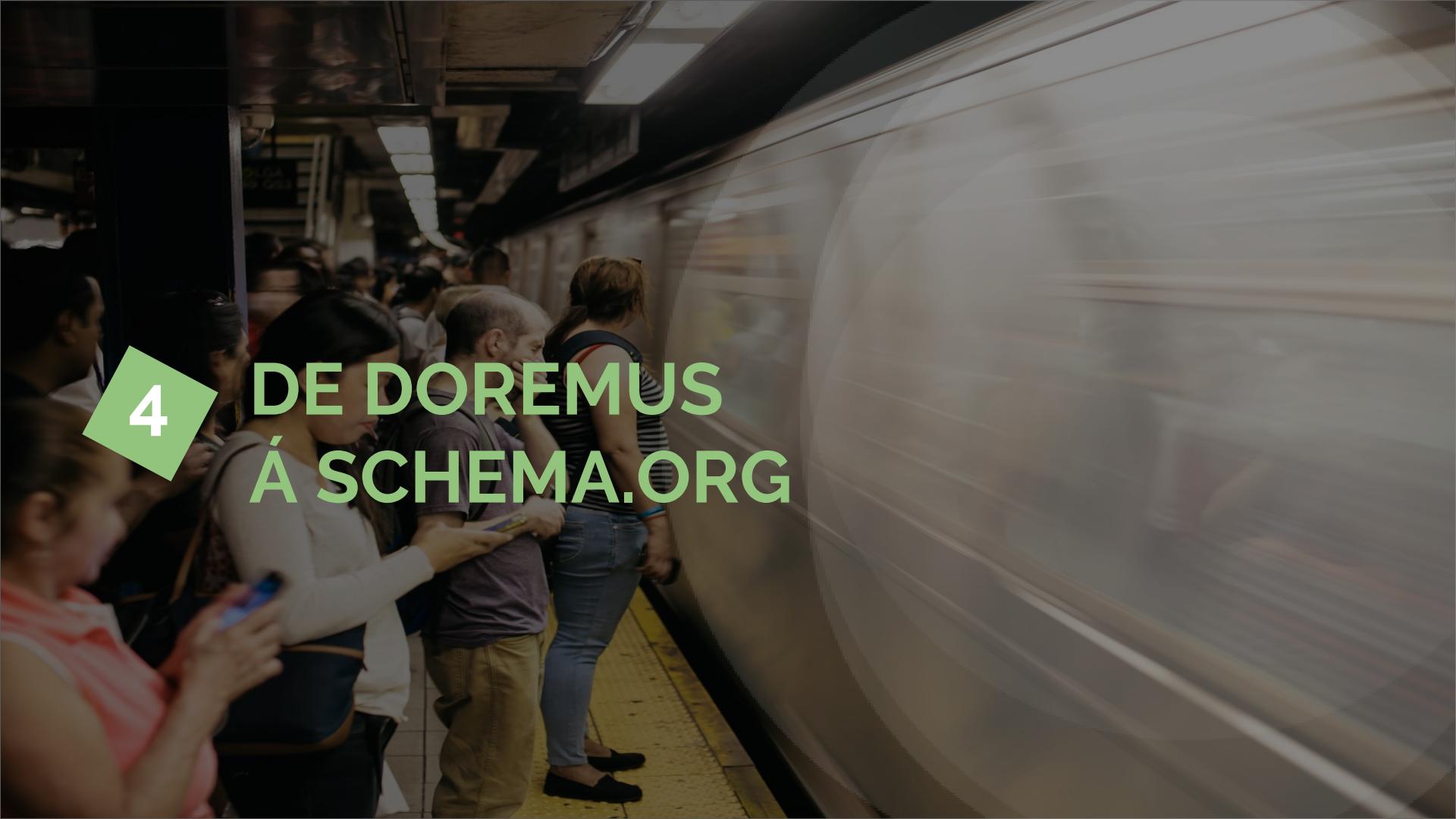
Beethoven, Ludwig
van(1770-1827)

Kurfürstensonaten



Manoury,
Philippe(1952....)

Veränderungen

A photograph of a subway platform. In the foreground, several people are standing on the platform, some looking at their phones. A train is moving quickly, creating a significant blur effect on the right side of the frame. The platform has yellow tactile paving. The overall atmosphere is one of urban transit.

4

DE DOREMUS
Á SCHEMA.ORG

Environ 9 060 000 résultats (0,64 secondes)



Queen - Bohemian Rhapsody (Official Video) - YouTube

<https://www.youtube.com/watch?v=fJ9rUzIMcZQ>

Paroles : Is this the real life? / Is this just fantasy? / Caught in a landslide / No escape from reality...

Paroles complètes sur Google Play Musique

Artiste : Queen

Album : A Night at the Opera

Date de sortie : 1975

Distinctions et récompenses : MTV Video Music Award de la meilleure vidéo extraite d'un film, plus...

Autres enregistrements de ce titre

Bohemian Rhapsody

Panic! at the Disco · 2016



Bohemian Rhapsody

Elton John, Axl Rose · 1992



Bohemian Rhapsody

Sam Tsui, Madilyn Bailey, Kurt Hugo Schneider, ... · 2015



En savoir plus sur Bohemian Rhapsody

Environ 135 000 résultats (0,59 secondes)

**Beethoven - Sonate au Clair de Lune - YouTube**<https://www.youtube.com/watch?v=Bmwkx0tSvKc>**Compositeur : Ludwig van Beethoven****Genres :** Cocktail/Lounge, Easy listening, Musique classique, New age, Musiques du monde, Musique pour enfants, Pop**Recherches associées**[Voir d'autres éléments \(plus de 10\)](#)**River Flows
in You**
Yiruma**Nocturne in E Flat, Op.
9, No. 2**
Frédéric
Chopin**Kiss the
Rain**
Yiruma**Beethoven's
Silence**
Ernesto
Cortázar II**Moonlight
Sonata,
Mvt. 1**
Ludwig van
Beethoven**Sonata
Claro De
Luna**
Ludwig van
Beethoven

Moins

Commentaires

[Au Clair de Lune - Beethoven - piano - Moonlight Sonata - piano ...](#)[Sonate au Clair de Lune](#)<https://www.youtube.com/watch?v=TesdiZ7LMqs>

Environ 234 000 résultats (0,34 secondes)

Beethoven - Sonata Quasi una Fantasia (op. 27, 2) 'Moonlight' - I ...



