NEOFIX

Northeast Ohio Flight Information Exchange

2nd quarterly report on the Northeast Ohio Information Exchange: Digital Infrastructure for Drone Services in Cuyahoga County project

Period thru June 30, 2023

Stuart C. Mendel
Project Director

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Website content hyperlinks

https://bw-centers-tech-partnerships.org/neofix/

https://bw-centers-tech-partnerships.org/members-supporters/

https://bw-centers-tech-partnerships.org/resources/

https://richedward.com/portfolio/mworks-commercial-1/

www.OH-FIX.com

https://oh-fix.com/index.html

Questions directed to Stuart Mendel, Affiliate Professor and NEOFIX Project Director
smendel@bw.edu

TAB 1

July 12, 2023

Cuyahoga County Office of the Council
2079 East 9th Street
Cleveland, Ohio 44115
Attention: Cynthia Mason, Research and Policy Analyst

With a copy to:
Cuyahoga County Department of Law
2079 East 9th Street
Cleveland, Ohio 44115
Attention: Director of Law

Dear Ms. Mason,

This document and attached booklet TABS comprise the second quarterly report on the Northeast Ohio Information Exchange: Digital Infrastructure for Drone Services in Cuyahoga County, abbreviated hereafter as the NEOFIX project.

The format narrative of this document is drawn from the reporting items listed in section 4 of the agreement between Cuyahoga County and Baldwin Wallace University for funding the NEOFIX, cut and pasted as:

> Recipient shall submit quarterly reports to the Clerk of the Cuyahoga County Council. Reports shall be submitted no later than thirty (30) days after the end of each calendar quarter. In each report, recipient shall provide the following:
>
> 1. An itemized list of all expenditures made during the preceding quarter (**see Table I below**).
> 2. An itemized list of project goals achieved during the preceding quarter; (**see Table II below**).
> **3.** An itemized list of project goals in progress as of the end of the preceding quarter **(see Table II below).**
> 4. An itemized list of project goals to be completed during the current quarter and an itemized list of project goals to be completed in the next quarter **(see Table III below).**

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Summary Narrative

The second quarter report on the progress of the NEOFIX depicts uninterrupted work initially described in the original proposal to the Cuyahoga County District 2 and County Council in Fall 2022 and the first quarter reported submitted this past April.

Briefly, the NEOFIX is a public private partnership, where public sector first-in resources will be amplified well beyond a dollar-for-dollar return for an emerging $10B private industry benefiting residents of the County and the state of Ohio. NEOFIX will provide public safety in Cuyahoga County with a *Common Operating Picture* of drone operations, supporting safe operations and counter-UAS. The NEOFIX puts the County and its airspace within the leading the communities in the nation, applicable as a model program for the state of Ohio.

As a general concept, the first quarter work of the NEOFIX attended on identifying and organizing the stakeholder community. The work of the second quarter has been focused on building the NEOFIX instrument. The NEOFIX web interface was made live in the second quarter of 2023 (June 21) and presented to stakeholders for use and refinement. Further buildout for use by private sector corporations, the state of Ohio, residents and other stakeholders will take place in quarters three and four of this calendar year.

Second Quarter Timeline
In the period April through June 2023 content has been steadily increased on the NEOFIX website to deepen its use as a resource for drone use stakeholders in the County and region. The hyperlink is: https://bw-centers-tech-partnerships.org/neofix/ and a subject index of the site content is provided under TAB 3 of this report.

During the second quarter meetings of NEOFIX stakeholders were held on the campus of Baldwin Wallace University April 18 and June 21, with subcommittee meetings on sequential days during the week of May 22. The four subject themes for the working groups were as follows:

1. The Data Sharing / Base Layers Group (County Planning, Emergency Management, First Energy) (will be published as buffered Hazards w/out descriptions to encourage pilots to avoid, but not publish what it is) Hazards / Obstructions (County Planning) Ground Rules (such as the Cleveland takeoff and landing rules) (County Planning, Emergency Management)Public Safety Incident Data – publishing real time incidents that require UAS operators to be aware and avoid for safety or legal reasons
2. The Design and Configuration Group (Developing additional guidance for UAS operators to layer on top of the Base Layers that contributes to overall safety of operations in the County, respect for resident's concerns, and improved operational clarity for UAS operators.)
3. The Sensor Integration and Planning Group (Identifying areas within the county where additional awareness of aircraft, whether traditional or UAS, is needed to ensure the safe

operations of UAS and support the public safety mission of local law enforcement and fire departments.)
4. The Policy Group (Examining local policy and comparing it to Ohio state policy, other state policy, and Federal policy to determine if there are areas where policy needs to be updated or created.

