

# TimeSide, an open web audio processing framework

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# Table of contents

- 1 Overview
  - Goals
  - History
  - Technologies
  - Features
- 2 Framework
  - Architecture
  - Workflow
- 3 Web User Interface
- 4 Related projects
- 5 Development and contact informations

# Main goals



- Archive, preserve and scale big music data and related metadata
- Play audio and read metadata synchronously
- Index and share music data through a collaborative web app
- Link music data to various ontologies and external services
- Manage workflow rules (access, copyrights) easily through time
- On demand audio processing through a modular architecture

# History of the project

- **2006**: definition of the goals (open source web audio collaborative platform)
- **2007**: first partner: french Research Center of Ethnomusicology (CREM)
- **2007 - 2009**: technical specifications, definition of the DB migrator
- **2008**: prototype development
- **2008 - 2010**: workflow and format specifications
- **2011**: development, final migration and release of **Telemeta 1.0** to the CREM for production : <http://archives.crem-cnrs.fr>
- **2011 - 2014**: collaborative indexing, more development, massive data imports...

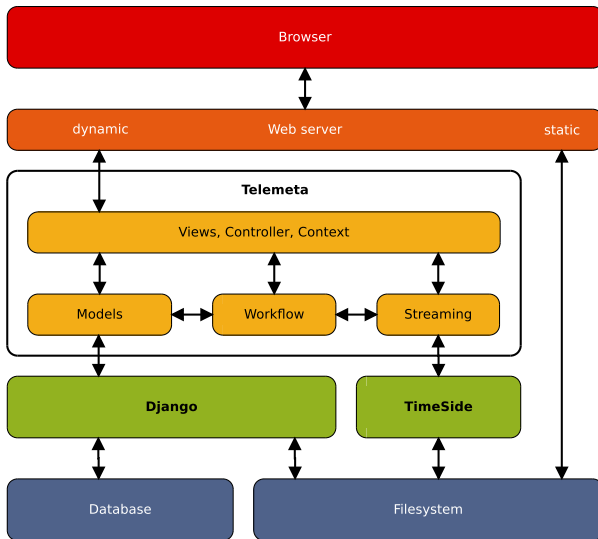
## 100% Open Source!

- [Python](#) : smart object oriented language
- [Django](#) : high-level web MVC framework
- [TimeSide](#) : open web audio processing framework
- [GStreamer](#) : open source multimedia framework
- MySQL, PostgreSQL, others : relational databases
- GNU / Linux : applications, libraries and kernel

# Key features

- **Pure HTML5** web user interface including dynamical forms and smart workflows
- **On the fly** audio analyzing, transcoding and metadata embedding in various formats
- **Social editing** with **semantic ontologies**, smart workflows, realtime tools, human or automatic **annotations and segmentations**
- **User management** with individual desk, playlists, profiles and access rights
- **High level search engine** (geolocation, instruments, ethnic groups, etc...)
- **Data providers** : DublinCore, OAI-PMH, RSS, XML, JSON and other
- **Multi-language** support (now english and french)

# Architecture



# Telemeta Web User Interface

Welcome, Guillaume Pellerin | [Profile](#) | [Help](#) | [Sign out](#)

[Desk](#) [Archives](#) [Geo Navigator](#) [Advanced search](#) [Users](#) [Admin](#)

Item : LAMENTATIONS ET CHANTS D'AMOUR\* :03-08

[Edit](#) [Copy](#) [Add to playlist](#)

[Previous](#) [Next](#)



Title	LAMENTATIONS ET CHANTS D'AMOUR*
Collector	
Collection	CNRSMH_I_1976_011
Recording date	Jan. 1, 1900 - Dec. 31, 1900
Last modification	July 7, 2011, 12:51 p.m. (j.simennet)

## Geographic and cultural informations

Location	Algérie, Afrique septentrionale, Afrique
Location details	Stépe, Hauts Plateaux
Cultural area	OULED NAYAL
Language	arabe
Population / social group	Arabe
Ethnographic context	

## Musical informations

Analysis

Markers

1

00:00:06.29

Lamentation

[Edit](#)

author: j.simennet

2

00:00:44.63

chant d'imposition du

[Edit](#)

adressé au marié.  
Traduction: L'imposition de ton henné est ma plus

author: j.simennet

3

00:01:15.04

Ayay

[Edit](#)

Chant non mesuré

author: j.simennet

[http://archives.crem-cnrs.fr/archives/items/CNRSMH\\_I\\_1976\\_011\\_003\\_08/](http://archives.crem-cnrs.fr/archives/items/CNRSMH_I_1976_011_003_08/)



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# TimeSide : open web audio processing framework

## Server side - TimeSide Engine

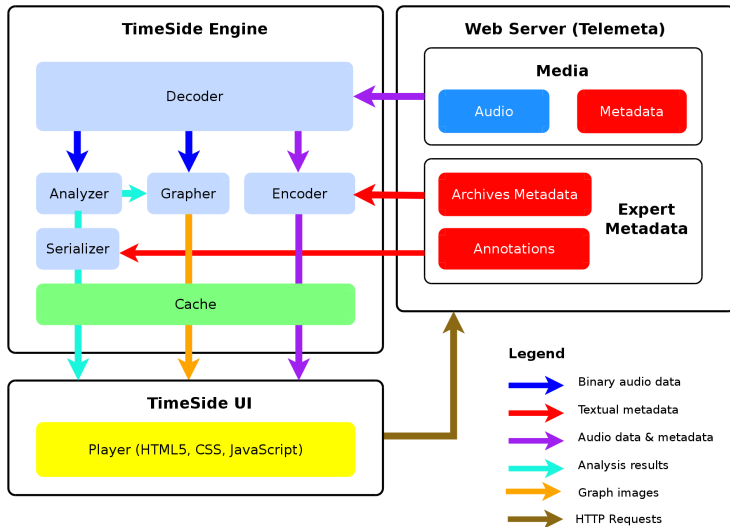
- **Do** asynchronous and fast audio processing with Python,
- **Decode** audio frames from ANY format into numpy arrays,
- **Analyze** audio content with state-of-the-art audio feature extraction libraries (Aubio, Yaafe, Vamp (experimental),
- **Organize**, serialize and save analysis metadata through various formats,
- **Draw** various fancy waveforms, spectrograms and other cool graphers,
- **Transcode** audio data in various media formats and stream them through web apps,