<https://www.youtube.com/watch?v=oeTlrEUNQ7k> ▾

11 mai 2010 - Ajouté par fireb0rn

Beethoven - Sonata Quasi una Fantasia (op. 27, 2) 'Moonlight' - I. fireb0rn ...

► 6:04

Sonate quasi una fantasia, op. 27 no. 2, de Ludwig van Beethoven ...



<https://www.youtube.com/watch?v=uzXRvuNHfyl> ▾

6 sept. 2011 - Ajouté par Anne-Marie Dubois

(English version below) Pianiste: Anne-Marie Dubois Extrait du film Romantisme au piano, co-produit par Les ...

► 4:28

Beethoven, Sonata para piano Nº 14 "Quasi una fantasia" Op.27 Nº 2 ...



https://www.youtube.com/watch?v=3MsZYfU7_p8 ▾

17 avr. 2013 - Ajouté par Publio Ovidio

Ludwig van Beethoven (1770-1827) Sonata para piano Nº 14 en Do♯ menor "Quasi una fantasia" ...

► 17:26

Sonate pour piano n° 13 de Beethoven — Wikipédia

https://fr.wikipedia.org/wiki/Sonate_pour_piano_n%2013_de_Beethoven ▾

La Sonate pour piano n° 13 en mi bémol majeur, opus 27 n° 1, de Ludwig van Beethoven, fut composée entre 1800 et 1801, publiée en 1802 et dédiée au Prince Lichnowsky. Comme la Sonate n° 14, avec laquelle elle partage le numéro d'opus 27, elle est intitulée « Sonate quasi una fantasia », ce qui indique qu'elle ne suit ...

Sonate pour piano n° 14 de Beethoven — Wikipédia

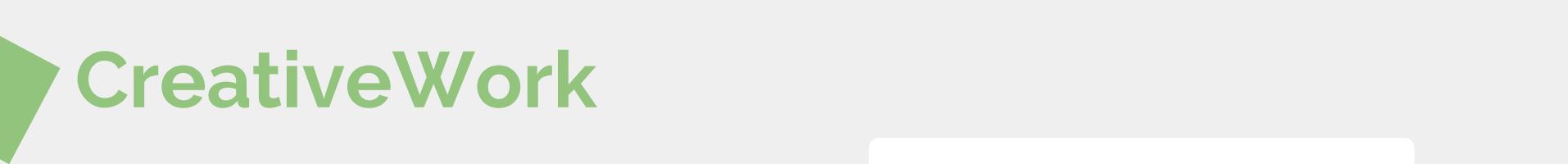
https://fr.wikipedia.org/wiki/Sonate_pour_piano_n%2014_de_Beethoven ▾

Sonata quasi una fantasia. Per il Clavicembalo o Piano-forte. Alle Damigella Contessa GIULIETTA GUICCIARDI —.DA.— Luigi van Beethoven Opera 27. N° 2 » ...

Piano Sonata No. 14 (Beethoven) - Wikipedia

[https://en.wikipedia.org/wiki/Piano_Sonata_No._14_\(Beethoven\)](https://en.wikipedia.org/wiki/Piano_Sonata_No._14_(Beethoven)) ▾ Traduire cette page

The Piano Sonata No. 14 in C-sharp minor "Quasi una fantasia", Op. 27, No. 2, popularly known as



- name
- description
- author
- citation
- genre
- locationCreated
- dateCreated
- isBasedOn
- workExample/exampleOfWork
- hasPart/isPartOf
-

MusicComposition

- composer
- lyricist
- firstPerformance
- musicArrangement
- musicCompositionForm
- musicalKey

MusicRecording

- duration
- inAlbum

MusicEvent

- actor
- location
- startDate - endDate
- workPerformed



DOREMUS (FRBRoo)



Comment faire le mapping?