See fill report below.

Report
I. **Second quarter NEOFIX project performance**

Goal 1 To form four working subgroups drawn from stakeholders identified during first quarter
Goal 2 To design and build the NEOFIX and accessible to the public.
Goal 3 To begin marketing the NEOFIX setting the conditions for a public private partnership (PPP) regionally and across the state of Ohio

The four groups convened on successive dates and worked on the following respective agenda activities.

1) **The Data Sharing / Base Layers Group**
   a) Lead: Scott Drew
   b) Description: Focus on building on the existing data sharing conversations to get groundspace data into the system – develop the initial set of data layers in NEOFIX specific to Cuyahoga County to support safe and efficient flight operations and FAA approvals of advanced operations
   c) Outcome(s): Identify, collect, and load data form relevant sources in Cuyahoga County to populate the initial system configuration, either through ArcGIS subscription, direct system integration, file data load, or hand creation if needed
      i) Objective 1: A list of data assets and owners
      ii) Objective 2: Load and integrate data into NEOFIX
   d) Standing Agenda: (1 Hour)
      i) Based on the expertise of the people in the group and data shopping list, where do these data assets reside?
      ii) Who owns the policies administratively?
      iii) Who owns the data assets administratively?
      iv) Who owns the data assets physically/technically?
      v) What is required to access them (administrative and technical)?
      vi) What is the next step for access for each listed asset?
      vii) When is the next meeting date for the Data Sharing group?

   NEOFIX Data Asset Shopping List
   - Ground space configuration data such as hazards, obstacles, and obstructions
     o Geo-buffered sensitive infrastructure (cell towers / power lines / substations) to assist with safe flight operations and compliance with regulations (e.g., infrastructure that would be harmed if a vehicle collided with it)
     o Hazardous ground conditions such as chemical and oil plants and storage facilities
     o Construction cranes
     o Tall (>100') buildings and structures

- Ground space configuration such as take-off and landing area rules (preferred, notification required, permission required, and prohibited)
  - Standing supplemental rules, requirements, or restrictions for take-off and landing on public property such as parks, garages, and schools
  - Areas restricted to the public (public safety, city yards, etc.) where a vehicle operators would not normally have access for takeoff and landing outside of an emergency situation.
- Event data
  - Public safety data such as operations and public safety sensitive or restricted areas that are time bound.
  - Access to local 911 Computer Aided Dispatch centers to integrate relevant dispatch calls.
  - Sports schedules
- Sensor data to provide situational awareness of environmental conditions, including weather.
  - Local or municipally owned weather sensors

Advisory Type	Description
State or Local Government Information Advisory	Provide local government a voice for local preferences (e.g., safety in operations over people, privacy, environmental concerns) and provide guidance to industry on conditions that may impact the safety or efficacy of an operation or integration into the community.
Public Safety First Responder Emergency Incident Management Response	(e.g., Fire, Police Operations): Inform operators and the public about an area of Public Safety operations so that private operators can avoid interference with public safety operations— manage flight in the air, deconfliction on the ground, and help with creating a temporary flight advisory (TFA) in the context of a Disaster Response.
Public Safety Hazardous Materials Incident	Inform operators and the public about an area of personal hazard or aircraft contamination risk— manage flight in the air and deconfliction on the ground.
State or Local Agency Site Data Collection	Make the public and UAS operators aware of operations so that we can reduce operational interference which improves safety while also reducing public concerns about the use of the UAS through transparency.
Public Safety Large Audience Event	Provide needed data to UAS operators and USS providers to assist in compliance with Federal Rules about operations over people.

Advisory Type	Description
State or Local Government Supplemental Rule Advisory	Denotes a time and location where a Supplemental Rule may be in effect (such as the requirement to notify an agency prior to use of the land)
Ground Operations Prohibited	Denotes a time and location where take-off and landing of a UAS are prohibited either due to: i) Public Safety requirements, ii) a political subdivision rule under HB 742, or iii) because the site is closed to the public.
Hazard / Obstruction	Denotes air or ground times and locations that may present a hazard to operators, either because of a physical obstruction on the ground or in the air or a hazardous ground condition.
Planned Flight Operation	Provides notification of a planned Flight Operation area
Ongoing Flight Operation	Provides notification of an ongoing Flight Operation area

- Surveillance information describing objects in the air, including crewed and uncrewed vehicles, and other relevant information, to assist USS/UTM providers managing airspace operations.
  - Access to any existing, available surveillance sensors

