

Take-Home Assignment

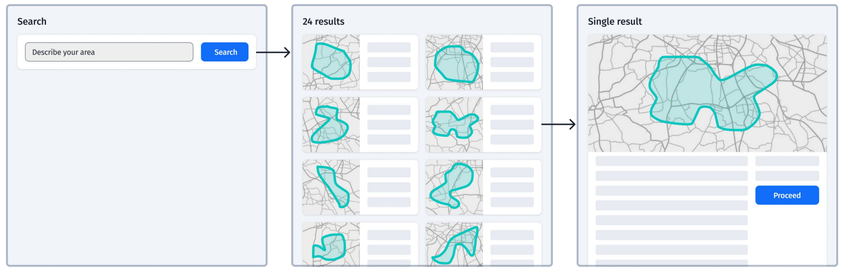
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Intro / Pitch

Current state
Your team is responsible for a web application that allows users to search for areas matching specific criteria. In the app, a search returns a list of results, each displayed with a small map preview and the area that is matching the search. From there, users can open a detailed view for any result to explore more information and proceed with further steps.

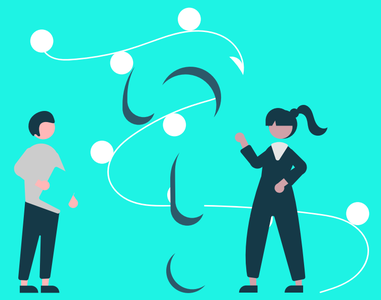
New requirements
Some of your users don’t want to search and deal with results because they already know the area they’re interested in. These users would like the option to either draw their area of interest directly on a map manually, or upload a file that contains this information. Once they defined their area this way, they would like to proceed in the same way as if they would have found the area via the search method.

The task
Create wireframes and describe in detail how you would design this user flow so that users can both search for areas based on specific criteria and manually define an area by uploading a file or drawing it on the map.



Problems

(AT LEAST WHAT I ASSUME THE MAIN ONES ARE...)



Difficult or unintuitive drawing tools

Most web map interfaces for drawing polygons suffer from:

- Tiny handles/vertices that are hard to select
- No snapping to roads, parcels, or landmarks
- No auto-correction for sloppy shapes
- Lack of mobile-friendly interaction
- Users accidentally closing or deleting polygons

Poor mobile experience

Drawing polygons on mobile screens is a major challenge because:

- Small screens make precision hard
- Tools are desktop-first
- Gestures conflict with map pan/zoom
- Lack of multi-touch drawing tools

Limited or rigid boundary definitions

Most apps force users to use:

- Zip codes
- Predefined districts
- County boundaries
- Administrative zones

These rarely match real-life needs like:

- “only this small neighborhood pocket”
- “the area on this side of the river”
- “the zone between these streets”

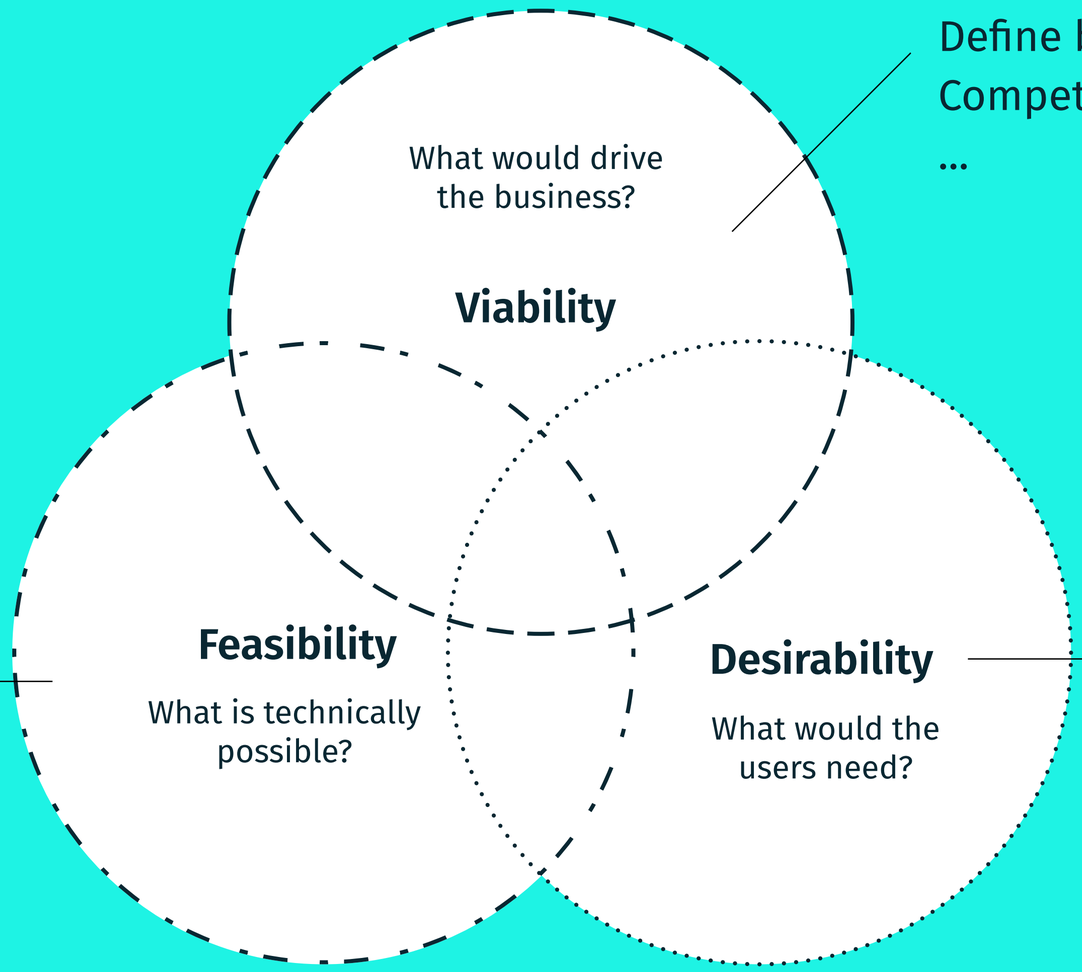
No support for uploading custom files

Many tools do not natively support files

Invalid geometry breaks the system

Self-intersecting polygons, Non-closed shapes, Duplicate points, etc.

Approach



Define business drivers
Competitor Analysis
...

