



LumiArt

The logo features the word "LumiArt" in a blue, cursive script. A yellow sun with rays is positioned above the letter 'i'. Green leaves are placed to the left of the 'L' and to the right of the 't'.

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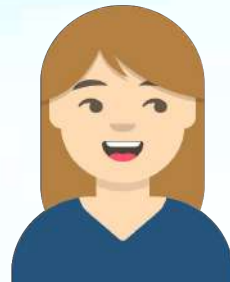
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# Executive Summary

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With LumiArt, we are combining art, technology and sustainability to offer a technological canvas through which communities can express themselves. Our aim is to foster a sense of belonging and identity in newly built, large-scale urban developments, which often struggle to develop a shared identity and strong social cohesion.

We are proposing an interactive art installation that utilises projectors to display art in the public space. The projectors will be mounted in a technological tree that has small wind turbines which generate the energy necessary to power the projectors. The art, which can be in any form, is both created and chosen by community members. Thus, both in terms of energy usage and art supply, LumiArt is virtually self-sustaining.

We hope to help new, developing communities on the outskirts of Paris express their own identities and give them the opportunity to celebrate all that makes their community unique. Unlike communities within the historic city, which have had centuries to develop shared identity, these more recently developed areas often struggle to develop similar levels of cohesion. Inspired by how scaffolding proteins bring molecules together to enhance cellular communication, LumiArt aims to foster a strong sense of belonging and trust within such communities, in order to strengthen their cohesion and make them feel like a valued part of the greater Paris region.



**Background**

# History of Thought on Urban Mental Health —

The impact of urban environments on mental health has been studied extensively since the 20th century. Two of the most influential experts on this topic were the German sociologist Georg Simmel (early 20th century) and the American social psychologist Stanley Milgram (late 20th century).



*Paris at the turn of the 20th century*

## Georg Simmel

According to Georg Simmel, cities overstimulate our minds, which is detrimental to our mental health. Because of this, **urban environments** cause us to become more **reserved** and feel more **anonymous**.

As a result, “we frequently do not even know by sight those who have been our neighbours for years” (Simmel, 1903).

## Stanley Milgram

According to Stanley Milgram, the **demography of city life** - a large, heterogeneous, and dense population - influences our perception of the city and leads to **overload**. Overload leads to our social relationships becoming superficial and less deep, and causes social isolation.

City life “deprives the individual of direct contact and integration in the life around him. It simultaneously protects and estranges the individual from his social environment” (Milgram, 1970).



# Mental Health Challenges Today

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Today, **urban communities**, and especially those that are under-resourced, still face much higher rates of **mental health challenges** (Peen et al, 2010).

Some reasons for this are the higher rates of criminality, mortality, social isolation, air pollution, and noise (Freeman, 1984).

The good news is that strong **social cohesion** within a community can **mitigate** the **negative influences** of these challenges in urban life (Aminzadeh et al, 2013).

**“A cohesive society works towards the well-being of all its members, creates a sense of belonging and fights against the marginalisation within and between different groups of societies.”**

*(OECD, 2011)*



*Paris in the 21st century*



*“Residence in the most deprived neighbourhoods was negatively associated with change in mental health. [...] This negative effect was significantly reduced in high social cohesion neighbourhoods.”*

(Fone et al, 2014)



# Our Mental Health Approach

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Rather than tackling the **challenge of mental health** in urban environments all at once, we are focusing on a **bottom-up approach**. This is both because of the multi-faceted and complex nature of the challenges we are addressing, and because implementing top-down “solutions” to challenges in under-resourced urban communities rarely leads to positive results.

The **mental health** of communities is influenced by many different factors, such as **social cohesion**.

**Social cohesion** is influenced by many different factors as well, such as a **sense of belonging and trust** within a community.

The challenge we are focusing on with **LumiArt** is to promote a sense of belonging and trust within communities in order to strengthen social cohesion.

**Mental health**  
↑  
**Social cohesion**  
↑  
**Sense of belonging**



# Placemaking

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The concept of **placemaking** - coined by the Project for Public Spaces - is defined as a collaborative process through which we can “strengthen the connection between people and the places they share” and “reimagine and reinvent **public spaces** as the **heart** of every community”.

According to PPS, “placemaking facilitates creative patterns of use, paying particular attention to the physical, cultural, and social identities that define a place and support its ongoing evolution” (Project for Public Spaces, 2018).

Placemaking shows that the **physical properties** of the public space can play an important role in facilitating expressions of **community identity**, especially when combined with **creative programming** in the space.



Since the design of the public space impacts its residents, we want to use features within physical spaces in conjunction with creative programming to foster a sense of belonging within a community.