2) **The Design and Configuration Group**
   a) Lead: Scott Ross
   b) Description: Identify added guidance and advisories that effectively "design" the preferred and prohibited take off and landing areas, sensitive or critical areas to avoid, and high value / high risk areas where higher surveillance performance is needed to make operations safer, more efficient, and approvable given the groundspace procedural mitigations
   c) Outcome(s): Develop a draft configuration plan including preferred and prohibited ground operations areas, sensitive flight areas, identified areas of air and ground risk and preferred navigational area and potential input on schedules and risk mitigations
      i) Objective 1: Initial ground configuration plans around Cleveland Clinic Administrative Campus and Cleveland Lakefront
      ii) Objective 2: Draft outline for risk mitigation strategy
   d) Agenda: (1 Hour)

i) Identify contemplated Phase 1 operations

ii) Identification of preferred, prohibited, and sensitive ground areas in the proposed operating areas

iii) Identification of sensitive or higher risk air operating areas

iv) What are the next steps for developing a regional risk mitigation strategy?

v) When is the next meeting date for the Design group?

3) **The Sensor Integration and Planning Group**

   a) Lead: John Eberhardt and Kyle Snyder

   b) Description: use the use cases and work from the Design and Configuration Group to identify sensor needs and build out an MVI deployment plan and support direct sensor integration into NEOFIX to meet the needs identified in the risk mitigation plan

   c) Outcome(s): Based on the groundspace data (Data Sharing) and configuration (Design) develop a set of proposed phased incremental rollouts of sensor infrastructure in the NEOFIX area

      i) Objective 1: Proposed ground sensor coverage map, by area and modality, for Cleveland Clinic Administrative Campus and Cleveland Lakefront

      ii) Objective 2: Initial proposed Performance Baseline given risk mitigation strategy

   d) Agenda: (1 Hour)

      i) What are the operational risks associated with the proposed operations based on the Risk Mitigation?

      ii) What can we observe about the Ground Risk based on the Risk Mitigation?

      iii) What types of ground-based infrastructure support operational goals and risk mitigation?

      iv) What specific service volume(s) can we identify? What services may be necessary in these volumes?

      v) What performance baseline metrics should we build to?

      vi) When is the next meeting date for the Integration and Planning group?

   As we consider our service volumes, we can assign:

   - Tier 1 provides position, awareness and environmental services at the lowest Performance level, for a combination of lower risk, lower density service volumes and operations.

   - Tier 2 provides position, awareness and environmental services at a mid-Tier Performance level, for medium level risk, medium density service volumes and operations or for areas where a medium risk operation occurs in a low risk service volume.

- Tier 3 provides position, awareness and environmental services at a high-Performance level, commensurate with current General Aviation services, intended to support medium or high risk operations in a high risk volume, such as adjacent to a General Aviation airport or over an urban core where the risk of injury is greater.

4) **The Policy Group**
   a) Lead: Stuart Mendel
   b) Description: Identify, understand and review relevant policies at the local, state, and Federal level and identify any recommendations or observations for discussion at the regional level.
   c) Outcome(s): An inventory of relevant policies and recommendations for local / regional government to discuss
      i) Objective 1: An inventory of policies
      ii) Objective 2: Proposals for regional stakeholders
   d) Agenda: (1 Hour)
      i) What relevant policies can we identify at the local, state, and federal level (in that order)?
      ii) How are these policies relevant to our region and our stakeholders?
      iii) What policies and policy recommendations do we need to explore?
      iv) When is the next meeting date for the Integration and Planning group?

II. <u>**Additional activities held in for May 2023**</u>

- Advanced Air Mobility with Kent State University College of Aeronautics and Manufacturing Works: 'Reaching New Heights' program and ecosystem development.
- Preparation for presence at the Cleveland National Airshow.
- Feasibility for state of Ohio capital budget funding for sensors.

Progress toward NEOFIX goals are reported in the following Tables.

Table I. Itemized list of all expenditures made during the preceding quarter.

Budgeted and Expense items First Quarter thru 06/30/2023

Line Item		Annual Budget	Actual	Notes
Program Development Expenses		$105,000	$50,500	Salary/fringe
Technical / Software		$ 75,000	$75,000	ATA
Stakeholder Outreach		$ 19,500	$15,000	EHM, Vaux
Data Governance		$ 0	$ 0	contributed
Use Case Development		$ 25,000	$ 8,120	Critical Ops, Food, travel
Total Direct Costs		$224,500	$148,620	

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Table II. An itemized list of project goals to be completed during the second quarter and an itemized list of project goals to be completed in the third quarter.

