Winfra
Rebuild your community

Jenesis Blancaflor   Ruthvik Mukkamala   Sanjida Orpi   Elijah Wilson

Issue

- Across New York City you'll notice the signs of neglected infrastructure, depleted roads, broken sidewalks, and malfunctioning public facilities disrupting lives

- No centralized platform exists for reporting infrastructure issues, leading to unaddressed problems due to improper reporting channels. (Source: Infrastructure Transparency Initiative)

"New York City Is Failing to Repair Needs"

Source: Comptroller's Audit

Research Results

New Yorkers rate their infrastructure satisfaction at 6.5/10, highlighting room for improvement (Source: AECOM)

Much of the city's infrastructure is over 100 years old, with 10% of bridges classified as "structurally deficient." (Source: NYC Comptroller)

The city's transit system received a D-plus ranking, meaning it stands in poor condition and shows general signs of deterioration. (Source: CBS News)

Local governments spend significant time and resources identifying and prioritizing issues, causing delays in repairs and improvements. (Source: Urban Institute)

Solution

1

Civilian Centered

Civilians can easily take action by pinning locations within their community.

2

Intuitive

Easy to use method to report infrastructure issues and challenges.

Visualize and find infrastructure problems geographically in real-time

3

Effective

Efficient way to contact and forward reports to local representatives

Take a look...

Create a report and share an infrastructure issue you encountered.

Check out what others around you have reported and leave helpful comments.

Click on the interactive maps to see infrastructure issues in your community.

Contact your representatives to let them know about infrastructure issues in your area.

Using the Winfra Learn More Section

Approach

Exploring Current Solutions

Step 1

Focus Development

Step 2

Implementation Exploration

Step 3

- Familiarity with community-focused networking platforms such as Citizen and Neighbors, with an emphasis on how interactive maps facilitate information sharing.

- Focused on the dynamics of community communication through features like posts, comments, and social media-style interactions.