Technical research
Event Storming

Personas
Research approach
Scenarios
User Journey
Wireframes

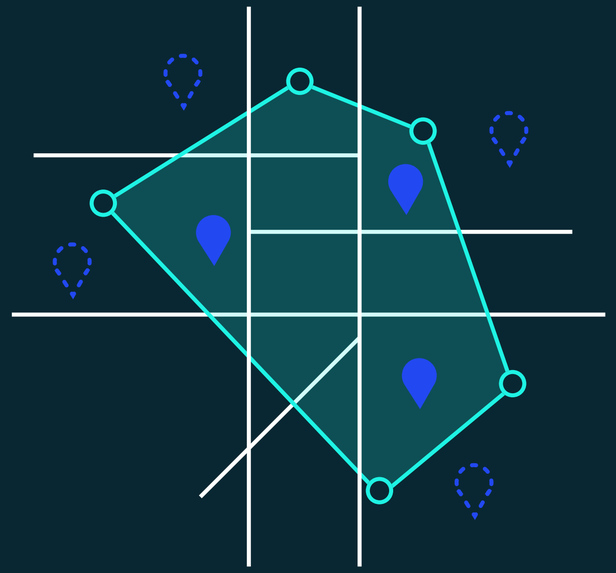
Technical research

https://www.here.com/docs/bundle/maps-api-for-javascript-index/page/resizable-polygon/README.html

*geojson format example

```
{
  "type": "Feature",
  "geometry": {
    "type": "Polygon",
    "coordinates": [
      [
        [8.5417, 47.3769],
        [8.5450, 47.3772],
        [8.5462, 47.3748],
        [8.5431, 47.3744],
        [8.5417, 47.3769]
      ]
    ]
  },
  "properties": {
    "name": "Example Polygon"
  }
}
```

- H.map.Polygon object
- The polygon is constructed using a geo.LineString, which is a sequence of geographic points (latitude/longitude).
- Each point (vertex) of the polygon has a lat and lng property — i.e., standard geographic coordinates
- For the interactive resizing, they also create H.map.Marker objects at each vertex of the polygon. These are draggable, so when the user drags a marker, the underlying polygon gets updated.
- To allow dragging, the polygon (or its parent group) is made draggable by setting draggable = true, and they also use volatility = true to make the rendering more fluid during drag.



Business drivers



Expand the addressable market

- unlock the product for advanced professional users (surveyors, planners, GIS teams).
- Allows onboarding customers who already work with GeoJSON/KML/Shapefiles and have known geographic boundaries.

Allow integration with enterprise workflows

- What companies have: Existing geofences, Service areas, Asset boundaries, Government datasets
- Integrate: Logistics systems, Urban planning tools, Real-estate analysis workflows, Environmental impact systems

Improve data quality and reliability

- get more accurate inputs
- avoid mismatched search results
- Reduces customer complaints about incorrect areas

Increase product usage frequency & stickiness

- Return more often
- Use the tool for more tasks
- Integrate it into their daily workflows
- Improve engagement and retention

Competitors

Google Maps (My Maps / Maps API)

Offers simple polygon drawing (My Maps) but lacks AI tools, advanced geofencing, or robust import/export beyond KML.

Esri ArcGIS

Most powerful enterprise-grade polygon and GIS tooling, but complex, expensive, and not user-friendly for casual users.

Mapbox

Developer-first platform allowing custom polygon tools, but no built-in end-user UI or AI-based area creation.

CARTO

Strong cloud geospatial analytics with polygon drawing & importing, geared toward data analysts and GIS professionals.

Kestrel Insights

Automated geofence provider with accurate polygon data; API-first and no end-user drawing interface.

Felt

Modern, user-friendly map platform with excellent drawing and collaboration, but limited enterprise geofencing workflows.

OpenStreetMap Tools (uMap, Overpass Turbo)

Flexible and free polygon tools for power users, but lacks modern UX, AI features, and enterprise-quality workflows.



User

Exploratory Research

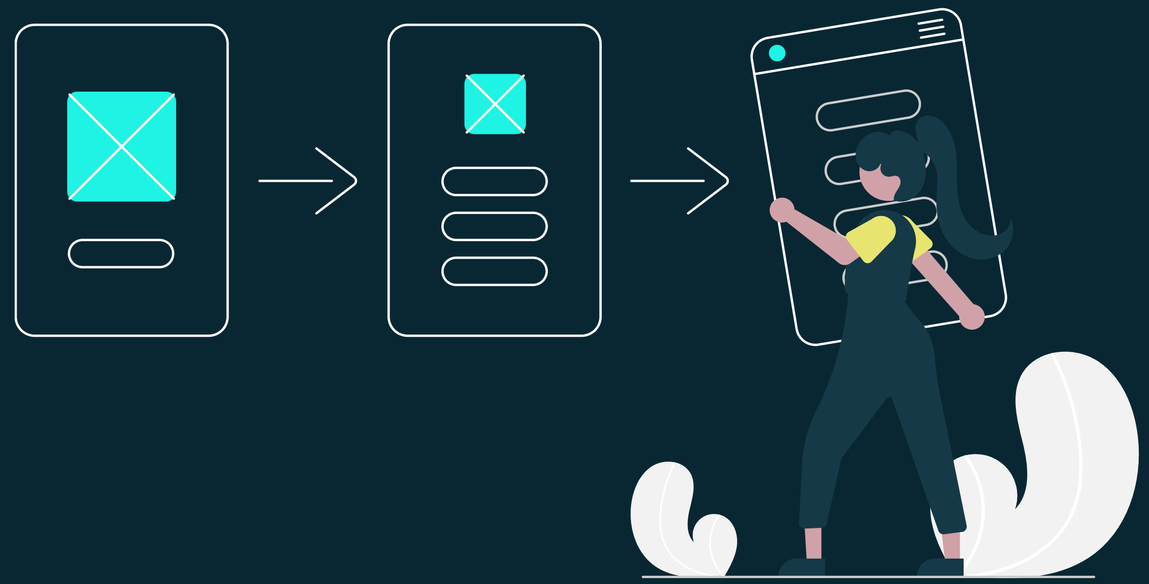
Validate the Problem Space

A more generic set of question to understand the problem space without biasing the users on a specific solution (and unveil more opportunities)

Evaluative Research

Validate the Solution

An ad-hoc / Draft solution to understand if our current ideas are solving for real the problems of the users



Real Estate (B2C)

Profile

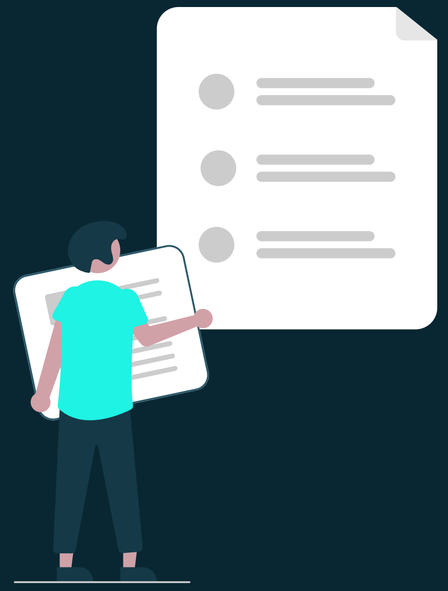
- **Background:** searching for a home to buy. They have specific lifestyle needs and clear ideas of where they want to live
- **Type:** analytical, visual, and values tools that give them control and insights
- **Challenge:** Identify properties that match their lifestyle constraints

Pains

- Traditional real estate platforms force them to search by postal codes or manually browse listings across too-wide areas.
- Spends too much time manually filtering listings outside the area she cares about

Needs

- Define her own “sweet spot” on a map
- Identify properties that match her lifestyle constraints
- Compare micro-neighborhoods visually on a map



What to ask

MORE IN GENERAL ON THE TOPIC

Current experience:

“Tell me about the last time you searched for a home or property —how did you decide which areas to look in?”

