



UMR 5205 CNRS

# Storytelling about Industrial Territories in a Place using a 3D Urban Environment

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# 1. Context

## TIGA project

- Study the industrialization and deindustrialization
- Reconnect inhabitants with their territory
- Different areas studied in Lyon and Saint-Étienne

**GRAND LYON**  
la métropole

SÉM

**SAINT-ÉTIENNE**  
la métropole



# 1. Context

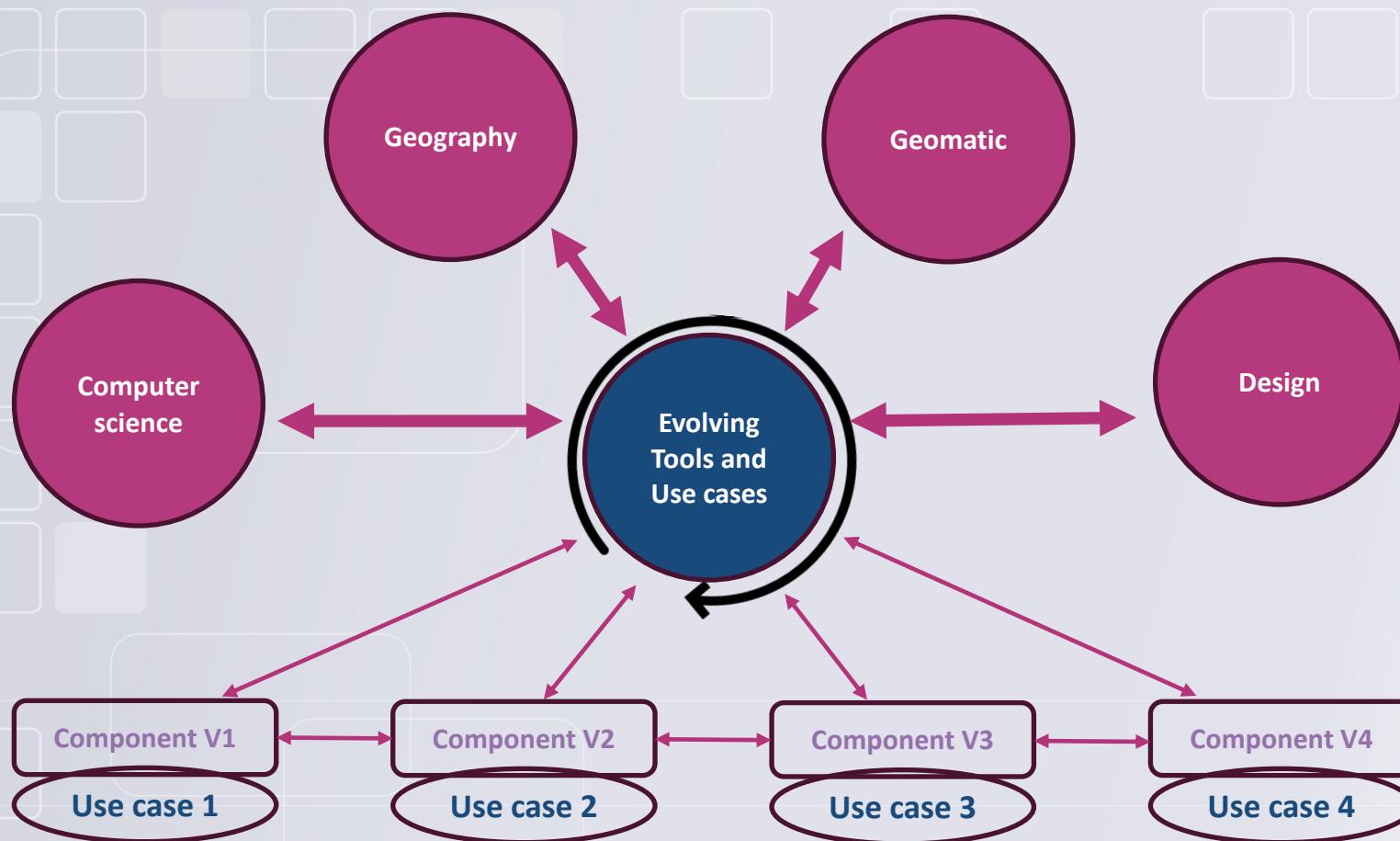
## Gier valley: one of the oldest industrial valleys in France