Second Quarter	Goals/Action
April	1. Commence collaboration with interested partners to facilitate turn up and deployment of new public safety and commercial industry drone services 2. Third User Group Meeting (April 12) 3. Start collecting and mapping data assets 4. Initial NEOFIX System Standup for Testing 5. Approve Production NEOFIX 6. Finalize and approve initial data mappings and supplemental language 1. Guidance for identifying and describing data
May	2. Initial data integrations to capture digital infrastructure data and sensor / tools integrations. 3. Establish data security model documentation. 4. Establish API credentials 5. Load initial production data 6. Complete onboarding initial USS/UTM partners
June	1. Fourth User Group Meeting to Deploy Production NEOFIX 2. Stablish processes for work listed below for July and August (third quarter).

An itemized list of project goals to be completed during the third quarter.

Table III Third quarter performance goals

Third Quarter	Goals/Action
July	1. Timely response to technical support and technical inquiries 2. Maintenance of new requirements and features 3. Successful provision of API access as needed 4. Hosting of NEOFIX with support during regular business hours 5. Ability to train new users 6. Ability to connect (onboard) USS/UTM providers and critical infrastructure providers 7. Provision of data governance manuals and guidance materials 8. Successful loading of data into the platform; and 9. Support for user group meetings.
August	1. Secure County Funding for year 2 operations 2. Submit proposal for sensors and other capital equipment 3. Create user-fee model for fiscal sustainability of the NEOFIX

Third Quarter	Goals/Action
September	1. Monthly user group meeting 2. Ongoing Onboarding of USS/UTM partners 3. Ongoing onboarding of BW partner agency systems 4. Continued collection, mapping and loading of data assets 5. Review, extend, update and maintain data mapping

Table IV

Fourth Quarter	
Monthly Thereafter	Monthly User Group Meeting Ongoing Onboarding of USS/UTM Partners Ongoing onboarding of BW partner agency systems Continued collection, mapping, and loading of data assets. Review, extend, updated and maintain data mappings and supplemental language.
Quarterly Thereafter	System Maintenance and Ongoing Security Compliance Minimum quarterly release of updated application and new features

Concluding items for the report.

- As of this writing the NEOFIX data sharing website is established and available for view through the www. There are two pathways to view the materials. The first is through the Baldwin Wallace University portal with address: https://bw-centers-tech-partnerships.org/neofix/ while the second is the direct hyperlink: www.OH-FIX.com.

- Over the next two quarters, we will increase outreach to state of Ohio legislators, executives and relevant departments for the purpose of deepening the initiative locally and advancing the initiative statewide.

- Our goal is to enable the NEOFIX to reflect live motion data by the FALL 2023.

Respectfully submitted,

Jennifer Pitz, MPA
Director, Research and Sponsored Programs

Stuart C Mendel
Affiliate Professor and Project Director

TAB 2

Here are the April 1 – June 30, 2023 meetings:

- April 7 = Staging Server and Track Discussion
- April 10 = Data Sharing
- April 12 = Stakeholder Meeting
- April 27 = BW Visit with Joe Zeis and Adam Holmes
- April 29 = Young Eagles Rally and Drone Safety Day (not sure if NEOFIX had a presence)
- May 1 -2 = Reaching New Heights at KSU
- May 2-4 = Ohio Aviation Association Annual Conference
- May 5-9 = Apple Blossom in Virginia
- May 9 = AUVSI
- May 16-17 = Ohio Global Aerospace Summit
- May 22 = Virtual Stakeholder Working Group (Data Sharing and Base Layers)
- May 23 = Virtual Stakeholder Working Group (Design and Configuration)
- May 24 = Virtual Stakeholder Working Group (Sensor Integration and Planning)
- May 25 = Virtual Stakeholder Working Group (Policy)
- May 31 = Cuyahoga County Data Sharing
- June 9 = NEOFIX Planning Group – Business and Sustainability Model Discussion
- June 15 = NEO AAM Roadmap
- June 20 = Virtual Stakeholder Working Group (Data Sharing and Base Layers)
- June 21 = Stakeholder Meeting and NEOFIX Launch
- June 22 = Virtual Stakeholder Working Group (Sensor Integration and Planning)
- June 28 = Critical Infrastructure Hazards

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TAB 3

Technology Partnerships Initiative | Baldwin Wallace University

NEWS POSTS
September 2022 – June 2023

Public Safety Drones Market Report Includes Dynamics, Products, and Application 2023 – 2032
06/10/23
https://bw-centers-tech-partnerships.org/public-safety-drones-market-report-includes-dynamics-products-and-application-2023-2032/