“What tools or apps do you currently use to check neighborhoods or areas when researching properties?”

Feature related:

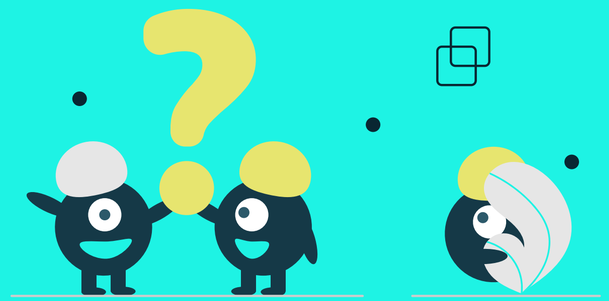
“Have you ever wished you could define your own custom area when searching? What happened in that moment?”

“When looking at areas on a map, what’s most important for you to understand before considering a property?”

Opportunitites

“Can you describe a time when a search area felt too broad or not relevant to what you needed?”

“If you could improve one thing about how apps let you explore neighborhoods, what would it be?”



Logistics (B2B)

Profile

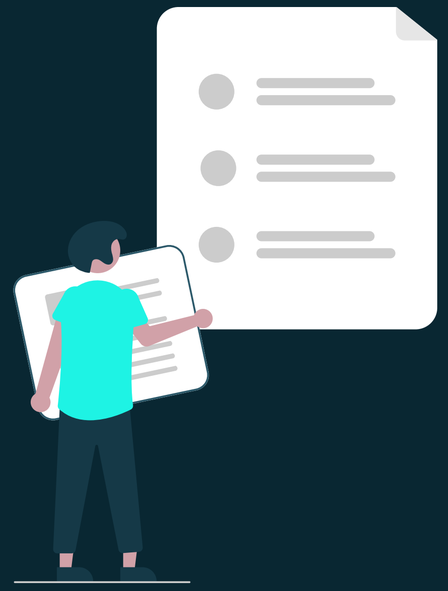
- **Background:** oversees daily route planning, service area updates
- **Role:** manages a team of planners and works closely with dispatch, drivers, and data analysts
- **Motivation:** not a GIS specialist—this tools must be practical and fast.

Pains

- Manual geofence creation is slow and error-prone
- GIS tools are too complex for his team; they want simple, intuitive interfaces.
- Existing tools don’t validate geometry, leading to broken geofences or failed integrations.

Needs

- A fast and intuitive tool to draw, edit, and update polygons
- Ability to upload or import official geospatial files
- Smart corrections (e.g., snap to roads, auto-close polygons)



What to ask

MORE IN GENERAL ON THE TOPIC

Current experience:

“How do you currently define and manage operational areas or geofences in your workflow?”

“Tell me about a recent situation where your team needed to draw or update an area on a map—how did that go?”

Feature related:

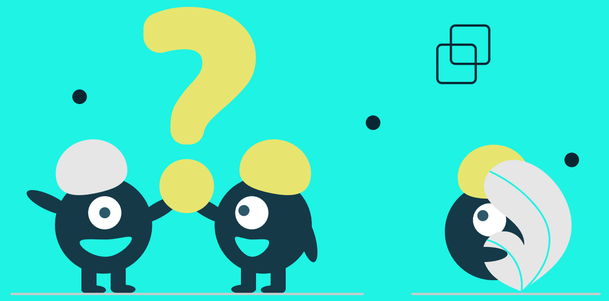
“What kind of files or data formats do you typically use when working with geographical boundaries?”

“Which teams or roles in your organization interact with custom areas, and what challenges do they face?”

Opportunitites

“What problems arise when the boundaries you use are inaccurate, outdated, or hard to create?”

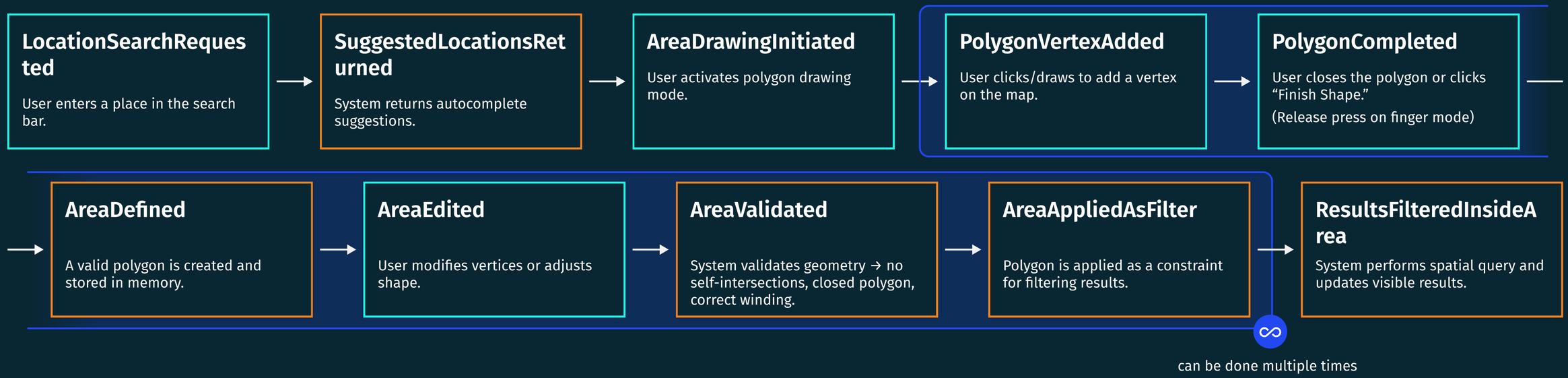
“If you had a tool that made creating and updating areas easier, what would it ideally help you do?”