## Needs

- Narrating the (de)industrialization of the territory
- Showcasing industrial heritage
- Tools for public mediation

## 2. Methodology



Key requirements: **reusability and reproducibility**

## 2. Methodology



SÉM

### Identify needs

with local authorities

Research



### Design a tool

with design specialists

Develop components and applications



Open data

Information about existing buildings



Company surveys

Information about companies

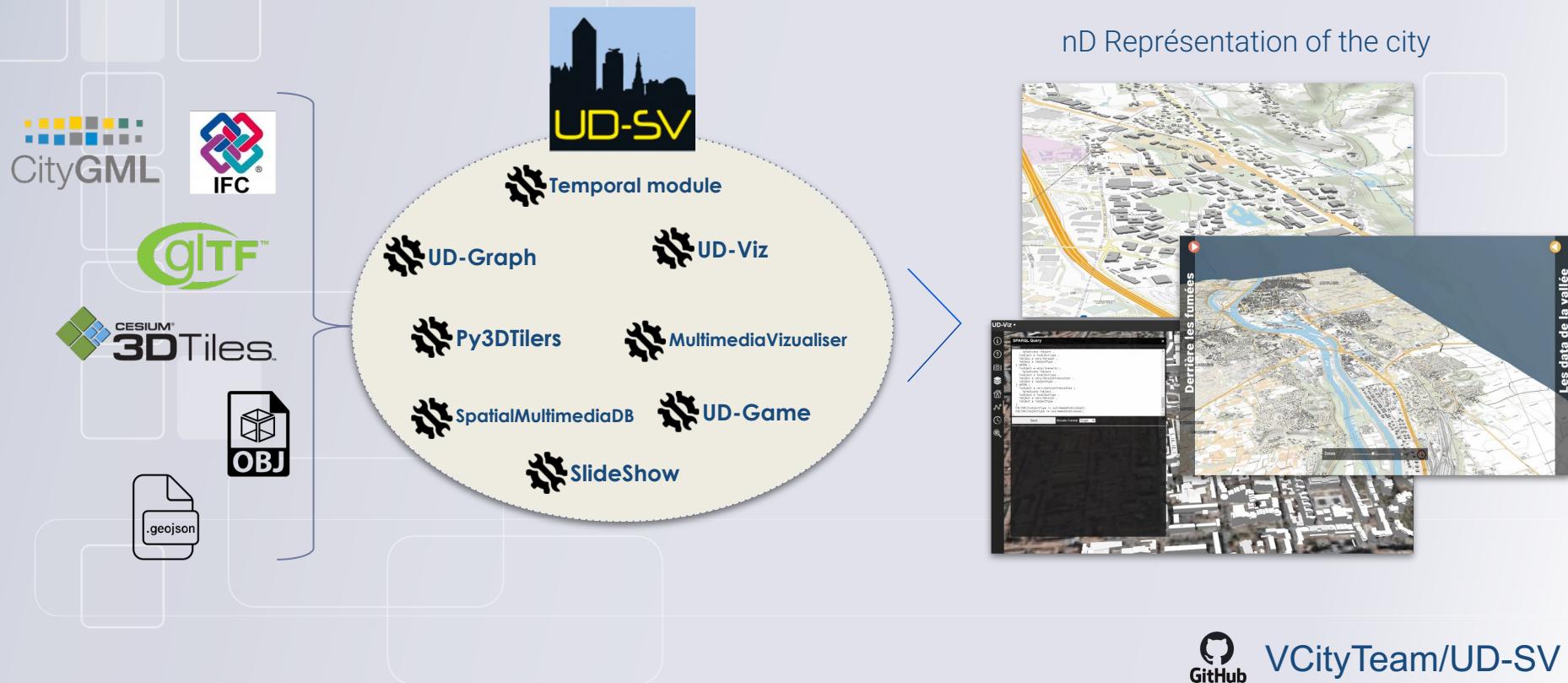


Archive data

Historical information and media

### 3. Tools – UD-SV

## Platform for the multidimensional navigation of urban data



VCityTeam/UD-SV