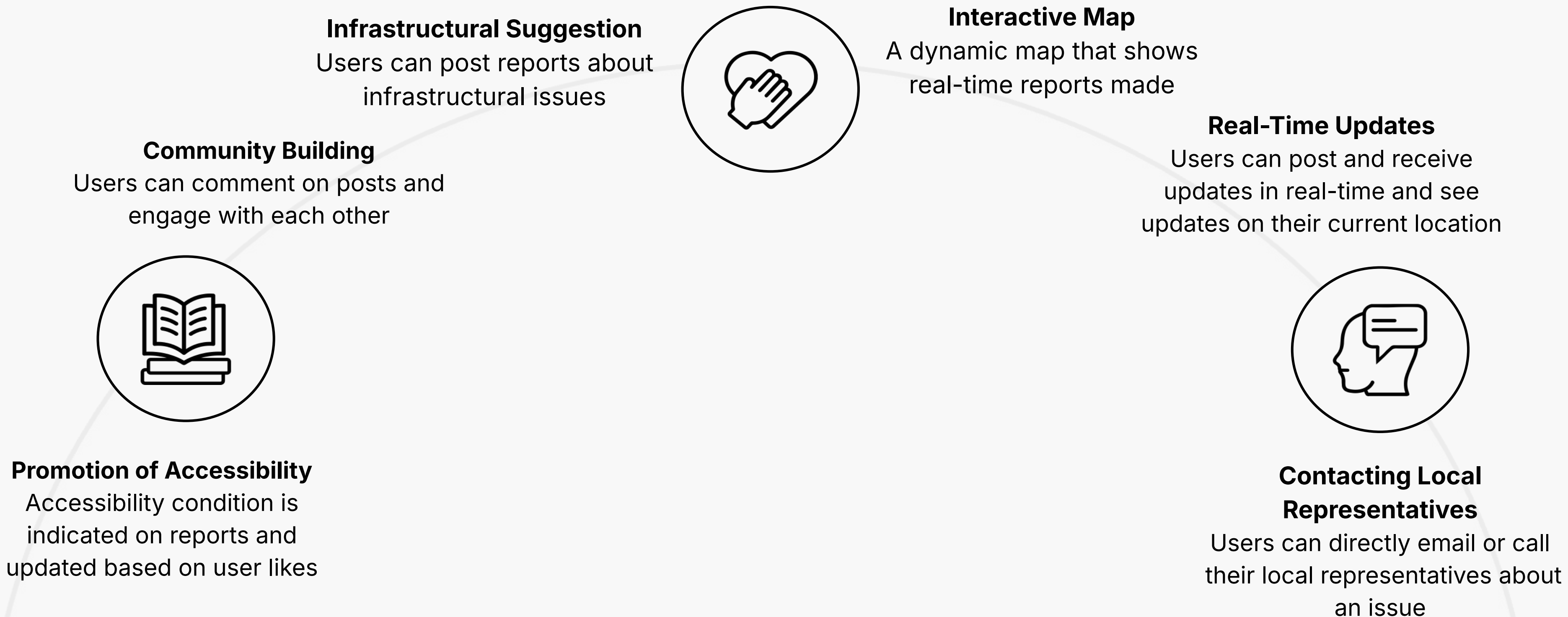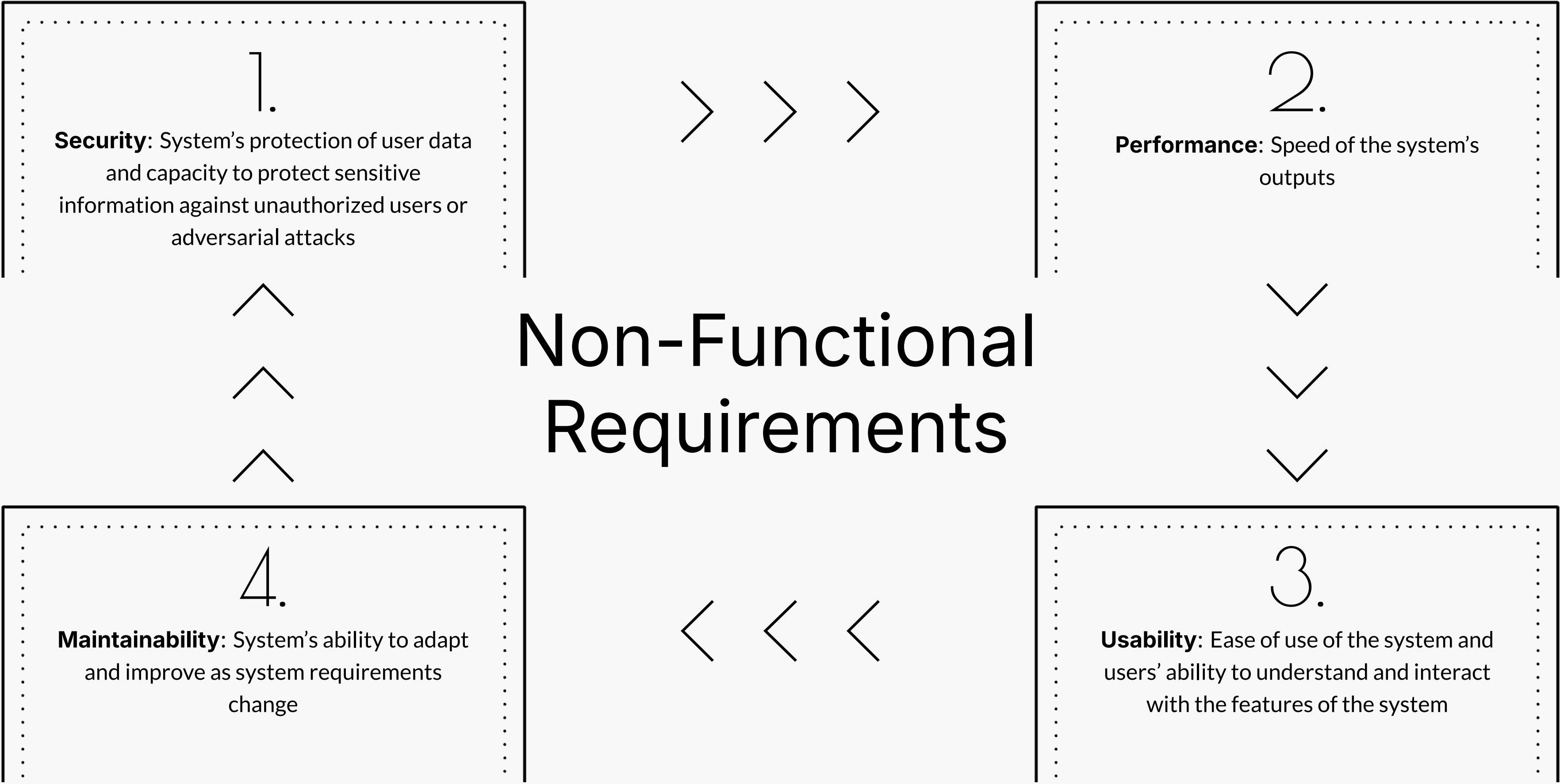- Ultimately aiming to apply these insights to design an inclusive, real-time