## Client side - TimeSide UI

- **Playback** and **interact** on demand through a smart high-level HTML5 extensible player,
- **Index**, **tag** and **organize semantic metadata**  
(see **Telemeta** which embeds TimeSide).



# TimeSide - Architecture



# The DIADEMS project

- DIADEMS : Description, Indexation, Access to Sound and Ethnomusicological Documents
- Granted by ANR : french national research agency (ANR-12-CORD-0022)
- 3 years, 8 partners, 850 k€
- Apply and test MIR algorithms on large scale ethnomusicological data
- Define some high level interfaces to find new ways of explorations in large complex musical corpus
- New modes of collaboration between human science and computer science laboratories and researchers
- Define the vocabulary describing musical events in the usecase of ethnomusicology vs. signal processing
- <http://www.irit.fr/recherches/SAMOVA/DIADEMS/fr/welcome/>
- <http://diadems.telemeta.org>

# DIADEMS - Partners

- Sponsors:

- CNRS
- Huma-Num (ex TGE Adonis)
- ANR
- CREM
- UPMC
- Parisson

- Partners :

- IRIT (université Paul Sabatier, Toulouse 3)
- LIMSI (universités Pierre et Marie Curie (UPMC, Paris 6) et Paris-Sud)
- LAM (institut Jean Le Rond d'Alembert, UPMC)
- LABRI (université de Bordeaux)
- CREM (université Paris Ouest Nanterre La Défense)
- LESC (université Paris Ouest Nanterre La Défense)
- Museum d'Histoire Naturelle de Paris
- Musée du Quai Branly



# Development

## Links

- <http://telemeta.org>
- <https://github.com/yomguy/Telemeta/>
- <https://github.com/yomguy/TimeSide/>

## Team

- Guillaume Pellerin
- Thomas Fillon
- Paul Brossier
- Riccardo Zaccarelli
- Maxime Lecoq
- David Doukan

## Licence

[CeCILL v2.1](#) (GPL v2 compatible)

# Development - Lessons from a 7 year old project

- Simplicity is better than complexity (a Python developer rule)
- Modularity is only accessible with a flexible language
- Models and objects are more important than technologies
- A good workflow is defined by the users themselves through feedback and revisions
- Prototyping is a crucial part of the development process
- A good platform should rely on standards, not on formats
- The Open Source ecosystem gives some tremendous possibilities to scale a platform project

# Development - TODO list

## TimeSide

- Tiny web server (django)
- Process task manager
- Full HTML5 zooming player (+ annotations, segmentations, etc..)
- Analyzer parameters (+ interface)
- Improve Vamp plugins support (Vamp python host ?)
- Add more automatic segmentation and classification tools to support various semantic ontologies (cf. thesaurus)
- Add more music analysis tools to support Ethnomusicological research
- Add automatic similarity analysis tools (inside a song or between sound items)
- Enhance analysis result displays to send to Telemeta
- <https://github.com/yomguy/TimeSide/issues>



# Development - TODO list

## Telemeta

- Update code to support Django new Class based views
- Rewrite geolocation services
- Public and enhanced user playlists
- Smart breadcrumbs
- Better interactions with TimeSide
- Enhance user interface (full HTML 5 + web audio API)
  - For annotations and segmentations in a collaborative manner
  - Provide import capabilities and feedback loop between manual and automatic annotations
  - Fancy displays of automatic analysis results (zoomable + synchronized with audio)
  - Add a User interface to control and tune the analysis parameters
- More documentation
- <http://telemeta.org/report/1>

# The End

Thank you!

## Links

- [telemeta.org](http://telemeta.org)
- [@telemeta](https://twitter.com/telemeta)

## Contact

- [guillaume@parisson.com](mailto:guillaume@parisson.com)
- [@yomguy](https://twitter.com/yomguy)
- [github.com/yomguy/](https://github.com/yomguy/)
- [+GuillaumePellerin](https://www.facebook.com/GuillaumePellerin)
- [fr.linkedin.com/in/guillaumepellerin](https://fr.linkedin.com/in/guillaumepellerin)

# TimeSide - Github repository

<https://github.com/yomguy/TimeSide/>

- 3 main branches: master, dev, diadems

## Installation

<https://github.com/yomguy/TimeSide#install>

- Installation des dépendances :

```
$ echo "deb http://debian.parisson.com/debian/ stable main" |  
$ sudo tee -a /etc/apt/sources.list  
$ echo "deb-src http://debian.parisson.com/debian/ stable main" | sudo tee -a /etc/apt/sources.list  
$ sudo apt-get update  
$ sudo apt-get install git  
$ sudo apt-get build-dep python-timeside
```

- Installation depuis le dépôt *Github* :

```
$ git clone https://github.com/yomguy/TimeSide.git  
$ cd TimeSide  
$ git checkout dev  
$ export PYTHONPATH=$PYTHONPATH:$(pwd)  
$ python tests/run_all_tests
```

# Statistics - CREM revisions