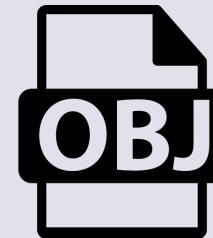
 Samuel, J., Jaillot, V., Colin, C., Alvarez, D. V., Boix, E., Servigne, S., & Gesqui  re, G. (2023). UD-SV: Urban data services and visualization framework for sharing multidisciplinary research. *Transactions in GIS*.

# 3. Tools – Py3DTilers

Open source Python toolkit to create 3D Tiles



GEOJSON



Created from CityGML



Created from GeoJSON



Created from IFC

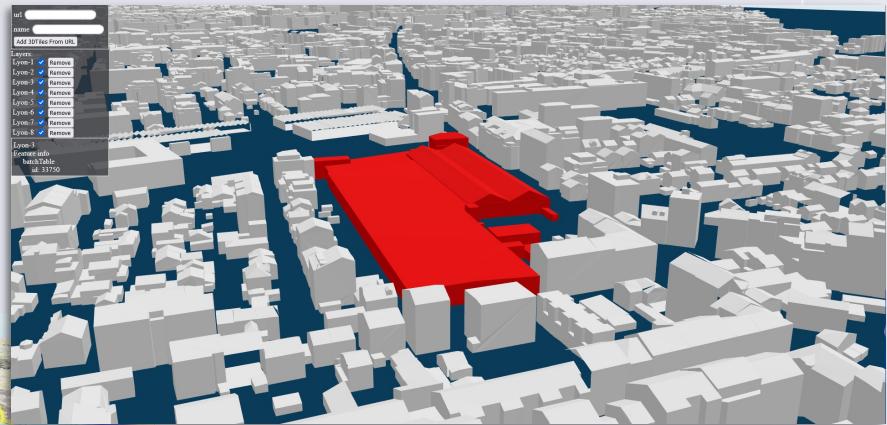


Marnat, L., Gautier, C., Colin, C., & Gesqui  re, G. (2022). PY3DTILERS: An Open Source Toolkit for Creating and Managing 2D/3D Geospatial Data. ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences, 10.