platform that improves awareness and responsiveness to infrastructure issues.
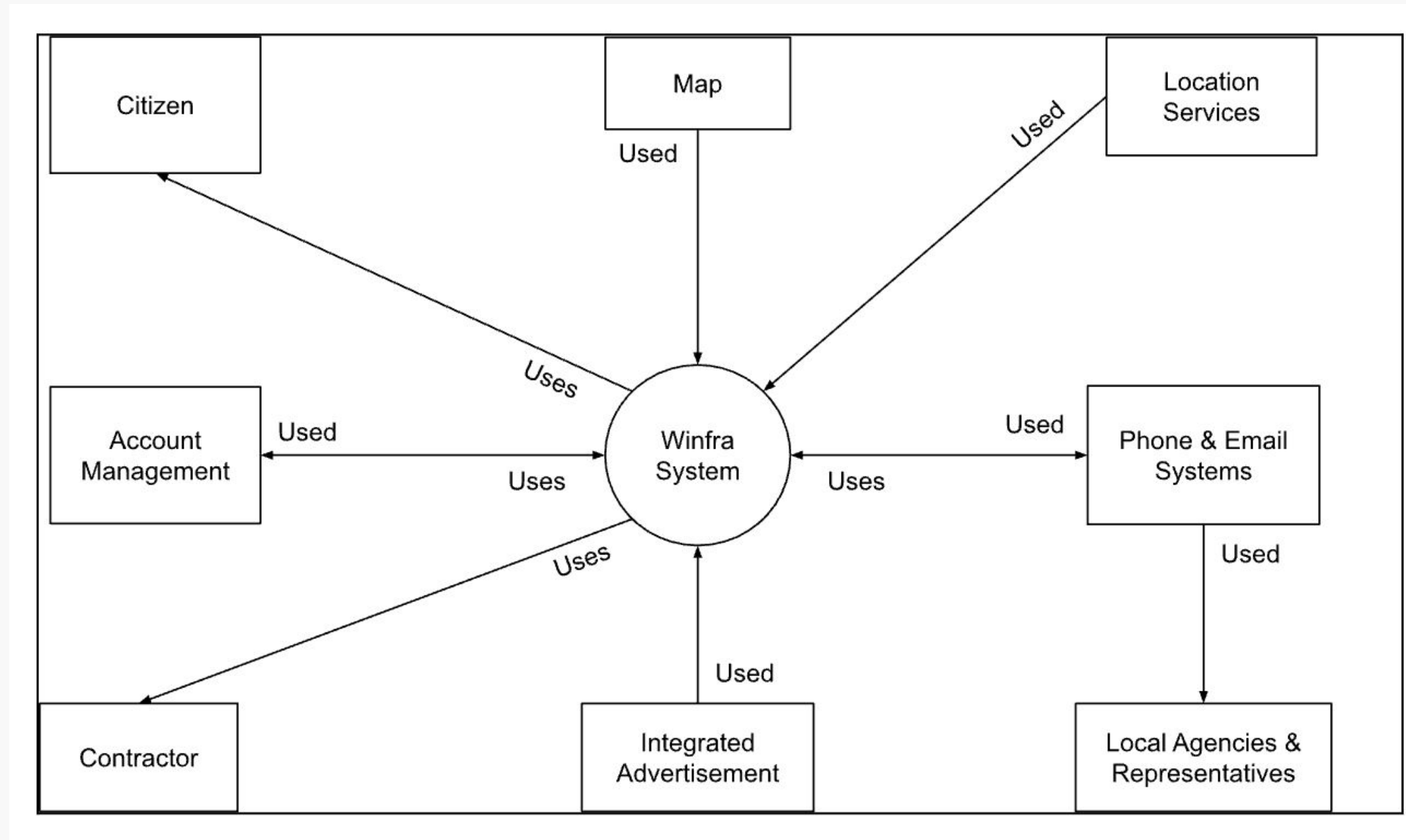
Functional Requirements