Event Flow

User System

Search domain

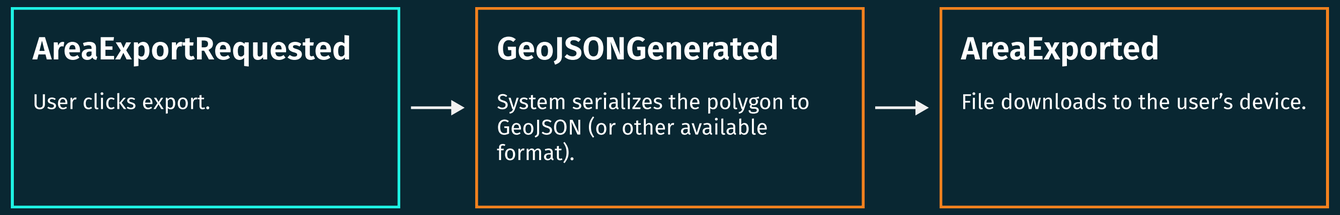


These activities can be done directly with the development team and business stakeholders

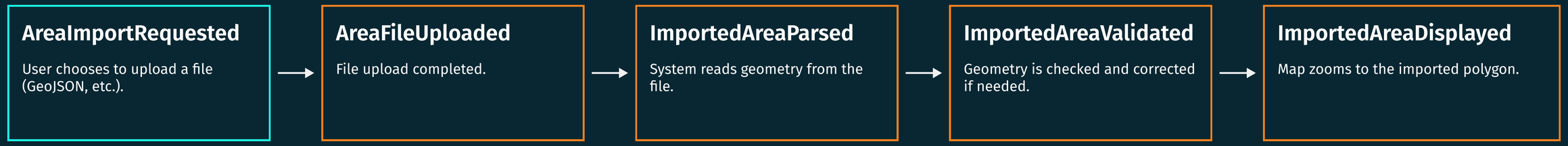
Event Flow

User System

Export domain



Import domain



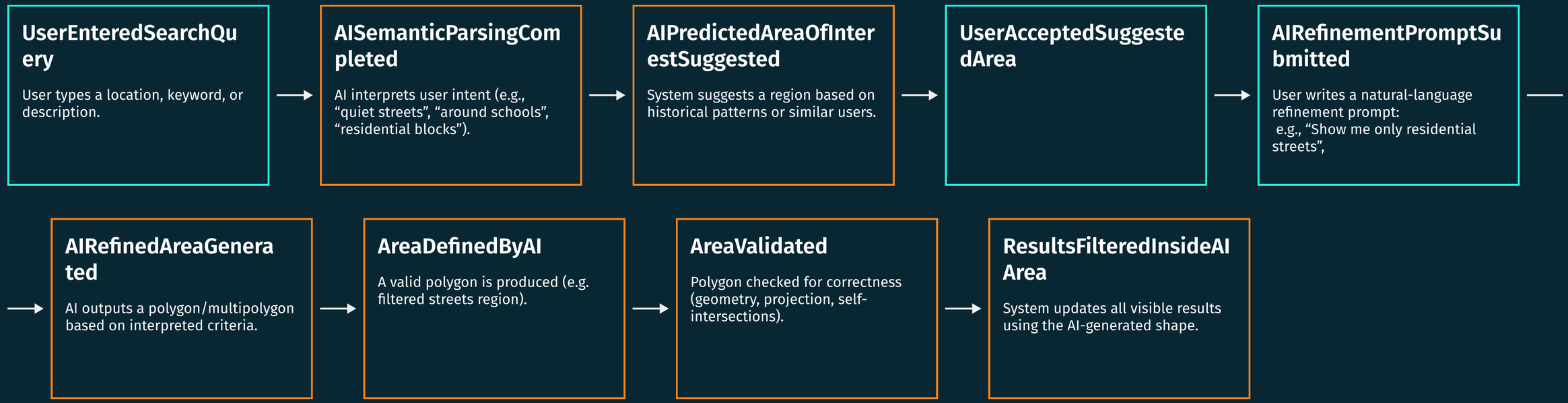
These activities can be done directly with the development team and business stakeholders

Event Flow

User System

Advanced / Experimental functionalities via AI

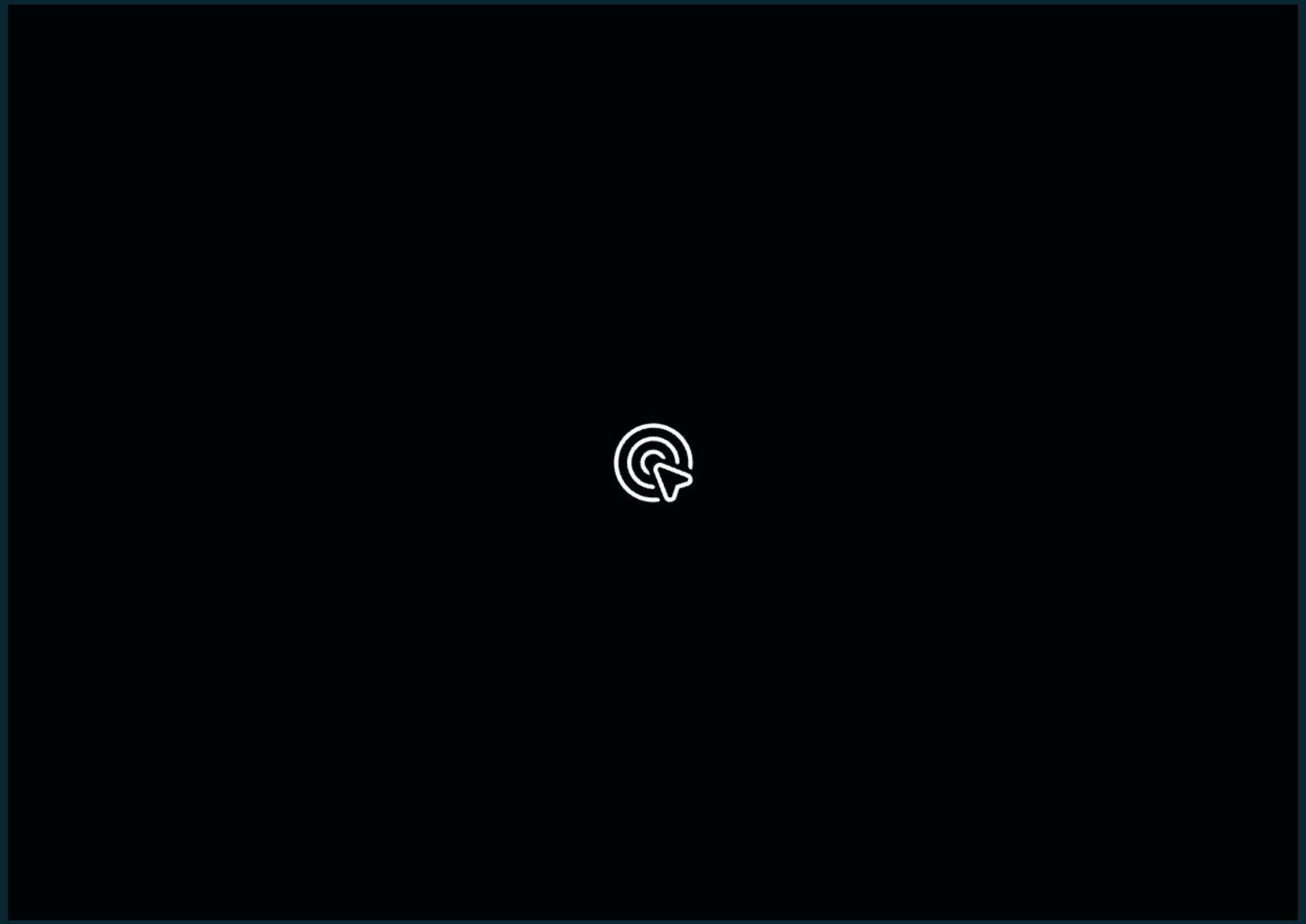
Advanced AI querying



These activities can be done directly with the development team and business stakeholders