### 3. Tools – UD-Viz

JavaScript library for interacting with geospatial data

- Creates a 3D scene
- Displays data layers
- Allows to interact with data



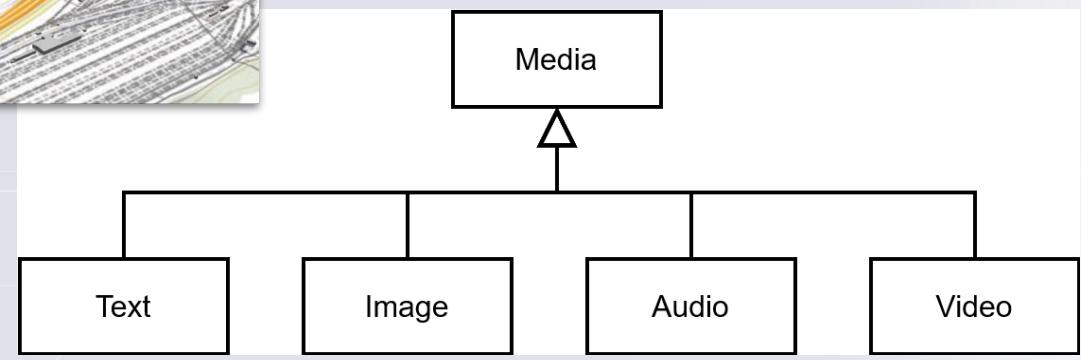
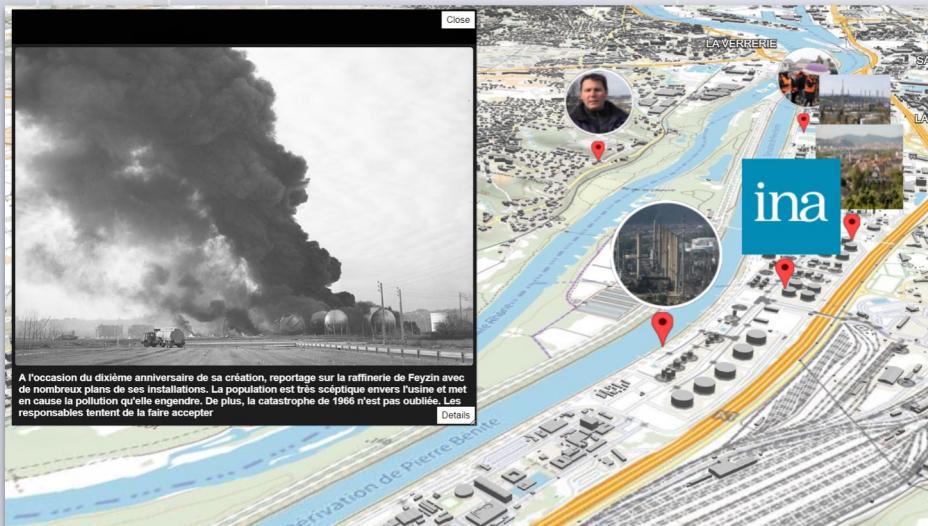
Open source library based on iTowns



VCityTeam/UD-Viz  
GitHub iTowns/itowns

### 3. Tools – Media

**Media enhance the storytelling and give additional information**



 Gautier, C., Delanoy, J., & Gesqui  re, G. (2022). Integrating Multimedia Documents in 3d City Models for a Better Understanding of Territories. ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences, 10.