Infrastructural Suggestion
Users can post reports about infrastructural issues

Interactive Map
A dynamic map that shows real-time reports made

Community Building
Users can comment on posts and engage with each other

Real-Time Updates
Users can post and receive updates in real-time and see updates on their current location

Promotion of Accessibility
Accessibility condition is indicated on reports and updated based on user likes

Contacting Local Representatives
Users can directly email or call their local representatives about an issue

Non-Functional Requirements

1.
Security: System's protection of user data and capacity to protect sensitive information against unauthorized users or adversarial attacks

2.
Performance: Speed of the system's outputs

4.
Maintainability: System's ability to adapt and improve as system requirements change

3.
Usability: Ease of use of the system and users' ability to understand and interact with the features of the system

Context Diagram

User Class

Data Representation of a
Winfra User

Comment Class

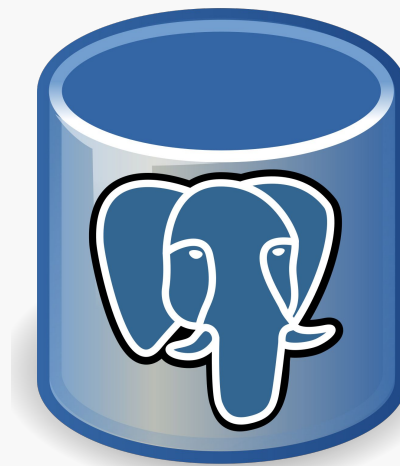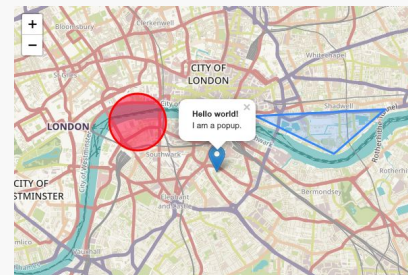Data Representation of a
Comment