Wireframes

Draw area / Filter results



Wireframes

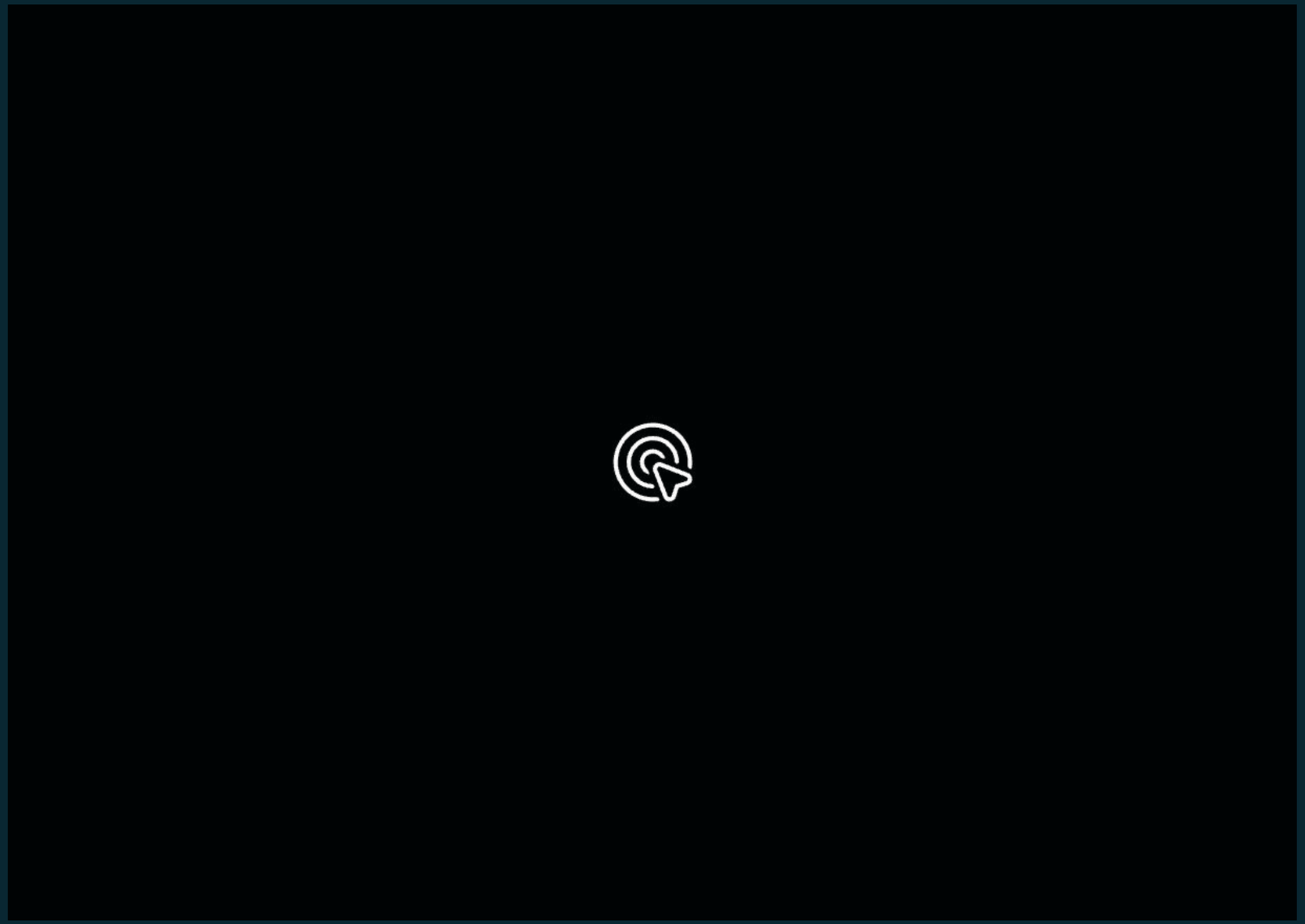
Please, refer to attached wireframe file for better resolution