- richesse
- détail
- spécificité

- immédiateté
- vue d'ensemble
- généricté



Schema.org



Recettes

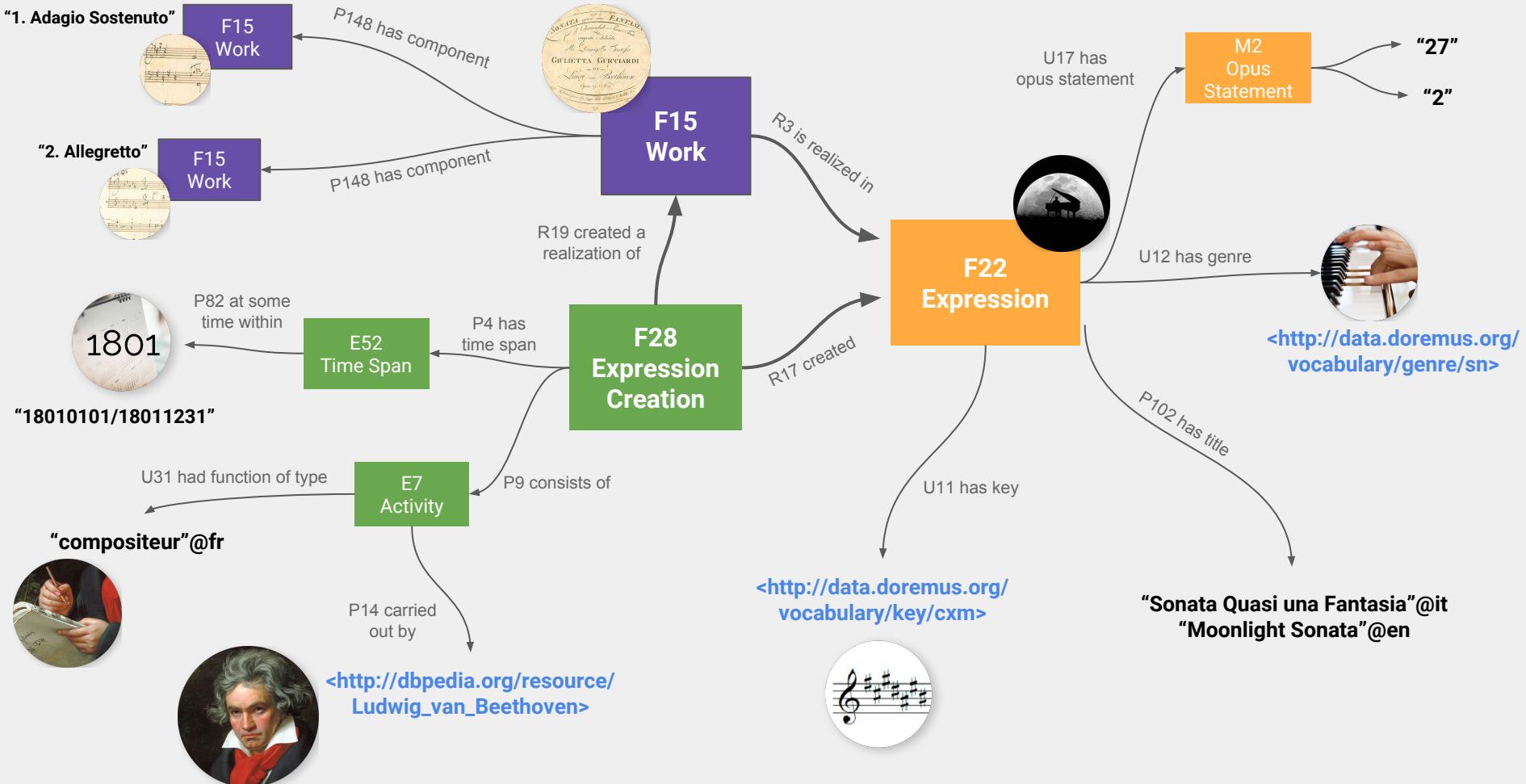
PAPER

P. Lisena, R. Troncy

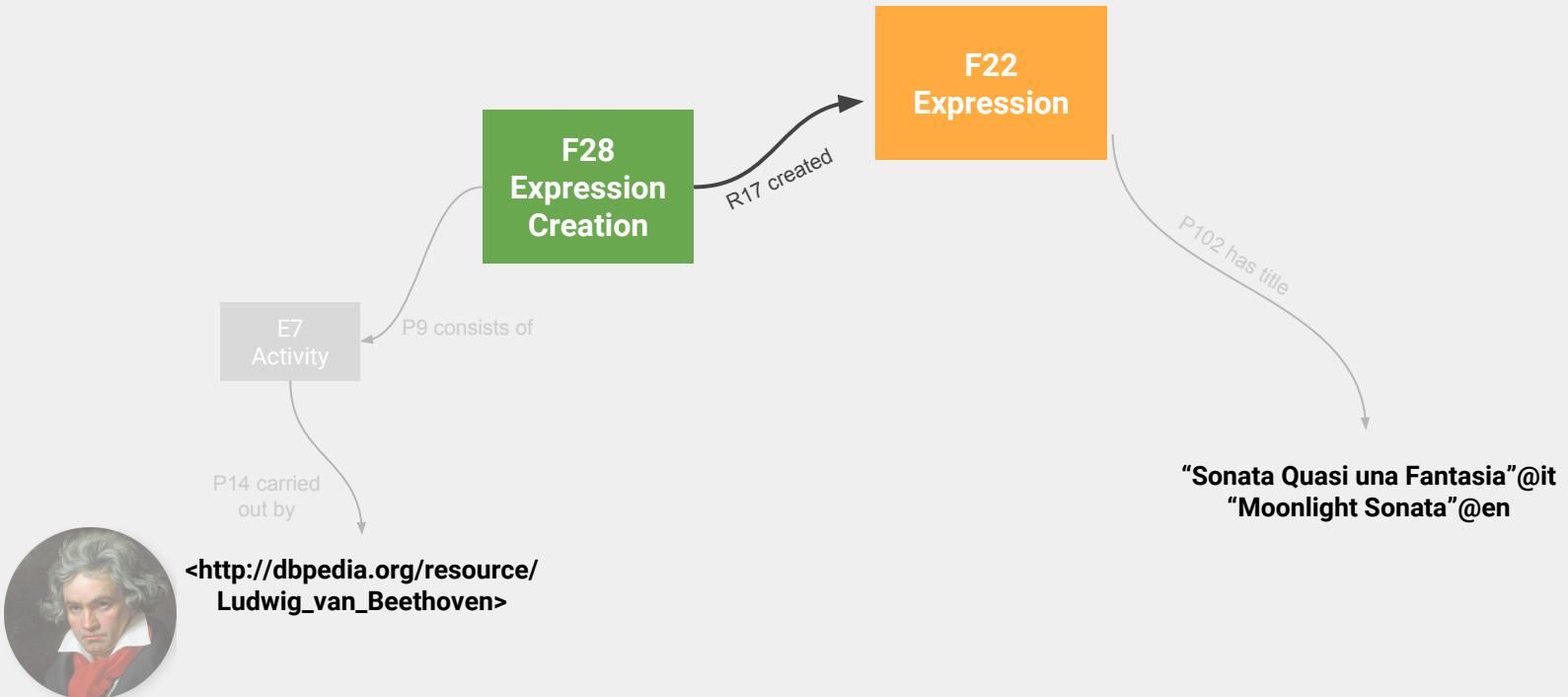
DOREMUS to Schema.org: Mapping a Complex Vocabulary to a Simpler One