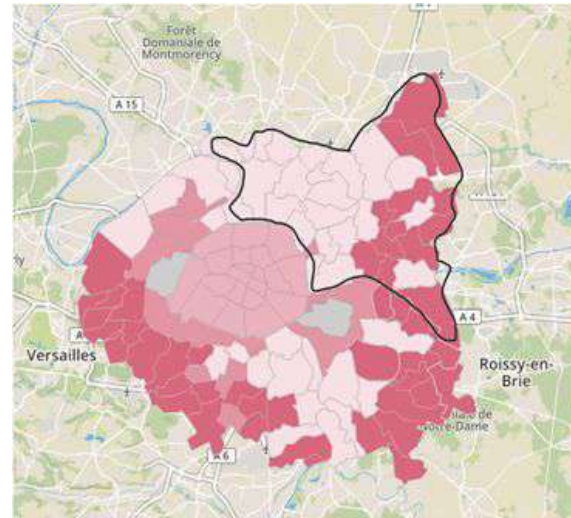
*Two neighbourhoods that face resource challenges, one of which applied the concept of placemaking*

# Social Cohesion in Seine-Saint-Denis

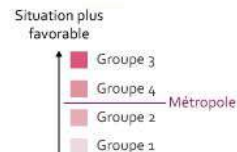
Seine-Saint-Denis is the largest department of greater Paris. Compared to central Paris, the department has many neighbourhoods that were only recently created, and it faces **challenges** in multiple areas.

For example, Seine-Saint-Denis has relatively high rates of **unemployment** (29% higher than national average), **health problems** (38% higher obesity rate than national average), **crime** (500% higher violence rate than national average), and **social isolation**.

This map - which is part of a research study done by APUR (Atelier Parisien d'Urbanisme) on multiple different factors that contribute to the quality of life in the different departments of greater Paris - shows that the majority of regions within Seine-Saint-Denis receive the lowest possible score on the quality of social relationships (APUR, 2018).



Situation des quatre territoires de vie pour le thème 'Relations sociales'



# Olympic Opportunity

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The department of [Seine-Saint-Denis](#) was chosen by APUR as the site of the 2024 [Olympic Village](#) for its location right next to Paris, its network of transportation, and to advance the department. The Olympic Village will be built near [Saint-Denis](#), and after the Games it will be converted into a new [residential community](#) with retail and office spaces, student housing, family housing, and at least 40% social housing.



*“The organisation of the Olympic and Paralympic Games is a large athletic adventure and plays a role in increasing social cohesion”*

(APUR, 2017)

# Benefits for Seine-Saint-Denis

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## During the Games



17,000 beds for athletes  
3 new swimming pools  
3 new gymnasiums

## Environmental Sustainability



10 ha of green space  
55% smaller carbon footprint than the two  
previous games  
100% green energy  
100% material biosourced

## After the Games

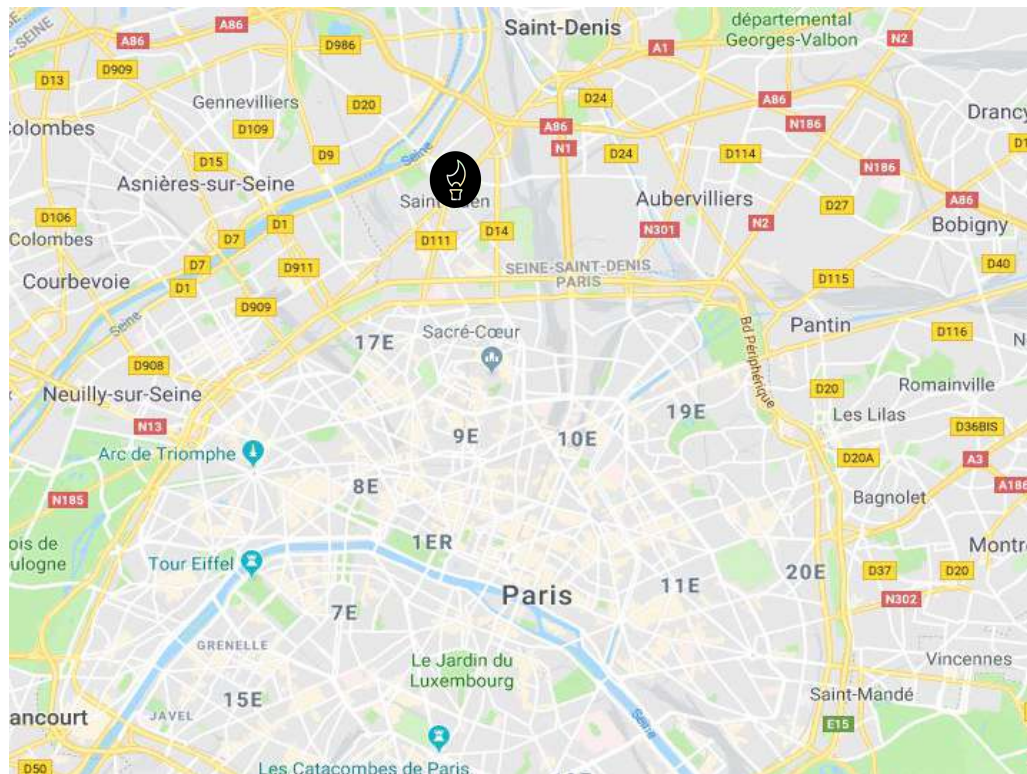


2,200 family housing units  
900 student housing units  
40% social housing  
35 000 m<sup>2</sup> for business  
3 new lines of transportation



# The Olympic Village

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The **2024 Olympic Village** will be located in Plaine Commune between Ile-Saint-Denis, Saint-Denis and Saint-Ouen, within the department of **Seine-Saint-Denis**.