Post Class

Data Representation of a
Post

System Architecture
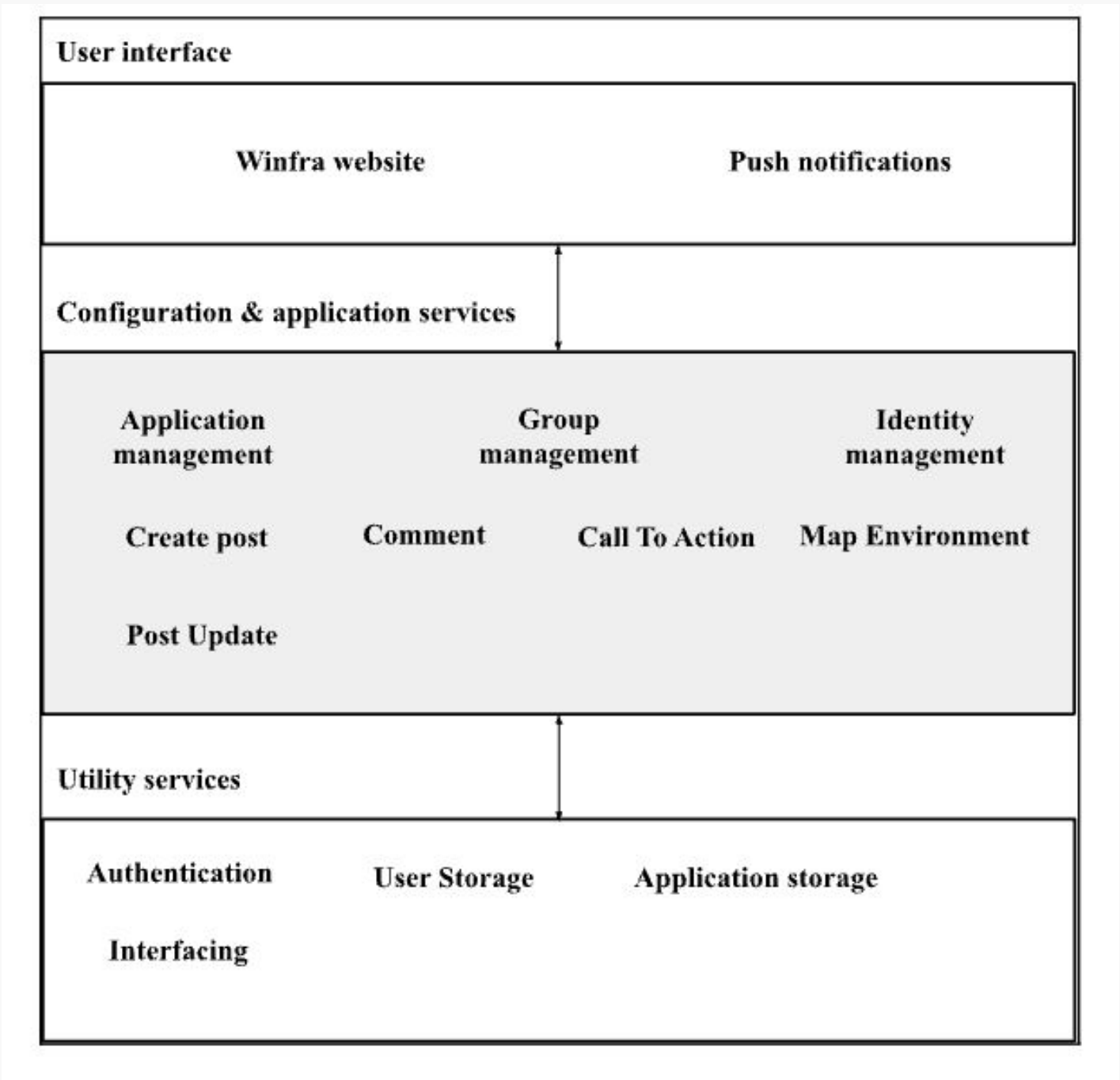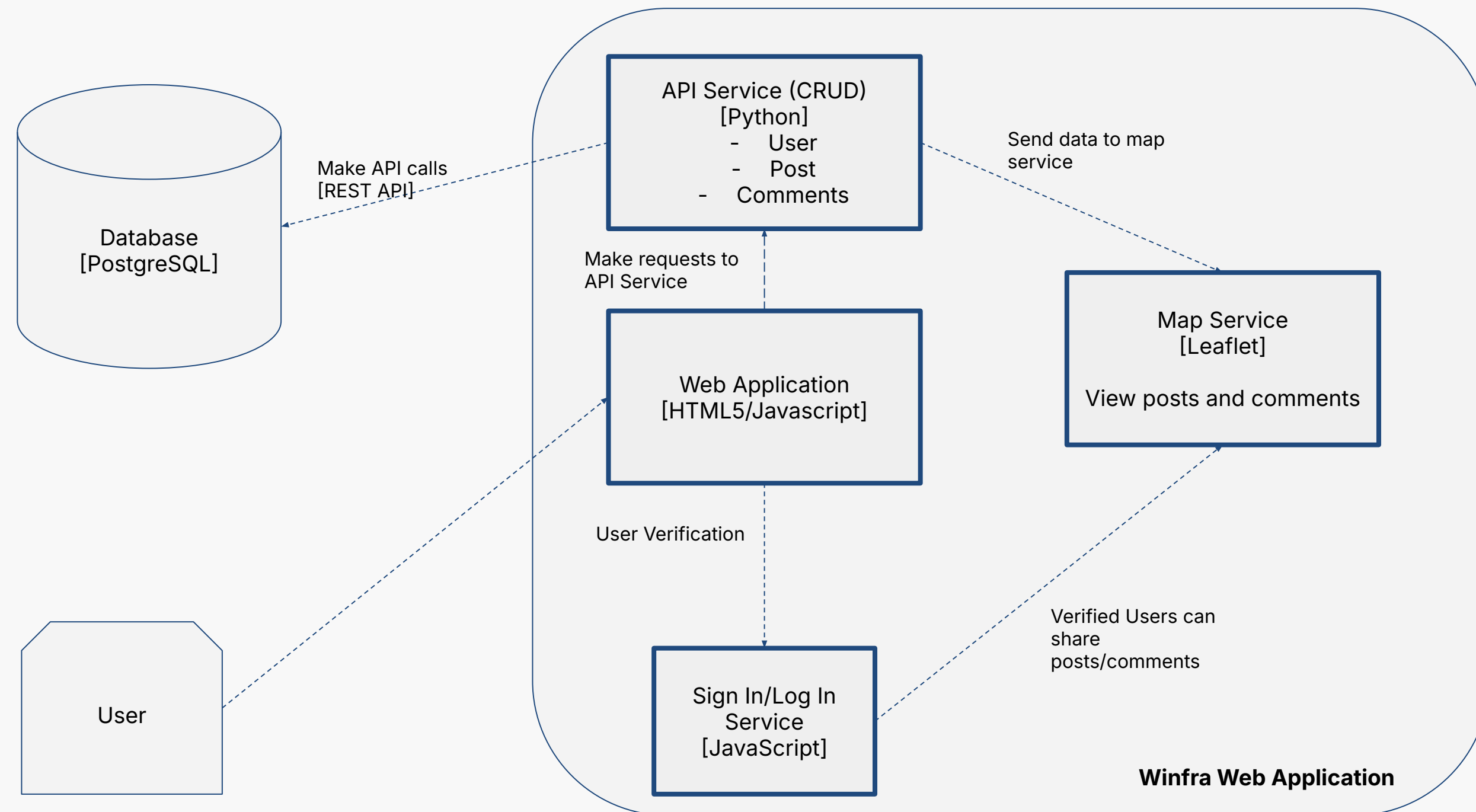
Technologies Used