*20th International Conference on Knowledge
Engineering and Knowledge Management,
19-23 November, Bologna*





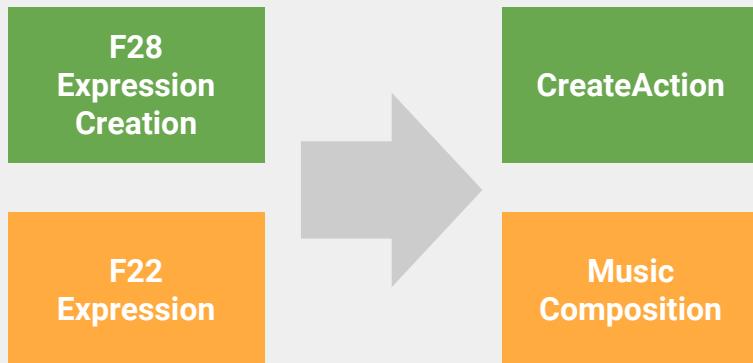
1. Choisir le(s) nœud(s) de départ



1. Choisir le(s) nœud(s) de départ

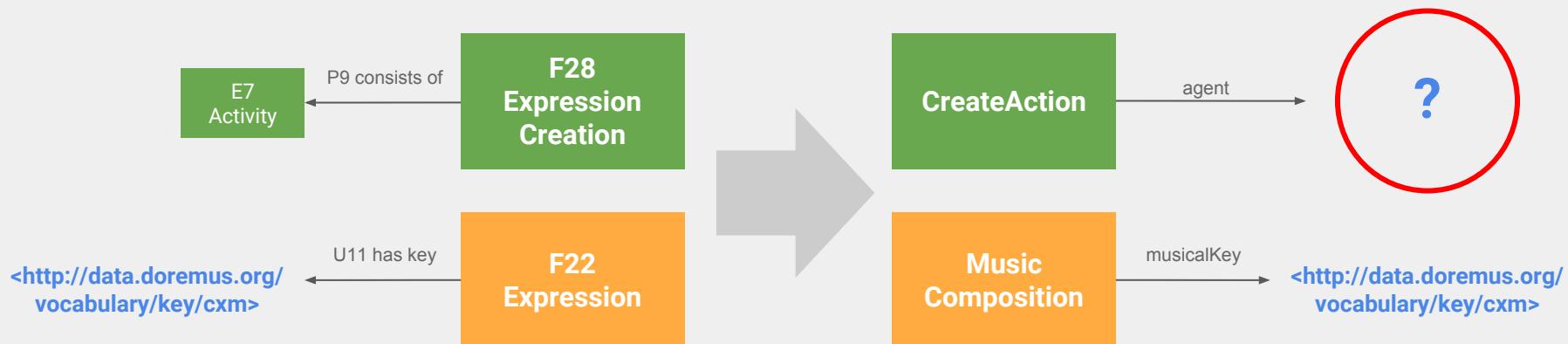
2. Identifier les classes similaires

- A. Noms similaires
mus:F28 ExpressionCreation → sdo: CreateAction.
- B. Descriptions similaires
- C. Propriétés similaires
mus:F2 Expression U11 has key → sdo:MusicComposition.musicalKey
- D. Propriétés avec des valeurs attendues similaires
mus: U12 has genre et sdo:musicCompositionForm ont "sonates" comme valeur possible



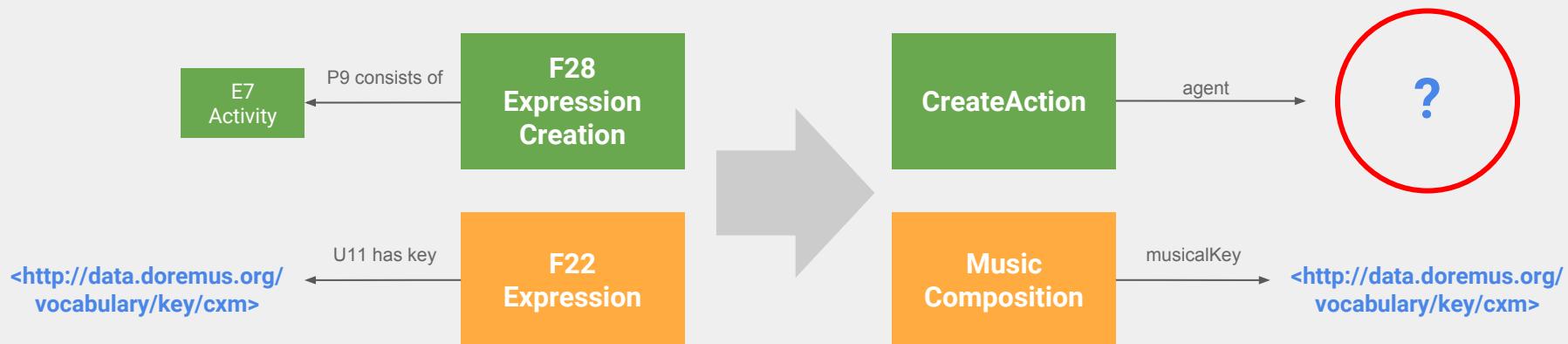
1. Choisir le(s) nœud(s) de départ
2. Identifier les classes similaires
3. Identifier les propriétés similaires