# Our Mission

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Given the low social cohesion felt by many communities within Seine-Saint-Denis, we want to help them create a [sense of belonging](#) by offering an innovative and sustainable canvas to express and develop their own [community identity](#). Instead of replicating ways shared identity has been created in the past by neighbourhoods that were established decades or centuries ago, we want to use [21st century technology](#) in order to show the unique identity of newly built communities.

By doing so, we hope to help advance two of the UN [Sustainable Development Goals](#).



SDG 3.4 includes the aim to “[promote mental health and well-being](#)”.

We aim to address mental health by connecting community members through art, thereby encouraging interactions between different social groups, increasing personal sense of belonging, and improving social cohesion.



SDG 11.3.2 encourages “[a direct participation structure of civil society in urban planning and management](#)”.

We hope to give communities the opportunity to shape their own public spaces and feel included in the construction and evolution of their community identity.



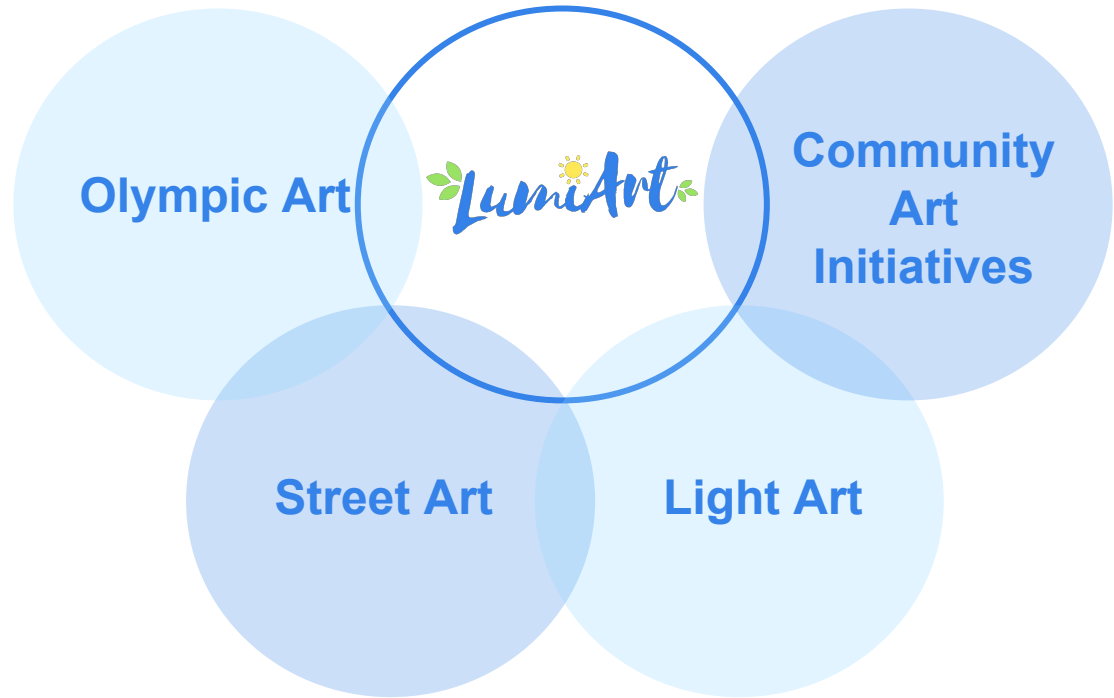


# Previous Approaches

# Previous Approaches

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In this section, we will analyse the history and role of art in past Olympic Games, the use of street art in cities, the strengths and weaknesses of light art, and the potential of community art initiatives in order to show how LumiArt seeks to integrate together and improve upon the qualities of past approaches to the challenge of strengthening community and individual sense of belonging.



From 1912-48, [art contests](#) were a regular component of the [Olympic Games](#) just as they were in the original Ancient Olympics. The founder of the modern games, Coubertin, wanted the games to be more than just about athletics; he hoped the games would be a melding together of both mind and body, [art and athleticism](#).

Recent Olympic host cities have been finding ways to promote art alongside the Games, and have also started considering whether Olympic art can be used to [meaningfully](#) improve communities.

*“Deprived of the aura of the art contests, Olympic Games are only world championships”*

*-Coubertin, Founder of the Modern Olympic Games*



# Olympic Art



## London 2012 Summer Olympics

The [ArcelorMittal Orbit Tower](#) was built as an attraction to help regenerate the city of Stratford. It is criticised as being a vanity project for Mayor Boris Johnson and ArcelorMittal (its sponsor). The sculpture is interactive, but the high entrance fee restricts its accessibility to the community.