## 4. Our proposition

Tour

Data and media in a 3D scene

Guided Tour

- Use of steps for a narrative
- Content is predetermined

Open Tour

- Free navigation
- Access to all data and layers

Quiz Tour

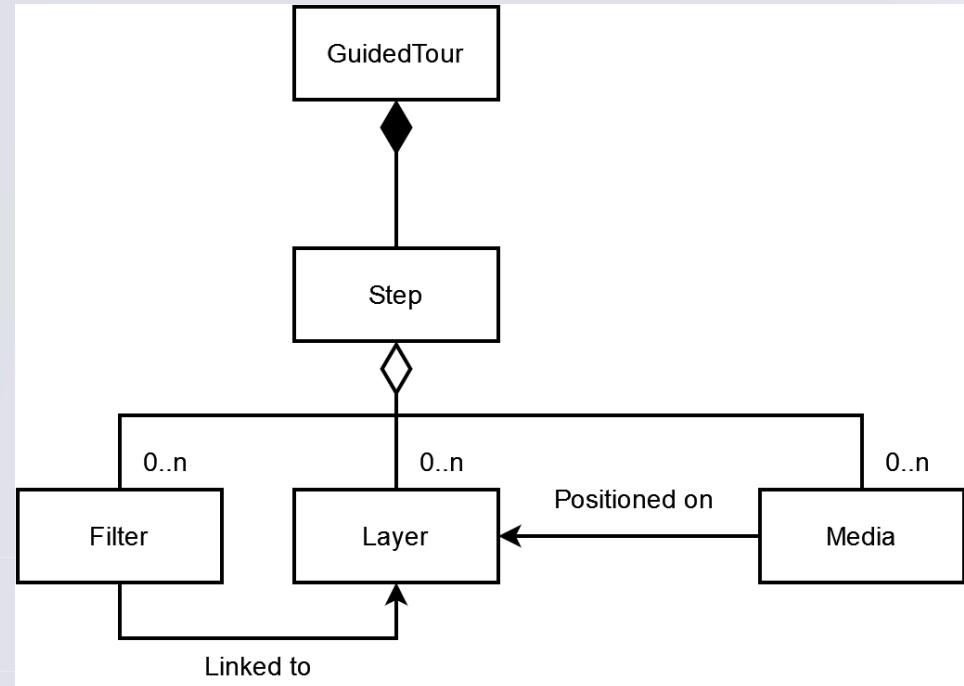
Historical Tour

## 4.1. Guided Tour

A Guided Tour is a sequence of *Steps*

Each step can have:

- Displayed data layers
- Filters on layers
- A 3D position/rotation
- Associated media



# 4.1. Guided Tour – Types

## Quiz tour

### Bienvenue à Lorette

Lorette est aussi célèbre pour Mavilor, qui signifie...

Manufacture des Véhiculeurs de Lorette

Manufacture des Vitrines de Lorette

Manufacture des Vébrequins de Lorette

Dans les années 30, on fabriquait à Lorette des vélvétins de moteurs : il s'agit d'une pièce maîtresse du moteur diesel et du moteur à explosion. L'usine, basée à l'Horne, devenue ThyssenKrupp Mavilor, a cessé son activité en juin 2010 : 373 personnes ont perdu leur emploi.

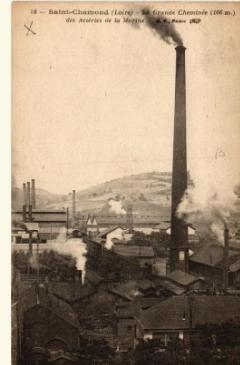
Le vélvétin figure sur les armoiries de la ville de Lorette.



## Historical tour

### Un siècle d'industrialisation

Comparez l'urbanisation et l'industrialisation de la vallée du Gier en 1812 et en 1932.



- Short interactive tour
- Targets the general public
- Offers concise information

- Long detailed tour
- Targets a public interested in the territory
- Presents historical research

# 4.1. Guided Tour – Demonstration

## L'avènement de la grosse mécanique

Dans un contexte de fragilisation de la filière de l'acier en raison de l'assèchement des commandes ferroviaires, une grande partie du tissu se reconvertis dans la grosse mécanique dans l'entre-deux-guerres, notamment dans les années qui suivent la crise de 1929.

Les Fonderies et Forges de l'orme sont représentatives de cette évolution. Elles ferment en 1929 pour être aussitôt racheté par les Acieries du Nord, un important groupe français de mécanique générale. Entre 500 et 600 personnes travaillent dans les ateliers de l'orme désormais spécialisés dans la maintenance mécanique du matériel roulant de la compagnie du chemin de fer PLM puis au sortir de la seconde guerre mondiale dans la production de tracteurs et machines agricoles. L'établissement intègre alors le groupe Richer spécialisé dans les machines agricoles et de travaux publics.



Part of an historical guided tour available in the online demo

[https://www.imuvirtuel.fr/vcity/valleedugier/html/parcours\\_histo\\_2.html](https://www.imuvirtuel.fr/vcity/valleedugier/html/parcours_histo_2.html)

## 4.2. Open Tour

Navigate freely in data and the 3D scene

- Explore the 3D scene without constraints
- Access all data about buildings and industry
- Choose which layers to display
- Click on buildings for more information