Draw area / Filter results



Wireframes

Import area

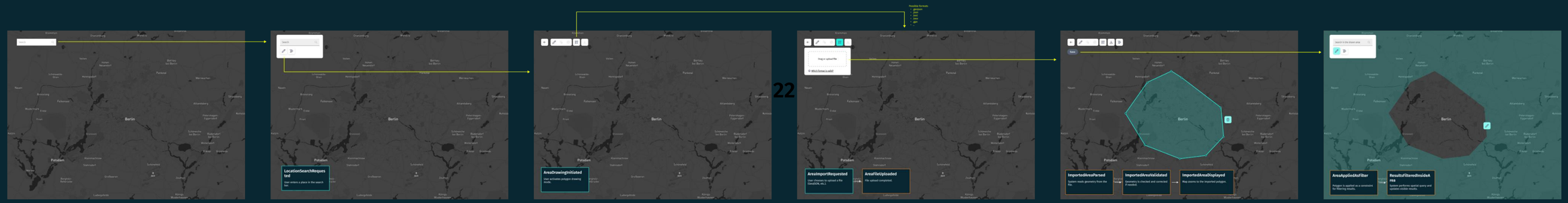


Wireframes

Import area

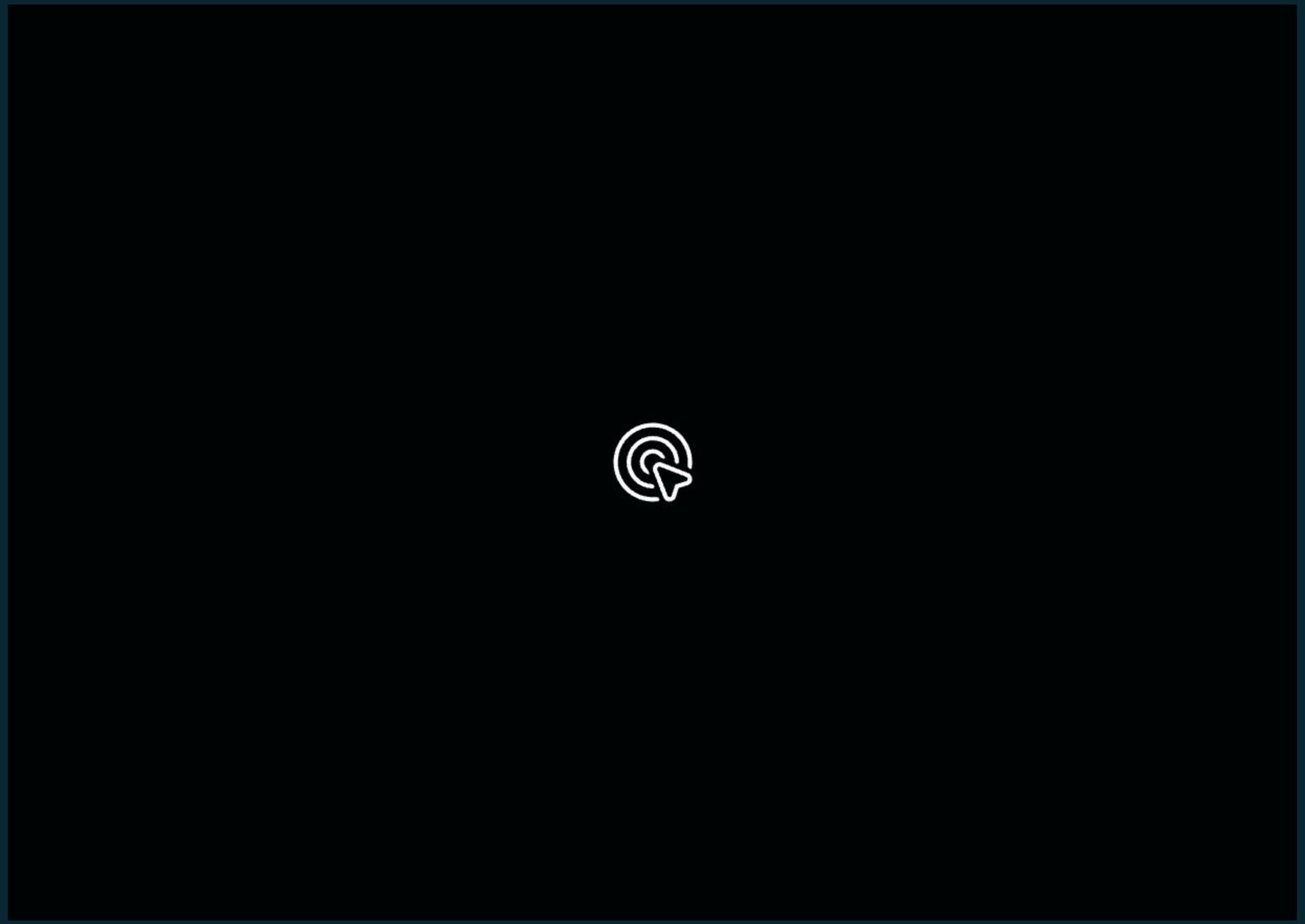
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Import area



Wireframes

Export area

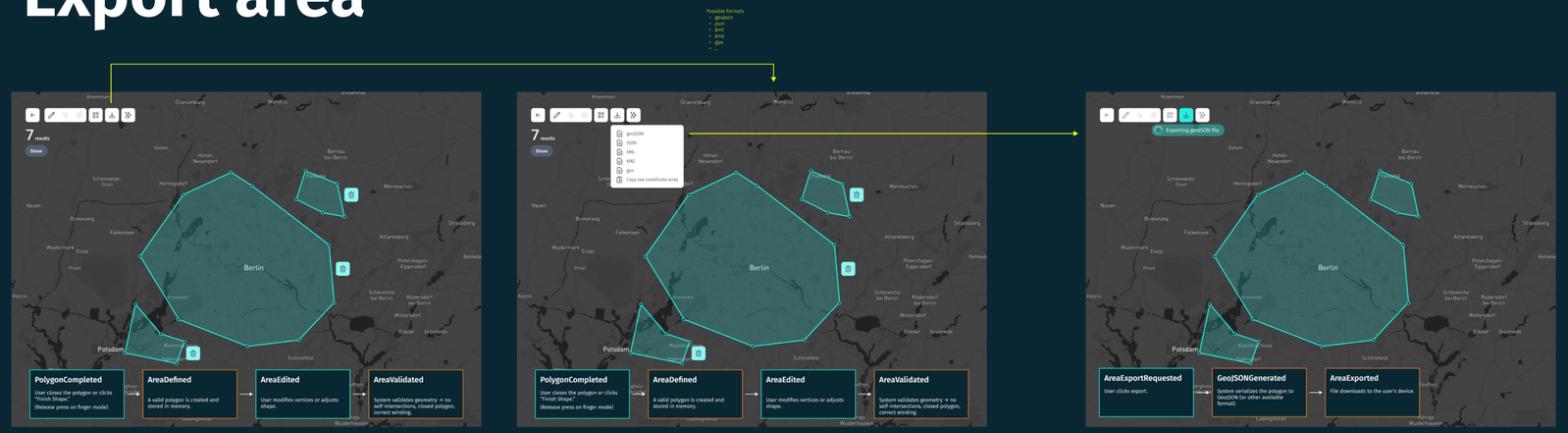


Wireframes

Export area

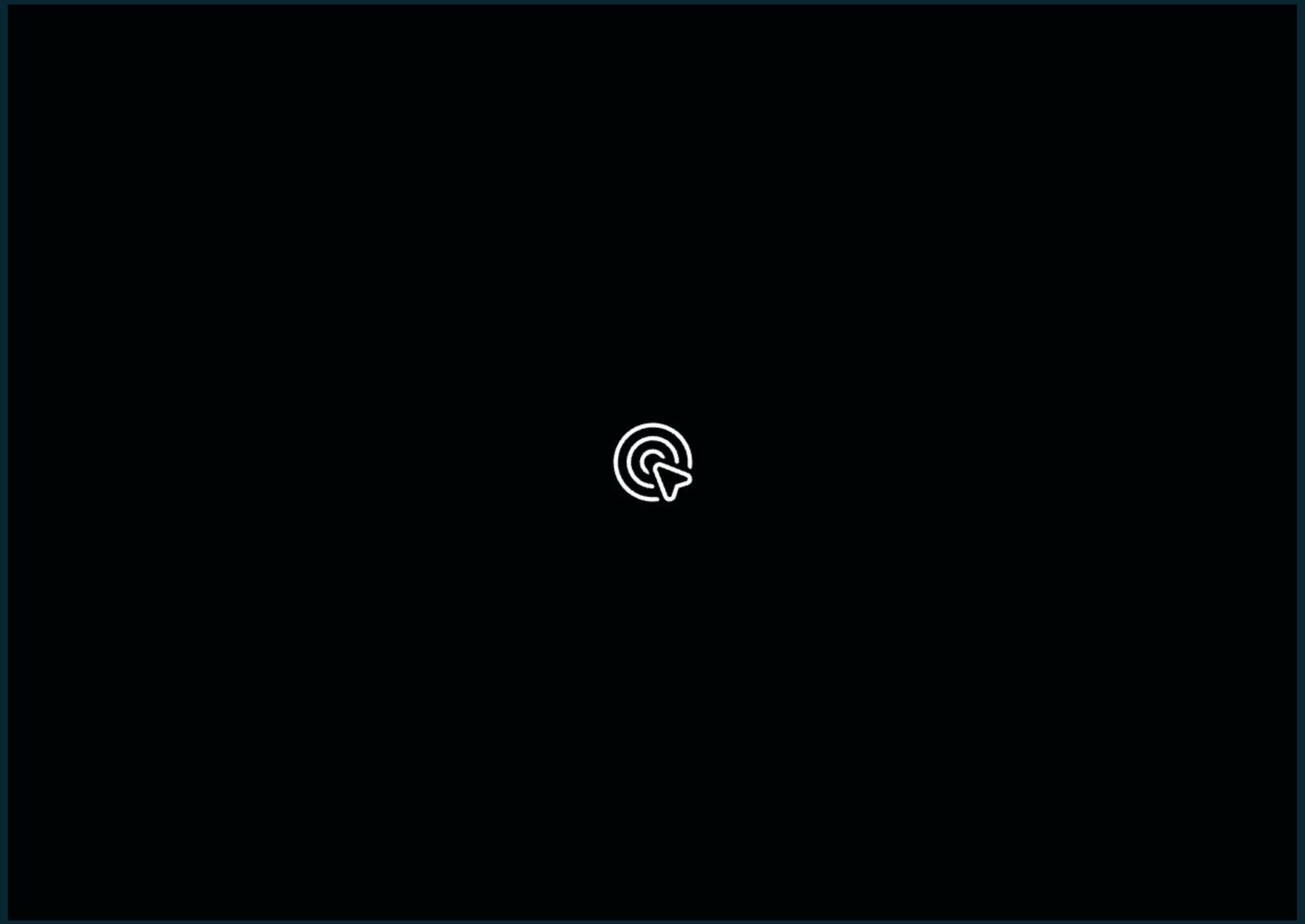
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Export area