## Rio 2016 Summer Olympics

Local and international artists were invited to create [public artworks](#) in the city for the Olympics. These pieces were received positively by locals and visitors alike. However, the community members living in the areas where the public art was displayed were not involved in the creation of the works at all.



## Pyeongchang 2018 Winter Olympics

This work, meant to depict the Winter Olympic sports and values, successfully achieved its goal of fostering community solely among Olympians and was showcased in the Olympic Village during the Games. Yet, while this artwork was effective in [uniting Olympians](#), it has had no impact on the local community.

# Street Art

Street art refers to artwork expressed on public architecture with the permission of the city. It adds value to communities around the world; it is a canvas for communal artistic expression and helps communities develop their own unique identity.

“Street art is used as a means to expose community characteristics that would otherwise remain hidden beneath the surface.”

*(Carver 2016)*



*Street art in the low-income favelas of Brazil*

“In communities around the world, individuals have been using street art to transform dull parts of a city into vivid representations of local identity.” *(Carver 2016)*



# Street Art

Street art can express collective identity by publicly displaying sentiments about social issues shared within neighbourhoods. Due to its prominent location in the public space, it demands acknowledgement of diverse views and rejects ignorance.

“Street art is more than a collection of eye-catching murals painted across random buildings and walls. It is a powerful tool of expression, and it can unlock the potential of people who have otherwise felt neglected or unheard.” (Carver 2016)

*Street art in the 13th arrondissement of Paris*





# Street Art

“[The] nature of street art is transitory; over time the walls in cities worldwide are often painted over.” (Linley 2014)

While the transience of street art may have a certain beauty, it can often be disappointing for an artist whose work is erased or vandalised beyond recognition.

What if street art could be displayed without requiring new, free spaces for every expression of art? Without requiring previous works to be painted over to make room for new creations?

*Street art being painted over in Berlin*



# Light Art

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*Crown Fountain*

Chicago's Crown Fountain projects the faces of community individuals in a creative way. By artistically reflecting the identity of the city and its citizens, this installation has proven effective at drawing locals and visitors together to enjoy the Fountain's light art.



*teamLab exhibition*

*Eiffel Tower*

Yet, despite the enjoyment that individuals derive from interacting with light art, such art has a major flaw; it tends to require high amounts of energy which often makes it unsustainable.



*Singapore Supertrees*

However, what if it were possible to engage communities with light art in a sustainable manner? The Supertrees, a popular tourist attraction in Singapore, have solar panels that sustainably generate part of the energy that powers them.



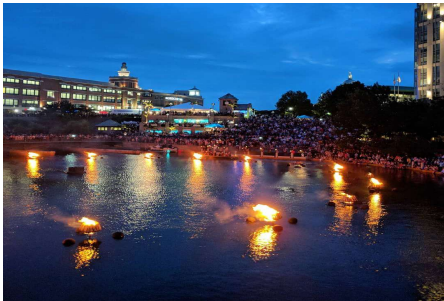
# Community Art Initiatives

The **Women's Centre** in Calgary, Canada, hosts **community building workshops** led by local artists. Of the 13,379 women who attended these workshops in 2017, 76% felt their community involvement increased, 89% reported feeling at home or a sense of belonging, and 80% met new people.

Despite these impressive qualitative results, the workshops only reach a fraction of women in Calgary. The Women's Centre also has a \$1.5 Million annual operating cost, with \$1.1M spent on wages and \$158k on rent, maintenance and utilities. (The Women's Centre, 2017)



*The Women's Centre*



*WaterFire*

**WaterFire** is a public art installation in Providence, USA, that hosts free bonfire shows on the water. It's mission is to "inspire Providence and its visitors by fostering community engagement and creatively transforming the city". WaterFire has helped bring together the neighbourhood and attract millions of visitors.

However, its shows are only held twice a week, and with its \$1.7 million annual operating cost, mainly spent on the continuous labour and resources needed for the shows (including lots of firewood), it is neither financially nor environmentally sustainable (Waterfire, 2018).

# Community Art Initiatives in Greater Paris

6B is a space dedicated to creating and sharing art in Saint-Denis. It has become a hotspot of cultural life and hosts many artists in residence, art workshops, music performances, and nightlife activities.

6B has added value to its community, but it has at the same time promoted gentrification; the majority of 6B visitors now come from outside Saint-Denis. As such, 6B is less effective at creating a sense of belonging for the members of the community it is located in (D'Angelo, 2014).