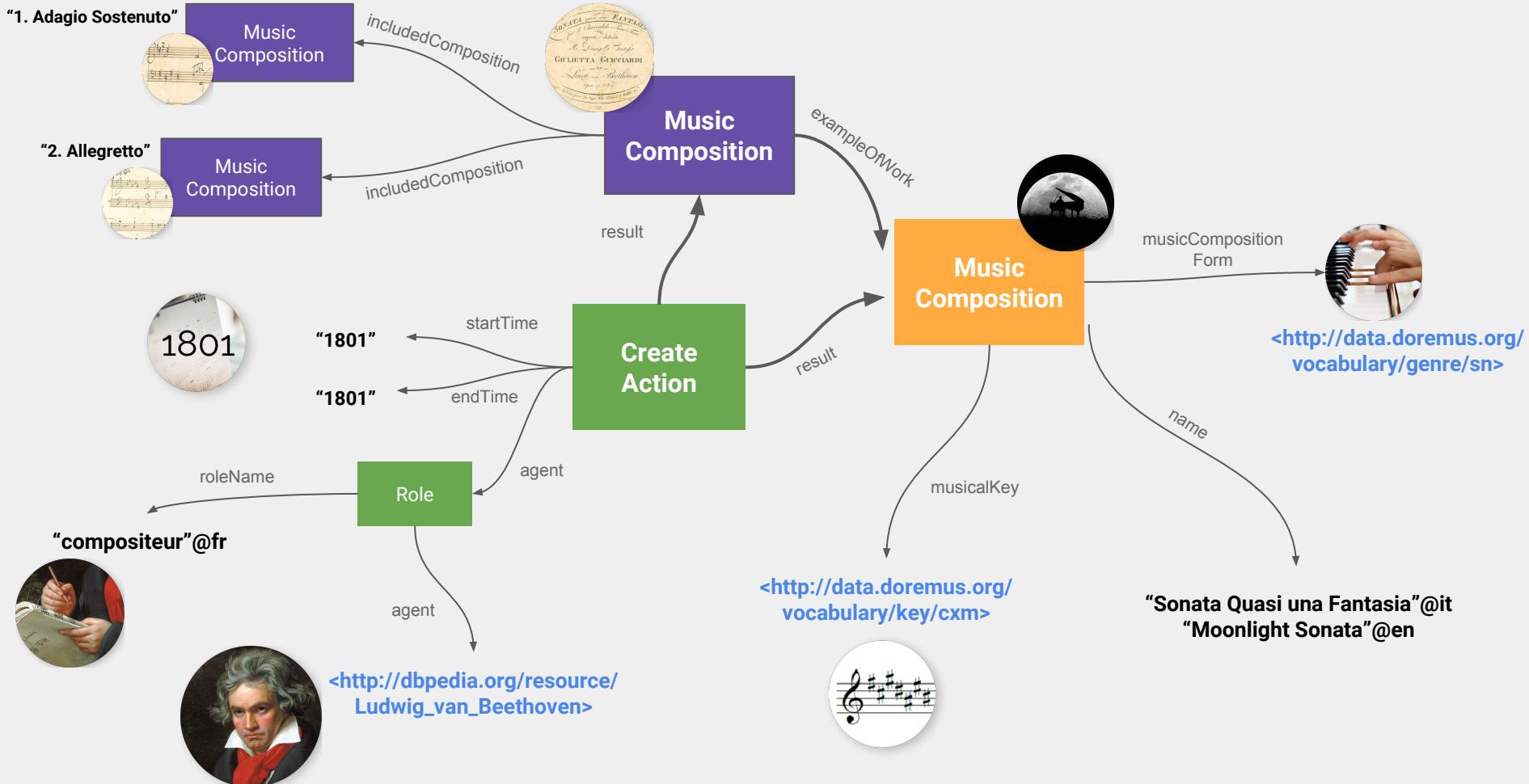
- A. Noms similaires
mus:U11 has key → sdo:musicalKey
- B. Descriptions similaires
- C. Valeurs attendues similaires
mus: U12 genre et sdo:musicCompositionForm ont “sonates” comme valeur possible