Drones on the front lines in public safety operations
06/08/23
https://bw-centers-tech-partnerships.org/drones-on-the-front-lines-in-public-safety-operations/

Time to revisit use of drones by law enforcement when public safety is at stake
06/05/23
https://bw-centers-tech-partnerships.org/time-to-revisit-use-of-drones-by-law-enforcement-when-public-safety-is-at-stake/

Allen County, Ohio, to Purchase Public Safety Drone
06/02/23
https://bw-centers-tech-partnerships.org/allen-county-ohio-to-purchase-public-safety-drone/

Emergency Management Drones: What are they, what do they do?
05/30/23
https://bw-centers-tech-partnerships.org/emergency-management-drones-what-are-they-what-do-they-do/

NASA Deploys PC-12 For Advanced Air Mobility Trials
05/22/23
https://bw-centers-tech-partnerships.org/nasa-deploys-pc-12-for-advanced-air-mobility-trials/

Technology Partnerships Initiative | Baldwin Wallace University

CAL Analytics to Provide Uncrewed Traffic Management Services to State of Ohio
05/18/23
https://bw-centers-tech-partnerships.org/cal-analytics-to-provide-uncrewed-traffic-management-services-to-state-of-ohio/

Mission Possible: Taking the Drone Economy to New Heights in Northeast Ohio
05/16/23
https://bw-centers-tech-partnerships.org/mission-possible-taking-the-drone-economy-to-new-heights-in-northeast-ohio/

Walmart Partner DroneUp Pushes to Enhance Drone Flight Safety
05/13/23
https://bw-centers-tech-partnerships.org/walmart-partner-droneup-pushes-to-enhance-drone-flight-safety/

Aloft UTM Launches Air Boss
05/10/23
https://bw-centers-tech-partnerships.org/aloft-utm-launches-air-boss/

Can You Zone Drone Use?
05/01/23
https://bw-centers-tech-partnerships.org/can-you-zone-drone-use/

Drone Industry in the US: An Overview of a Game-Changer
04/28/23
https://bw-centers-tech-partnerships.org/drone-industry-in-the-us-an-overview-of-a-game-changer/

UAV Manufacturing in the US – Employment Statistics 2005–2029
04/25/23
https://bw-centers-tech-partnerships.org/uav-manufacturing-in-the-us-employment-statistics-2005-2029/

Drone market outlook in 2023: industry growth trends, market stats and forecast
04/22/23
https://bw-centers-tech-partnerships.org/drone-market-outlook-in-2023-industry-growth-trends-market-stats-and-forecast/

Job Growth in the Drone Industry
04/19/23
https://bw-centers-tech-partnerships.org/job-growth-in-the-drone-industry/

Agriculture Drone Software Market Research Report 2023-2033 Market R & D
04/11/23
https://bw-centers-tech-partnerships.org/agriculture-drone-software-market-research-report-2023-2033-market-r-d/

NIMBUS receives $2M to advance drones' role in climate change research
04/06/23
https://bw-centers-tech-partnerships.org/nimbus-receives-2m-to-advance-drones-role-in-climate-change-research/

Drone Sensors Market to Reach USD 2,391.5 million by 2032
04/03/23
https://bw-centers-tech-partnerships.org/drone-sensors-market-to-reach-usd-2391-5-million-by-2032/

US Needs Improved Regulation to Foster Drone R&D
03/30/23
https://bw-centers-tech-partnerships.org/us-needs-improved-regulation-to-foster-drone-research-and-development/

Ohio House aviation committee seeks to help state soar
03/18/23
https://bw-centers-tech-partnerships.org/ohio-house-aviation-committee-seeks-to-help-state-soar/

Manufacturing Works Programs and Events | March 2023
03/01/23
https://bw-centers-tech-partnerships.org/manufacturing-works-programs-and-events-march-2023/

NEOFIX Featured in North Coast Drone Alliance News
02/23/23
https://bw-centers-tech-partnerships.org/neofix-featured-norcoda-news-022323/

The State of the Drone Industry | Drone Industry Insights
02/17/23
https://bw-centers-tech-partnerships.org/state-of-drone-industry-2022-021623/

Air Traffic Control for Drones – Run by Computers | NoCamels Israeli Innovation News
02/14/23
https://bw-centers-tech-partnerships.org/air-traffic-control-for-drones-run-by-computers/

How a Drone from a Tampa Walmart Makes Deliveries | Tampa Bay Times
02/14/23
https://bw-centers-tech-partnerships.org/how-drone-from-tampa-walmart-makes-deliveries/