Map Technologies and Front End

Database

Version Control

Backend

Interface Diagram

Database
[PostgreSQL]

Make API calls
[REST API]

API Service (CRUD)
[Python]
- User
- Post
- Comments

Send data to map
service

Make requests to
API Service

Map Service
[Leaflet]

View posts and comments

Web Application
[HTML5/Javascript]

User Verification

Sign In/Log In
Service
[JavaScript]

Verified Users can
share
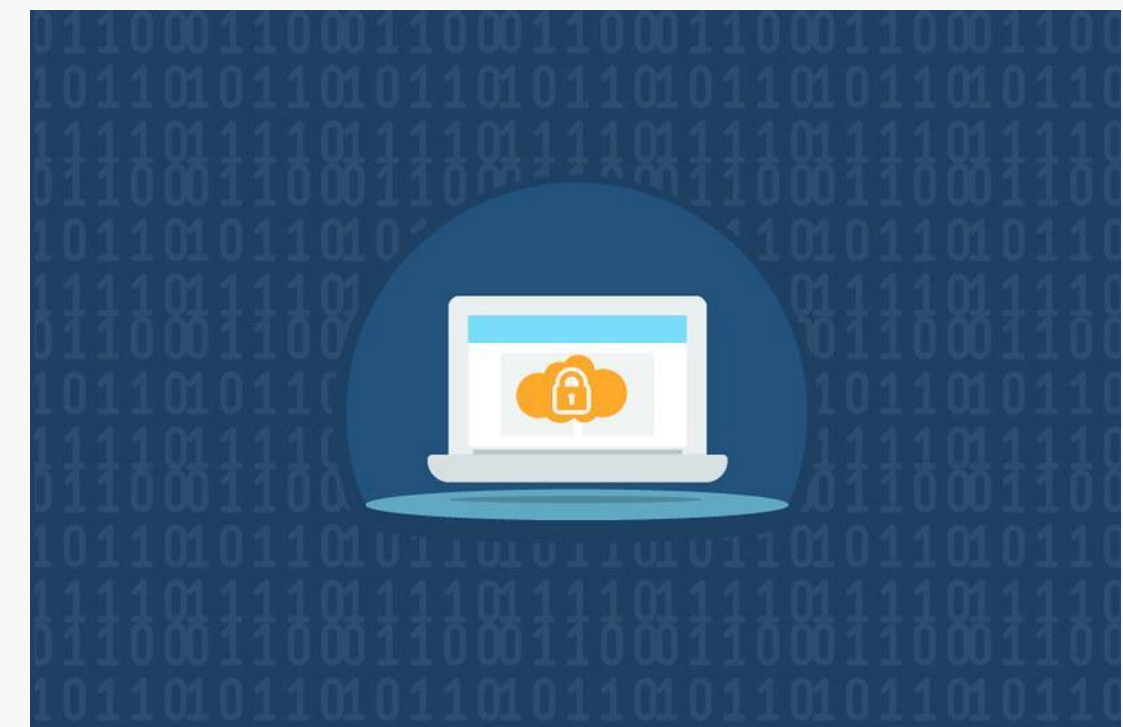posts/comments

User

Winfra Web Application

Limitations

- Local database currently
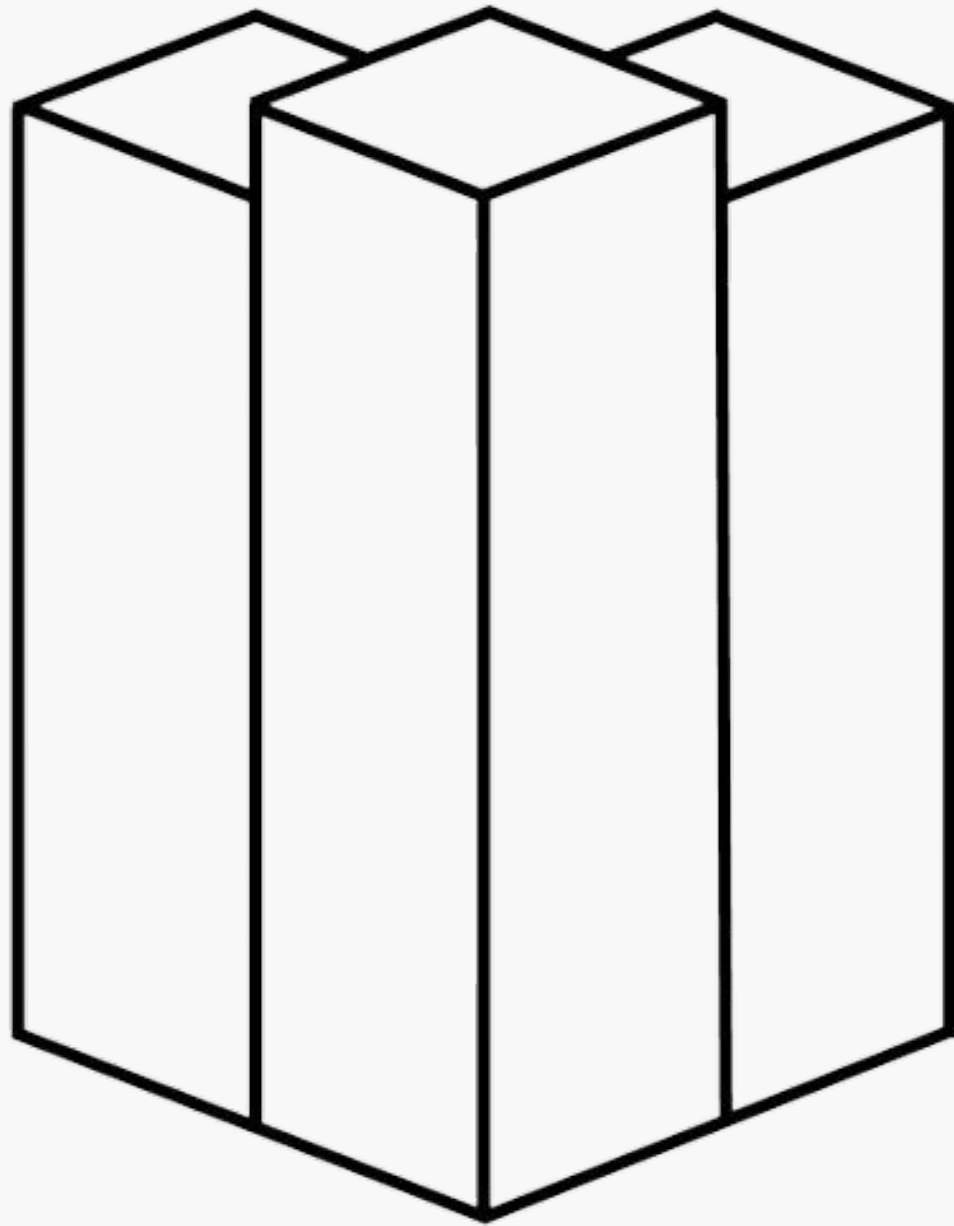- Security and performance
- Leaflet limits locations fetched

Next Steps

- Migrate local database to cloud hosting
- Implement comment replying and notifications
- Source more resources beyond representatives (i.e. Local contractors)
- Implement more security measures to ensure data protection
- Testing

Winfra

Rebuild your community.

Questions?

<u>Works Cited</u>

- https://infrastructuretransparency.org/2024/05/22/breaking-down-barriers-how-ippi-is-changing-the-game-in-infrastructure-data-sharing/
- https://www.cisa.gov/sites/default/files/2023-06/infrastructure_resilience_for_low-capacity_communities_oct2021_508c.pdf
- https://www.urban.org/research/publication/understanding-how-infrastructure-bill-dollars-affect-your-community
- https://infrastructure.aecom.com/2019/newyork
- https://comptroller.nyc.gov/services/for-the-public/investing-in-nycs-infrastructure/infrastructure-planning/
- https://pfnyc.org/transit-and-infrastructure/
- https://www.nyccfb.info/media/reports/voter-analysis-report-2021-2022/
- https://www.nyccfb.info/media/reports/voter-analysis-report-2023/
- https://comptroller.nyc.gov/newsroom/audit-new-york-city-is-failing-to-accurately-identify-its-infrastructure-repair-needs/