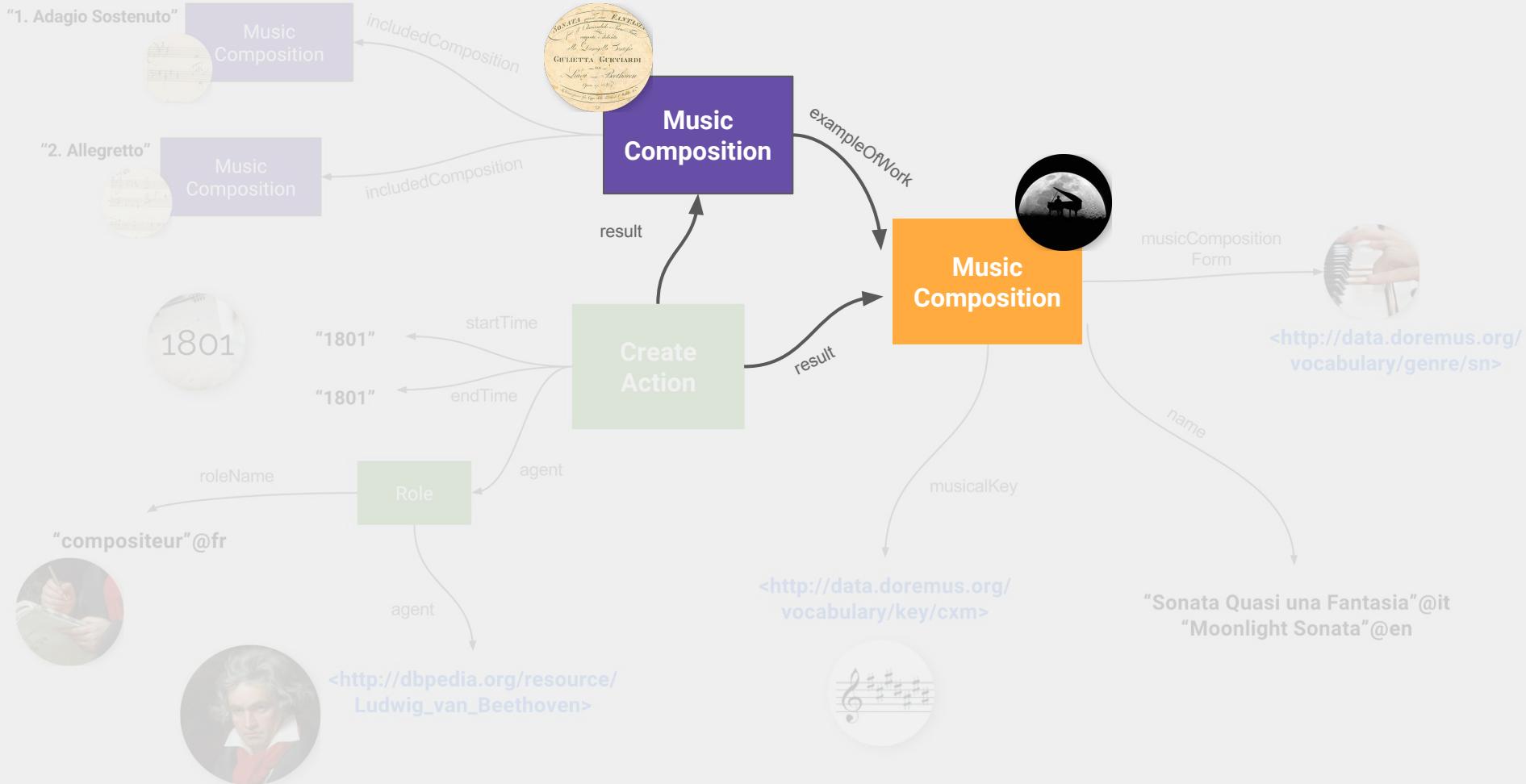


- 1. Choisir le(s) nœud(s) de départ
- 2. Identifier les classes similaires
- 3. Identifier les propriétés similaires