Drone Prepared | February 10, 2023
02/14/23
https://bw-centers-tech-partnerships.org/drone-prepared-021023/

6 Barriers to Drone Adoption in Public Safety & Emergency Services and How to Overcome Them
02/09/23
https://bw-centers-tech-partnerships.org/6-barriers-drone-adoption-public-safety-emergency/

Ohio: The Birthplace of Aviation
01/23/23
https://bw-centers-tech-partnerships.org/ohio-birthplace-aviation-drone-industry/

FAA Unmanned Aircraft System Traffic Management Concept of Operations
10/19/22
https://bw-centers-tech-partnerships.org/faa-unmanned-aircraft-system-traffic-management/

The Technology Partnerships Initiative at BW
09/29/22
https://bw-centers-tech-partnerships.org/technology-partnerships-initiative-bwu/

NEOFIX: A Partnership to Develop Drone Infrastructure
09/29/22
https://bw-centers-tech-partnerships.org/neofix-partnership-drone-infrastructure/

Critical Infrastructure Modernization Forum
09/29/22
https://bw-centers-tech-partnerships.org/critical-infrastructure-modernization-forum-092022/

BW Faculty Connections with the Technology Partnerships Initiative
09/29/22
https://bw-centers-tech-partnerships.org/bwu-faculty-connections-with-the-technology-partnerships-initiative/

EVENTS POSTS
September 2022 – June 2023

June 21, 2023 | Uncrewed Aerial System (UAS) Operators and Industry Stakeholder Engagement
https://bw-centers-tech-partnerships.org/event-june-21-2023-uncrewed-aerial-system-uas-operators-and-industry-stakeholder-engagement/

May Virtual Meetings (NEOFIX)
https://bw-centers-tech-partnerships.org/may-virtual-meetings-neofix/

May 16-17, 2023 | Ohio Global Aerospace Summit
https://bw-centers-tech-partnerships.org/event-may-16-17-2023-ohio-global-aerospace-summit/

May 2, 2023 | Reaching New Heights in Advanced Air Mobility (AAM)
https://bw-centers-tech-partnerships.org/event-may-2-2023-reaching-new-heights-in-advanced-air-mobility-aam/

April 29, 2023 | Drone Safety Day
https://bw-centers-tech-partnerships.org/event-april-29-2023-drone-safety-day/

April 29, 2023 | Young Eagles Rally, EAA Chapter 1252
https://bw-centers-tech-partnerships.org/event-april-29-2023-young-eagles-rally-eaa-chapter-1252/

April 12, 2023 | Uncrewed Aerial System (UAS) Operators and Industry Stakeholder Engagement
https://bw-centers-tech-partnerships.org/event-april-12-2023-uncrewed-aerial-system-uas-operators-and-industry-stakeholder-engagement-2/

March 8, 2023 | Uncrewed Aerial System (UAS) Operators and Industry Stakeholder Engagement
https://bw-centers-tech-partnerships.org/event-march-8-2023-uncrewed-aerial-system-uas-operators-and-industry-stakeholder-engagement/

February 8, 2023 | Uncrewed Aerial System (UAS) Operators and Industry Stakeholder Engagement
https://bw-centers-tech-partnerships.org/uas-operators-industry-stakeholder-engagement/

TAB 4

Northeast Ohio Flight Information Exchange (NEOFIX):
A Public-Private Partnership To Develop Drone Infrastructure For Economic Development, Public Safety Cyber Security And Emergency Preparedness
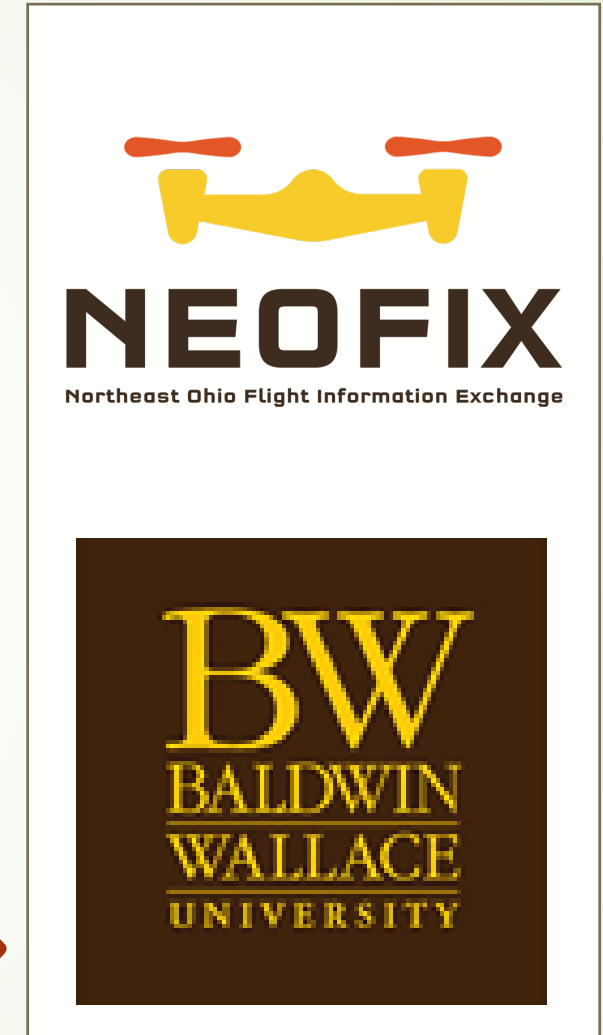
Tuesday, June 13, 2023, briefing attendees:
County Executive – Chris Ronayne
County Council District 2 Dale Miller
Stuart Mendel, Baldwin Wallace University
Stephen Stahl, Baldwin Wallace University