6B



*“Face au temps”*

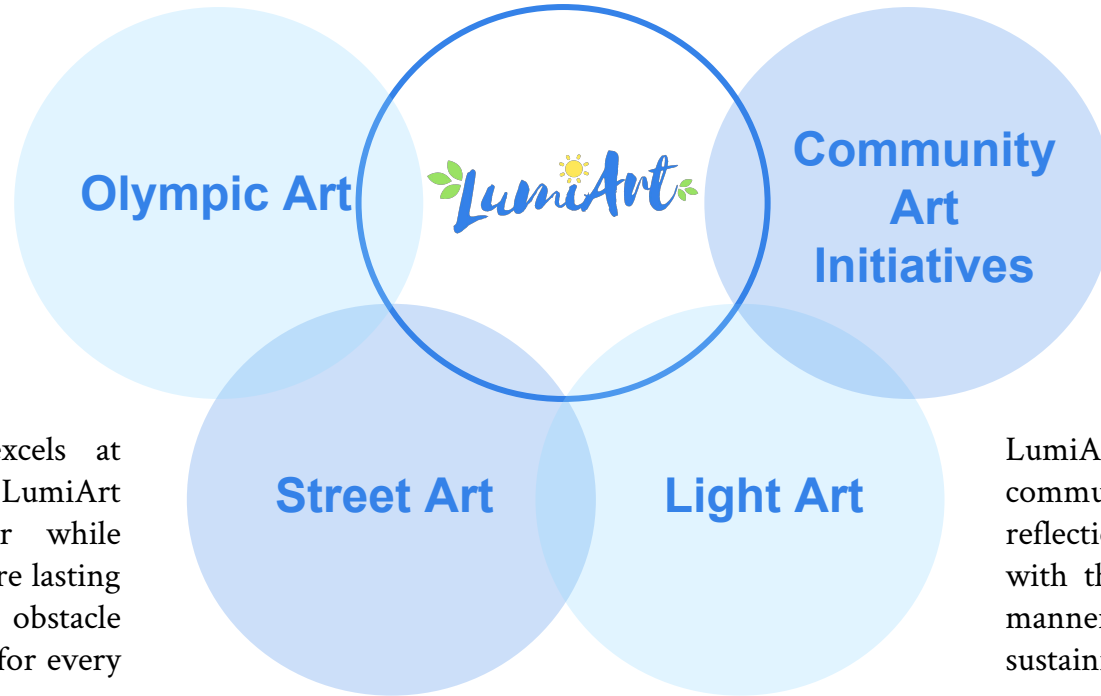
Les Nouveaux Commanditaires puts citizens in contact with contemporary artists so they can work together on creating an artwork in the public space. This has resulted in multiple artworks around Paris, such as “Face au temps” by Bigert & Bergström which was made on the Delafontaine hospital in Saint-Denis.

Les Nouveaux Commanditaires hopes that by collaborating on an artwork, the citizens and artists meet people they would not usually encounter in their daily lives. However, many of the artworks are located behind closed doors and thus not generally visible for the wider community. (Les Nouveaux Commanditaires, 2018).

# Comparative Advantage of LumiArt

Unlike artwork in recent Olympics, LumiArt presents Paris 2024 with the potential to leave a legacy of art in tune with the local community.

Where street art excels at showcasing identity, LumiArt seeks to be similar while presenting art in a more lasting manner free from the obstacle of needing new space for every piece.



In contrast to past initiatives, LumiArt aims to be financially and environmentally sustainable while inclusively engaging a large audience with public art.

LumiArt seeks to captivate communities by serving as a reflection of communal identity with the use of light art in a manner that is fully self-sustaining in regards to its energy usage.



A white trellis structure is set up in a garden, featuring numerous yellow and green birdhouses hanging from its branches. The trellis is made of white poles and is surrounded by lush green foliage and trees. The birdhouses are arranged in a way that they are visible through the leaves, creating a vibrant scene. The text "Proposed Solution" is overlaid on the bottom left of the image.

**Proposed Solution**

# The Art Installation

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LumiArt is an [interactive art installation](#) that uses greenery, sustainability and innovative technology to display art created by community members. It focuses on fostering a positive collective identity in order to improve the sense of belonging and trust in the community.

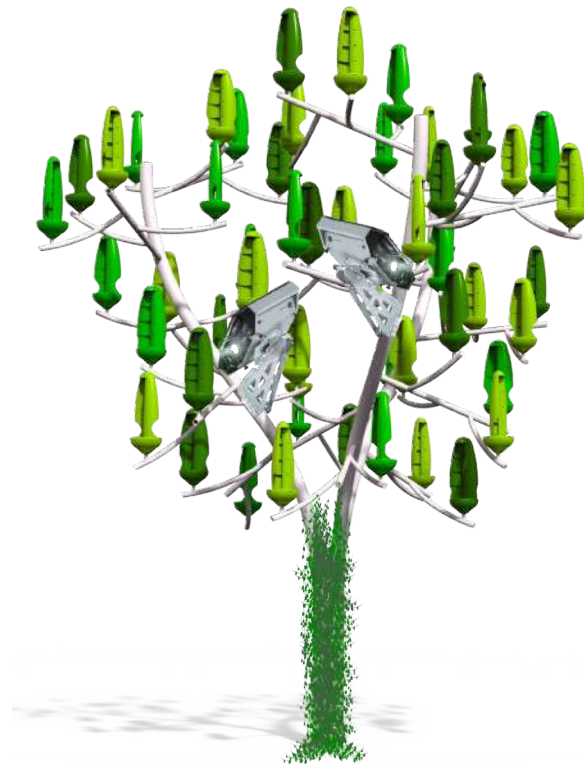


The [tree](#) trunk will be covered with [ivy](#), which both filters pollution and elegantly hides the projector cables.