Wireframes

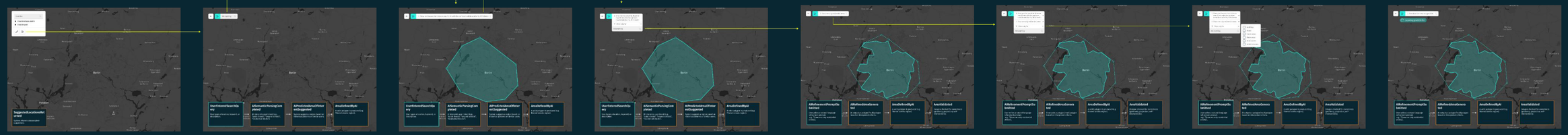
AI advanced editing



Wireframes

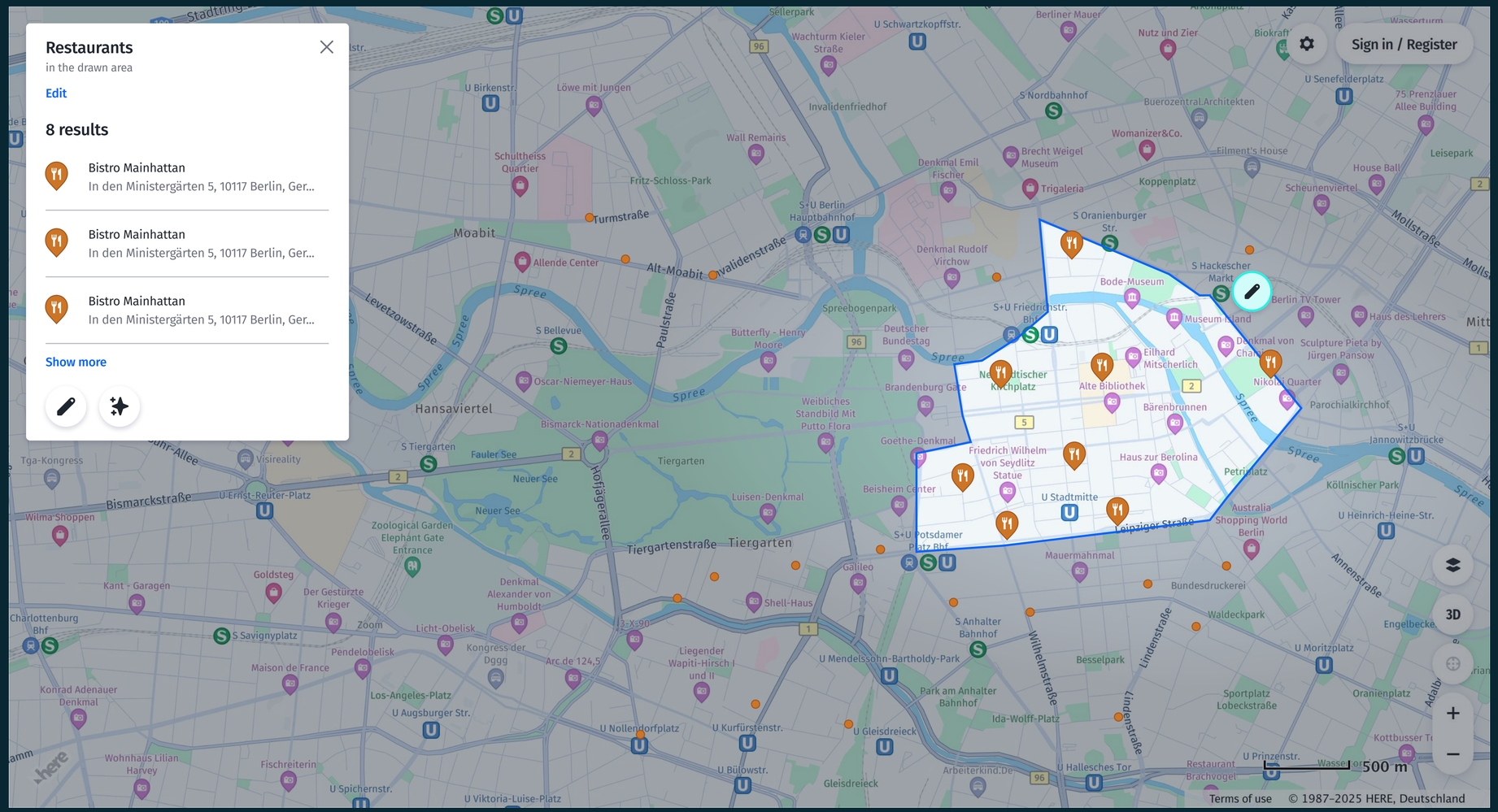
AI advanced editing

AI advanced area definition