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7/13/23

What is NEOFIX?

- NEOFIX is the instrument for state and local government and public safety agencies to post information for each other and drone operators which keep the airspace open, secure, and safe.
- NEOFIX informs drone operators of ground rules and conditions, local issues and events, public safety incidents, hazards, and sensitive and critical infrastructure: key safety and navigation data.
- NEOFIX allows information sharing in the most open way possible while also respecting operational security, privacy requirements, and public safety, enabling multiple ways to connect and share information via Internet and flight programs.

- https://bw-centers-tech-partnerships.org/neofix/

- https://richedward.com/portfolio/mworks-commercial-1/

- www.OH-FIX.com

- https://oh-fix.com/index.html

Public Data, for the Public Good, in the Public Interest

BWU NEOFIX Project Objectives

This project fits within BWU strategic values devising programming that is intentionally excellent, innovative, equitable and inclusive. The NEOFIX is an exciting and valuable fit within BWU's regional impact, awareness and reputation strategic initiative outputs. As a public private partnership this technology partnership is a necessary infrastructure underlying high paying jobs drawing on education , training, manufacturing a design, maintenance technologies, flight operations programs; and public policy development and discourse while also engaging students and faculty of BWU.

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Summary of the Benefits and Capabilities of NEOFIX

- <u>Inexpensive</u> approach to infrastructure for the rapid growth of the drone industry and <u>creation of high paying blue collar and technology derived jobs</u>
- Enables <u>local government</u> the ability to <u>define how drones get integrated</u> into their communities
- Enables safe integration for the space where drones operate (under 1,000 feet)
- Creates public data assets for drones that provides Navigational Aids (NAVAIDS) that the FAA has already stated it will not provide
- Relies on a <u>proven model</u> that accelerates services, industry, and jobs while minimizing cost and risk
- <u>Local and national stakeholder support</u> will <u>attract investment from national drone industry</u> players – discussions underway
- Phased project enables a <u>proven aviation sustainability model</u>

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NEOFIX Northeast Ohio Flight Information Exchange