## 4.2. OpenTour – Demonstration

À LA DÉCOUVERTE  
- DE LA VALLÉE DU GIER -

Carte des industries

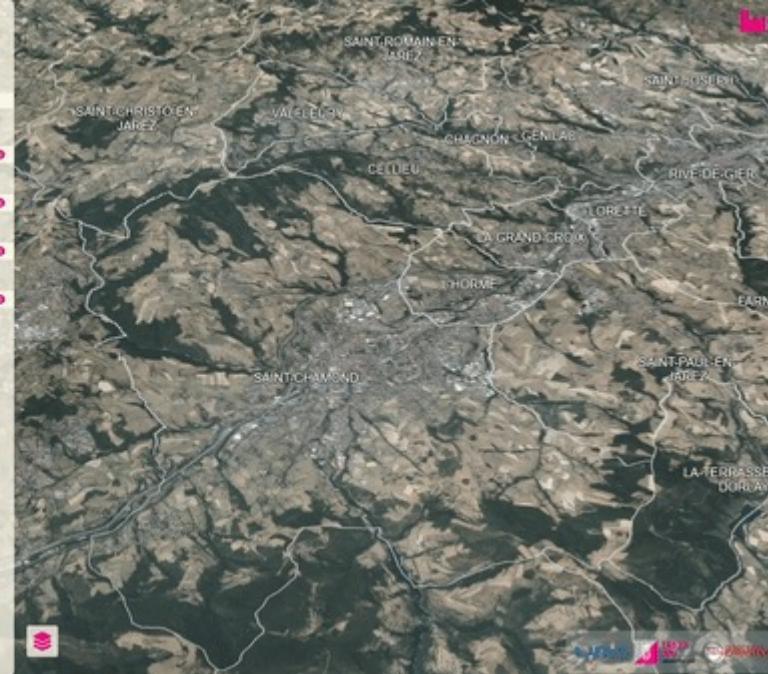
Fiche établissement

XX<sup>e</sup> siècle

Dans les années 1980

Dans l'entre-deux-guerres

Dans la première moitié du XXI<sup>e</sup> siècle



Part of the open tour available in the online demo

[https://www.imuvirtuel.fr/vcity/valleedugier/html/open\\_visit.html](https://www.imuvirtuel.fr/vcity/valleedugier/html/open_visit.html)

# 5. Reusability and reproducibility

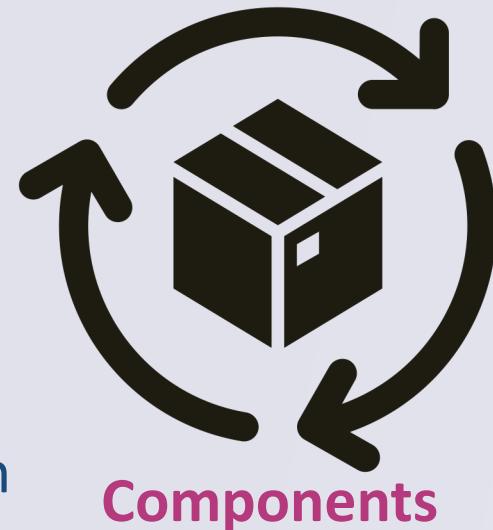
## Open source project

Components and data can be reused:

- On new territories and themes
- As a base for new projects
- For creating a stand-alone demonstration

Use case

Co-creation



Find code, data, documentation, docker and demo online

- Code & data: <https://github.com/VCityTeam/UD-Demo-TIGA-Vallee-Du-Gier>
- Docker: <https://github.com/VCityTeam/UD-Demo-TIGA-Vallee-Du-Gier-docker>
- Demo: <https://www.imuvirtuel.fr/vcity/valleedugier/>

# 6. Public demonstration

## Presentation to the general public

- Test the tours
- Collect feedback
- Refine the approach



Pop'Science festival at Villeurbanne, 2023

# 7. Conclusion

## Open source tool to create historical narratives

- Modeling and development for storytelling of (de)industrialization
  - Guided Tour: sequence of steps
  - Open Tour: free navigation
- Reusable and reproducible components

### Future works:

- Enhance the tool to create and edit tours
- Extensions of mediation tools (tangible representation, gamification, ...)



# Thank you for your attention

## Storytelling about Industrial Territories in a Place using a 3D Urban Environment

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<https://github.com/VCityTeam/UD-Demo-TIGA-Vallee-Du-Gier>