The tree is designed by New World Wind and has small [wind turbines](#) that efficiently turns urban wind into electrical energy.

The [projectors](#) are designed by Lumitrix. They are mounted in and powered by the tree and project the community art onto the ground.

The tree will be connected to the [electricity grid](#), so excess electricity is redirected back into the grid.





# Technical Details

We will use two [projectors](#) per tree. The projectors, designed by Lumitrix, are [resilient](#) in outdoor conditions and provide [high quality projections](#) that can be wirelessly operated. Their ease of operation as well as durability, size, and ability to project onto tiles commonly used in urban environments make them perfectly suited for our permanent art installation.

The projectors will be used from the early evening until the morning, 365 days per year.

The [Wind Tree](#) - created by the local Parisian company New World Wind - will be the [structural frame](#) as well as [energy source](#) for the projectors.

The Wind Tree is roughly 10 m tall and 8 m wide, and is made in France.



A Wind Tree installed in an urban Paris environment supplies on average [5.4 kW](#), and the projectors each require [550 W](#).

LumiArt will use two projectors, which will be working on average 12 hours a day. The Wind Tree produces energy at all times, so we will be able to redirect around 80% of the energy generated by the tree back into the electricity grid.

The [profits](#) from selling back this energy will partially fund LumiArt's maintenance, and offset the carbon footprint of the project.

(Lumitrix, 2018) (New World Wind, 2018)

We propose to place the LumiArt installation in the Olympic Village Plaza.  
This is a central location surrounded by housing as well as business offices.



# Website and Platform

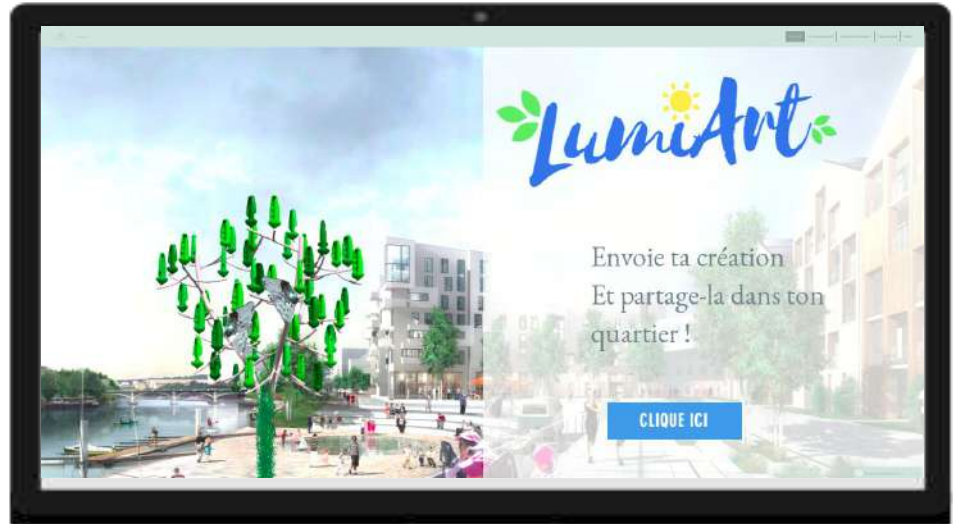
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The [website](#) has two aims: to explain the [purpose](#) of LumiArt to the community and to [engage](#) the [community](#) in its [art programming](#).

[Submitted art](#) will be divided into categories (eg. youth, local artists, thematic art) and the decisions of which art will be projected are partly made through a [democratic voting system](#) on the website and partly by a [community board](#) consisting of representatives of the local department as well as community groups. On occasion, special invitations to submit art will also be extended to local schools, artists, or youth groups.

All community members are [invited](#) to vote, so even those who do not wish to submit art to LumiArt can still engage with its programming.

Of course, before being displayed on the website, any inappropriate content (eg. violent images) will be filtered out.







# Biological Inspiration



# Scaffold Proteins as Inspiration

Within cells, scaffold proteins enhance signal sequencing necessary for cellular function. They do this most commonly by bringing the molecules that take part in the signalling sequence together in close proximity for more effective cellular communication and function (Good 2011).

While cells depend on signalling sequences and metabolic pathways comprised of millions of molecules, communities depend on the interactions that take place between their community members.



LumiArt seeks to bring community members together in an innovative way to foster creative expression through art. By serving as a technological “scaffold” for creative expression, LumiArt’s goal is to strengthen collective community identity.

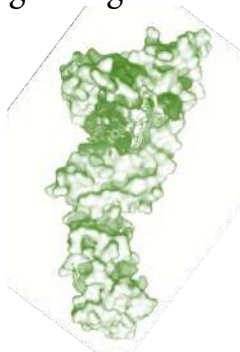
Just as a scaffold protein brings molecules together to heighten the efficiency of signalling sequences in the cell, LumiArt strives to bring community members together to elevate their own sense of belonging and overall community identity.