} itérer ce 2 points
jusqu'à ce que chaque noeud soit atteint

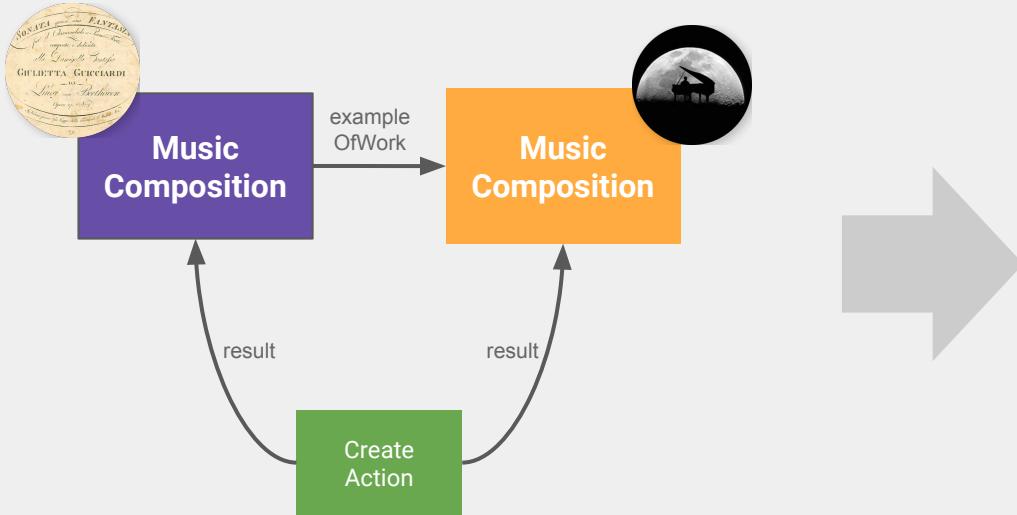


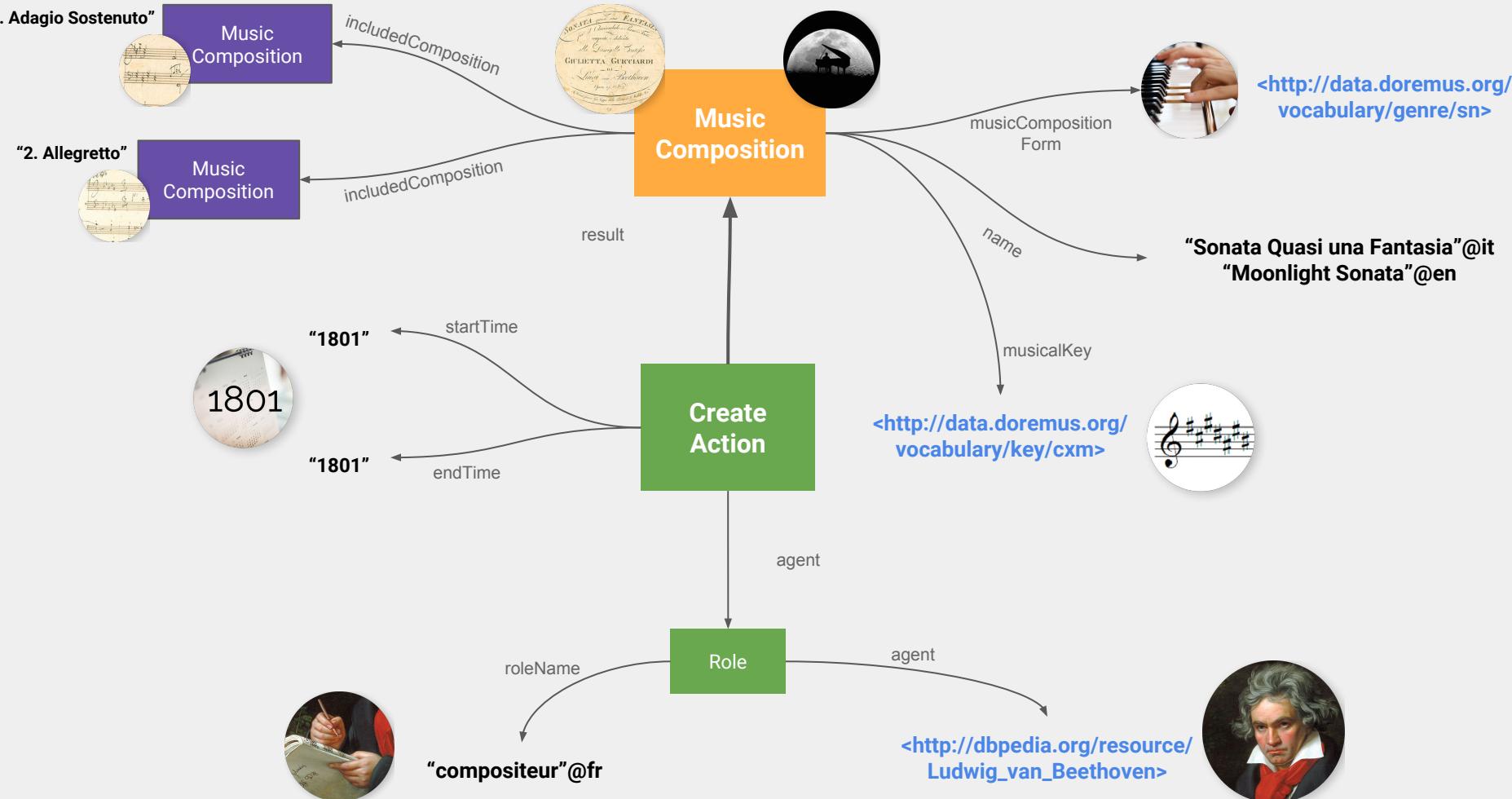


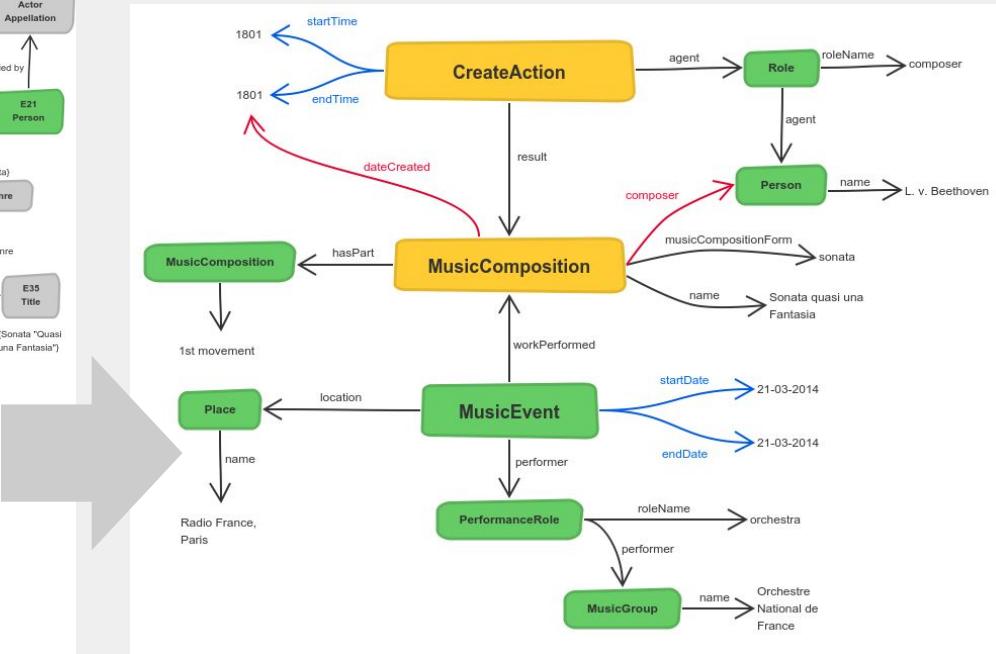
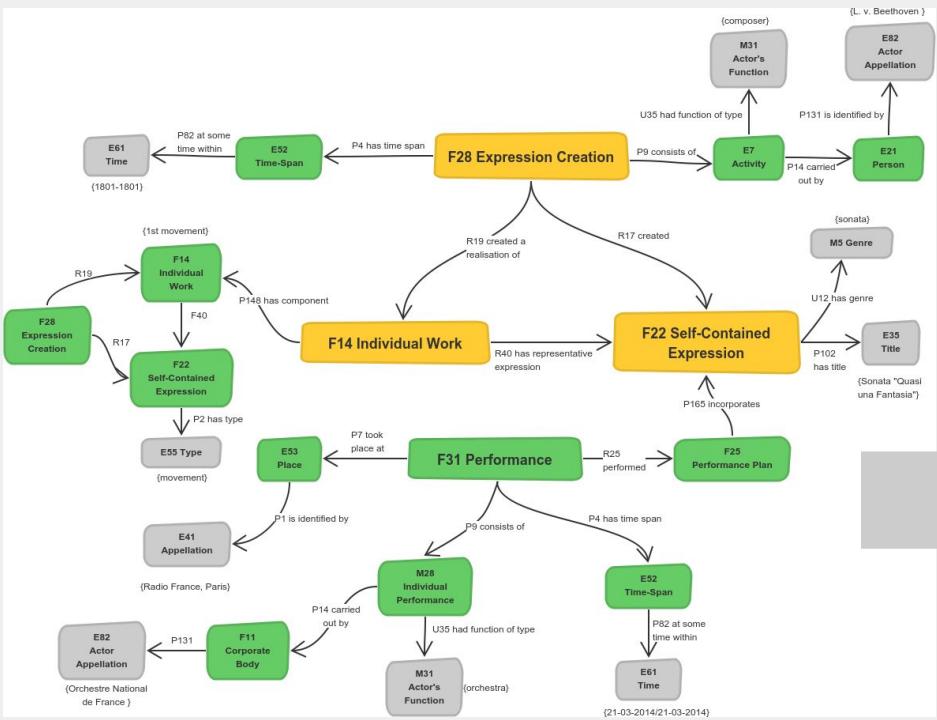