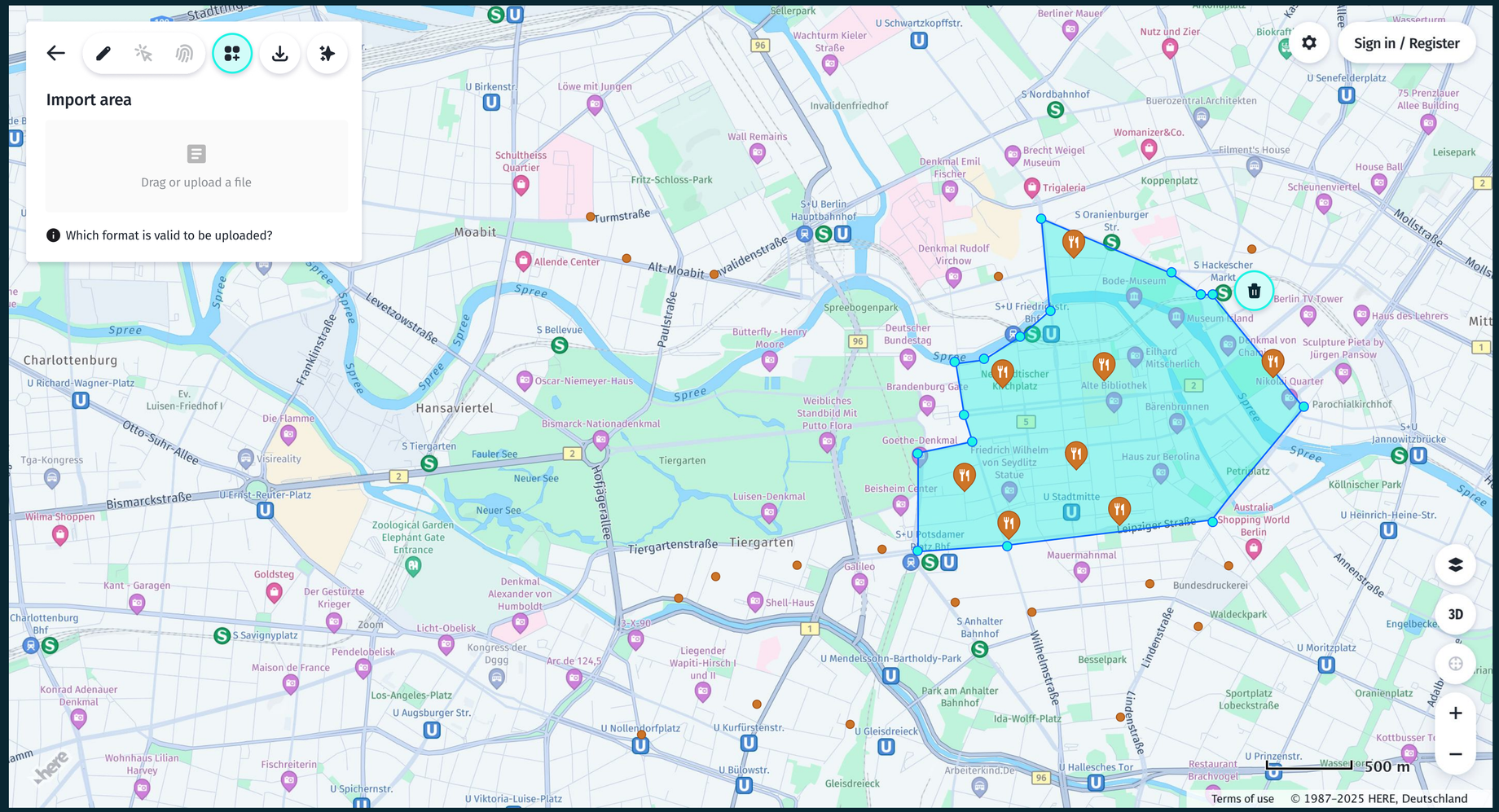
Design

Filtered search



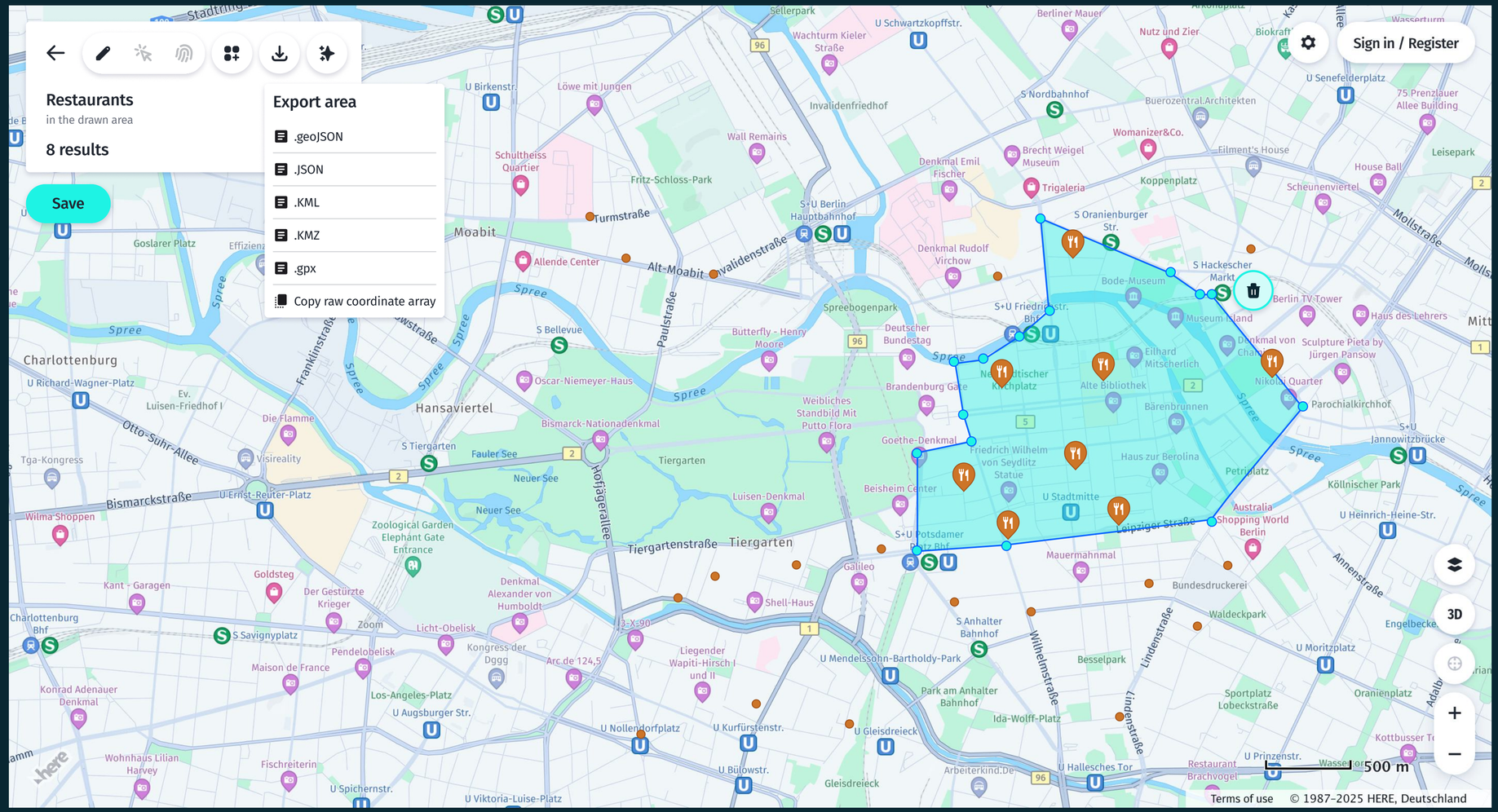
Design

Import



Design

Export



Design

AI advanced editing