# Scaffold Proteins and LumiArt

Cellular Response



Signalling Proteins

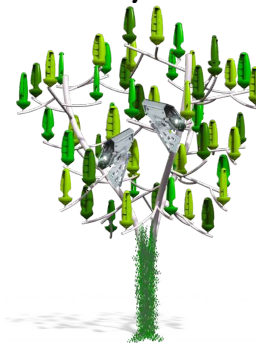


Scaffold Protein

Sense of Belonging & Community Identity



Community Individuals



LumiArt



# Business Plan



# Value Proposition

LumiArt is an interactive art installation that aims to foster social cohesion. By offering communities a new way for individuals to express themselves creatively through art, LumiArt seeks to form and strengthen bonds within communities.

We hope that LumiArt will help individuals feel a greater sense of belonging within their neighbourhoods and will help them strengthen the collective identity of their community.

Ultimately, this effect of LumiArt should contribute to improved overall mental wellbeing of the community in the long term.

The potential for LumiArt to powerfully impact communities is further enhanced by its financial self-sustainability after the initial installation.

LumiArt offers an innovative public art installation that fosters community engagement at a lower costs than traditional public art programmes.

# Beneficiaries

Meant to serve all members of the community in which it is located, LumiArt will primarily benefit individuals residing in and around the Olympic Village after the Games. Existing associations in the neighbourhood, such as schools, youth groups and artist collectives, will especially benefit.

LumiArt may also draw visitors from outside the direct community interested in seeing public art, providing the department of Seine-Saint-Denis with the economic benefits of increased tourism.



# Proposed Partners

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**Community** is at the heart of our project and we consider the local community members our principal partners. This includes the residents of the area around LumiArt, as well as community associations, local schools, and local artist collectives.

“This project is a good way to promote and showcase all the creation in Seine-Saint-Denis” - Lotfi Aoulad, Conseil Departemental of Seine-Saint-Denis.



Working with the **Seine-Saint-Denis Department** will be necessary. We aim to partner with them for logistical support as well as for funding.

The Department has established specific grant competitions for the Olympic Games, such as the “Olympiade Culturelle” which promotes and sponsors cultural projects in the public space and especially in the Olympic Village area. We believe that LumiArt perfectly fits the criteria for this competition.

We aim to partner with **New World Wind** and **Lumitrix** for the provision of the tree and projectors.

Benefiting from the publicity that the **Olympic Village** attracts, LumiArt also hopes to obtain sponsorship from **large energy corporations** such as EDF, MJ or Vinci energies, some of whom have already planned to work with our proposed partner New World Wind in the Seine-Saint-Denis area.



# Maintenance



LumiArt will physically be powered by sustainable energy thanks to a system that recovers urban wind energy, and its art content is powered by creations from the local community.

We estimate that the LumiArt installation will require regular check-ups from horticulturist and electricians roughly every 3 months. These will consist of checking the condition of the projectors, cables, wind turbines, and maintaining the ivy plants so they are not overgrowing or dying.

Maintenance of the website will be done by the web designer.

Sustainable in terms of art and energy

Checking the projectors, cables and wind turbines

Maintenance of ivy

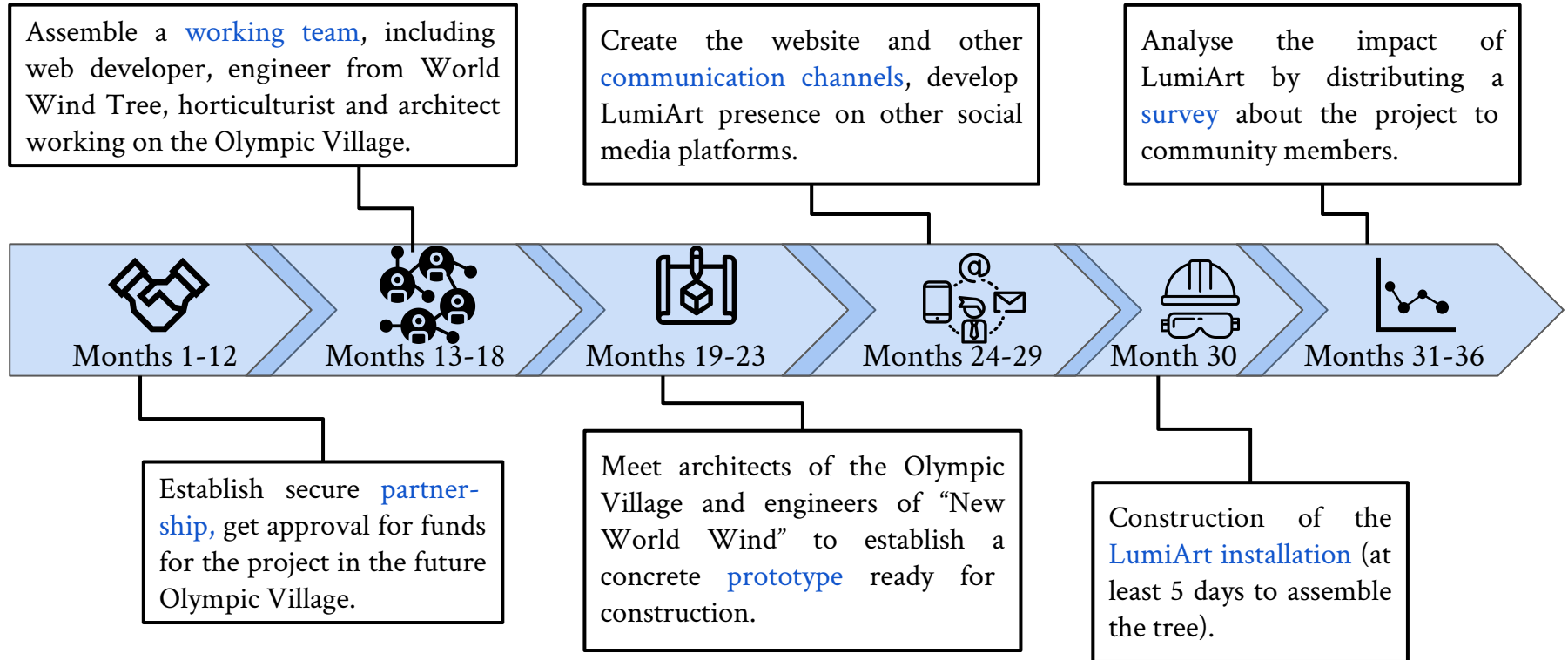
Electricians, horticulturists and web designer needed