1. Choisir le(s) nœud(s) de départ
2. Identifier les classes similaires
3. Identifier les propriétés similaires
4. Simplifier le graphe

- A. Même classe ou une superclasse en commun
- B. Les connexions à la même classe sont effectuées avec la même propriété
- C. Ils sont liés entre eux
- D. Pas de propriétés en conflit
Ils ne peuvent pas avoir des noms ou des clés différents.







schema-visualizer

demo: <https://doremus-anr.github.io/schema-visualizer>

source code: <https://github.com/DOREMUS-ANR/schema-visualizer>

Schema.org Visualizer

BETA

Paste JSON-LD here

```
{"@context":"http://schema.org","@id":"http://data.doremus.org/Self_Co  
ntained_Expression/F22/3908d595-bf99-46ca-bd29-  
19af260e8116","@type":"MusicComposition","name":"Sonata quasi una  
Fantasia","alternateName":["Sonate au clair de lune","Clair de  
lune","Sonate no 14 en do dièse mineur"],"mentions":"Contesse  
Giulietta","musicalKey":"Do dièse  
mineur","musicCompositionForm":"sonate","timeRequired":"PT16M","desc  
ription":"opus 27, n°2","genre":"Musique Romantique","composer":  
{"@id":"http://data.doremus.org/composer/beethoven"},"locationCreated":  
{"@type":"Place","name":"Vienne"},"dateCreated":"1801","hasPart":  
[{"@type":"MusicComposition","name":"1. Adagio  
sostenuto","musicalKey":"do dièse mineur"},  
 {"@type":"MusicComposition","name":"2. Allegretto","musicalKey":"ré  
bémol majeur"}, {"@type":"MusicComposition","name":"3. Presto  
agitato","musicalKey":"do dièse mineur"}],  
{"@context":"http://schema.org","@id":"http://data.doremus.org/Expressi  
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19af263738465","@type":"CreateAction","description":"Composée à  
Vienne en 1801, dédicace à  
Giulietta","startTIme":"1801","endTIme":"1801","location":  
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Contained_Expression/F22/3908d595-bf99-46ca-bd29-  
19af260e8116","agent":{"@type":"Role","roleName":"composer","agent":  
{"@id":"http://data.doremus.org/composer/beethoven}}},  
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er/beethoven","@type":"Person","name":"Ludwig van  
Beethoven","familyName":"van  
Beethoven","givenName":"Ludwig","birthDate":"1770","deathDate":"1827","i  
mage":"http://commons.wikimedia.org/wiki/Special:FilePath/Beethoven.  
jpg"}]
```

GET PERMALINK <https://doremus-anr.github.io/schema-visualizer/#?id=57cfb6b3c2ef16746ca48bb0>



Sonata quasi una Fantasia

opus 27, n°2

Alternate Names: Sonate au clair de lune, Clair de lune, Sonate no 14 en do dièse
mineur

Composer: Ludwig van Beethoven

Mentions: Contesse Giulietta

Key: Do dièse mineur

Music Composition Form: sonate

Genre: Musique Romantique



Ludwig van Beethoven

Given Name: Ludwig

Family name: van Beethoven

LIENS UTILES

DOREMUS Website
<http://www.doremus.org/>

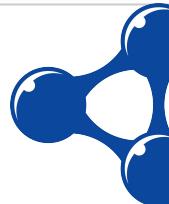


The DOREMUS website homepage features a large banner image of musical instruments and sheet music. The footer includes links to Tutorials, Tools & Softwares, and a search bar, along with recent post summaries.

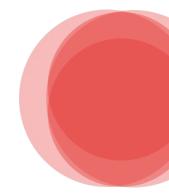
Page GitHub
avec le logiciels, l'ontologie, ...
<https://github.com/DOREMUS-ANR/>



SPARQL Endpoint
<https://data.doremus.org/sparql>
<https://data.doremus.org/fct>



OVERTURE
<https://overture.doremus.org/>



Cette présentation
<https://goo.gl/FFVp4s>