Vandalism avoided through community engagement

Because the tree structure and projectors are both built to be very durable and made to withstand all aspects of the urban and Parisian climate, natural damage to the structure is relatively unlikely. Indeed, the Wind Trees already installed in Aubervilliers and Vélizy-Villacoublay have not suffered any natural damage.

If we are successful at creating sustainable community engagement with LumiArt, the community will hopefully feel ownership over the art installation and see it as a valuable part of the community, which will protect it from vandalism.

# Timeline



# Cost Structure



Creation and maintenance of the website	€16,100
Ivy plants from Jardiland in Seine-Saint-Denis	€35
Lumitrix projectors	2 x €25,000 = €50,000
Wind Tree	€50,000
Maintenance	Variable, around €3,000 per year
<b>Total</b>	<b>€119,135</b>

We are hoping to generate revenue from multiple sources:

The tree generates yearly around 37,000 kWh more than needed, which can be sold back for around €0.10 per kWh, earning roughly €3,700 per year.

Corporate sponsorships from energy companies or Olympic sponsors, especially those already active in Seine-Saint-Denis.

Government funding sources, from grants and competitions such as Paris 2024 and the Olympiade Culturelle.





# Assessment and Conclusion

# Proposed Impact

## Individual

LumiArt reduces social isolation by giving **individuals** the opportunity to **express themselves** and their views on the community through the **art installation**, as well as offer a space for rest and reflection in the busy **urban environment**.

LumiArt also aims to reduce the barriers to **accessing art** that individuals might face: by bringing art into the **public space**, we hope to reduce the cost and time commitment that experiencing art generally requires.



## Community

LumiArt aims to increase **community engagement** through the art installation itself as well as through the interactive website. It puts the community at the forefront of technological **art innovation** in greater Paris.

One of the long-term goals of LumiArt is to also increase and improve the **contact** between community members, and thus make the community more socially cohesive.

Assessing the proposed impact poses two main **challenges**:

1. **Subjectivity** of results
2. **Small scale** of project



Since we are focusing on an abstract and subjective factor of community wellbeing - the sense of trust and belonging within a community - there are few objective measurements that can provide reliable data, and we must rely mainly on **self-reporting**.

Additionally, because of the (intentionally) small scale of our project, we will not be able to assume that any correlation between positive community developments and our project's implementation implies a causation.

Other community-focused initiatives in the past have resolved these challenges by focusing their evaluations on surveys, and this seems the most promising way to assess the **impact** of LumiArt as well.

Municipal research is already done on different aspects of community **wellbeing** on a regional scale, but our surveys will be targeted to the **direct community** surrounding the LumiArt installation, in order to increase the reliability of our impact assessment as much as possible.

# Survey

We will assess the impact of Lumi-Art through [self-report surveys](#), distributed among the community around the art installation.

Apart from asking community members general questions about their community belonging and social relationships, we will also ask how they perceive the art installation and the impact that they think it has on their [community experience](#).

We will draw upon the survey designs done by similar community art initiatives, such as the evaluative survey of the Calgary Women's Centre.

In the [analysis](#) of the survey results, we will try to quantitatively visualise the impact LumiArt has had on community and individual wellbeing, but also emphasise [qualitative evaluation](#), by providing space in the survey to write thoughts and comments about LumiArt and the local community life in general.





# Looking Forward



1.

Finish the development of LumiArt and successfully **implement** it in the 2024 Olympic Village.



2.

**Evaluate** the impact of LumiArt on the post-2024 Olympic Village - what was successful and what should be improved when LumiArt is started in a new community?



3.

Implement the **improved** LumiArt in new neighbourhoods and large-scale urban developments - in greater Paris and beyond...



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