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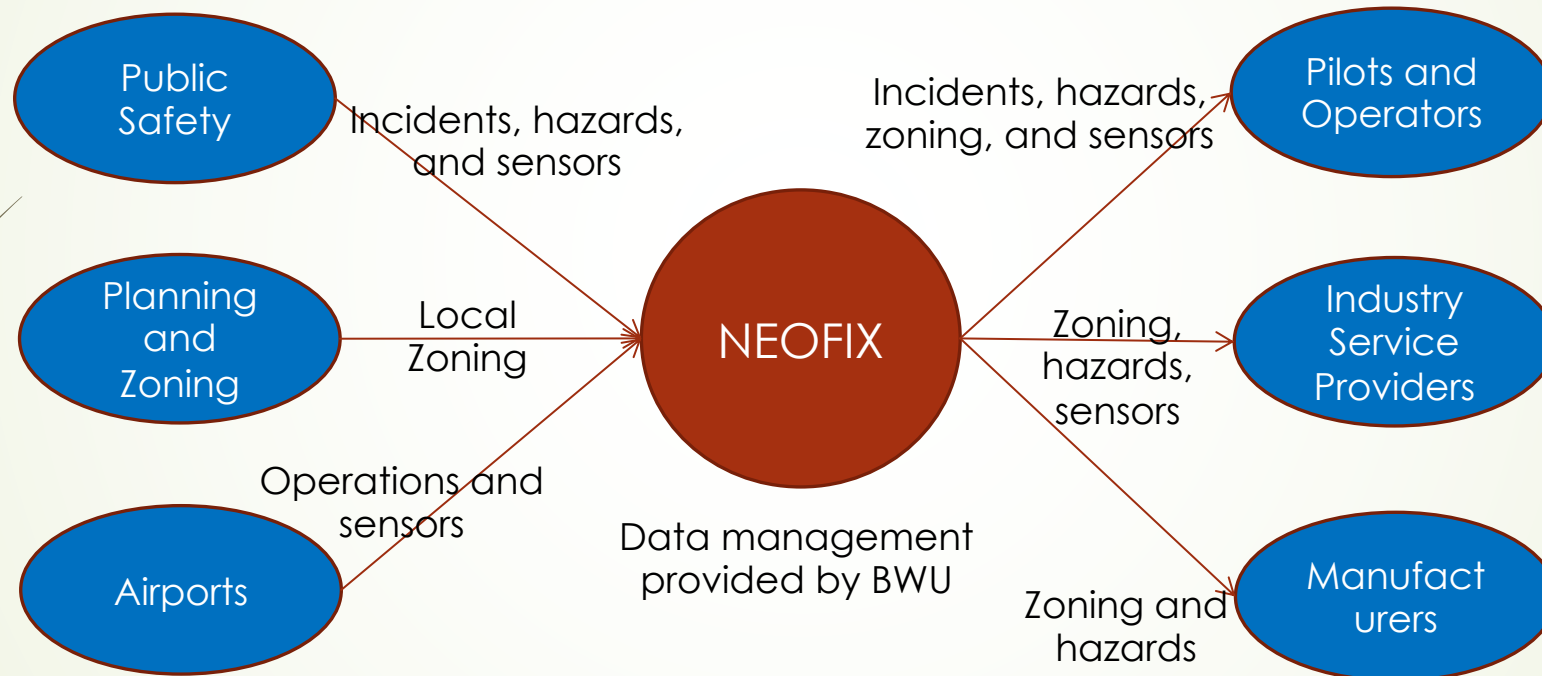**Public Data, for the Public Good, in the Public Interest**

Why Now?

- Why now?
  - Industry is looking for real, functional infrastructure now; looking for communities that are serious not high-dollar research projects
- Why Cuyahoga County?
  - Existing aerospace industry will benefit from growth of Drone industry
  - Diverse metropolitan area creates an ideal collaboration environment
  - Leader in health sciences supports developing new medical Drone services
  - Major airport, shared border, and one of the busiest airspaces in the nation
  - NASA GLENN Research Center
- Cuyahoga County will see the following benefits:
  - Immediate onboarding of 3-5 providers and other industry players
  - Opportunity to add Smart Cities Infrastructure (weather and environmental)
  - Major infrastructure investment: telecomms, sensors
  - Rapid development of new medical and resident delivery services (ARPA benefits) and related investments in hundreds of pilot and operations personnel jobs

Public Data, for the Public Good, in the Public Interest

NEOFIX
Northeast Ohio Flight Information Exchange

BW
BALDWIN
WALLACE
UNIVERSITY

NEOFIX
Northeast Ohio Flight Information Exchange

BW
BALDWIN
WALLACE
UNIVERSITY

Why Cuyahoga County?

- Cuyahoga County can be a leader in the new $3Bn drone industry forecast to grow to over $10Bn in the next five years.
- Experts point to dramatic increases in local drone traffic over the next few years. They also tell us that the #1 factor holding back growth is lack of clarity in usage, public policy, drone manufacturing, repair, maintenance and development.
- Communities that have drone infrastructure first will get the lion's share of investment in infrastructure, education, and jobs: average salary is $58,280/year (ZipRecruiter)
- A safer airspace saves lives and supports public safety; more clarity grows UAS operations resulting in more services and more jobs
- Virginia for example is seeing the fast growth benefits of this model
  - 40+ state and local agencies collaborating to create over 7,000 NAVAIDS
  - 9 of the FAA's 15 approved "USS" providers now operating in Virginia
  - Infrastructure is drawing companies: Silent Falcon, Electra Aero, Raytheon/Collins, Walmart, and more
  - New resident services such as package and medical delivery being created

Public Data, for the Public Good, in the Public Interest

NEOFIX – a public private partnership

Public Safety

Planning and Zoning

Airports

Incidents, hazards, and sensors

Local Zoning

Operations and sensors

NEOFIX

Data management provided by BWU

Incidents, hazards, zoning, and sensors

Zoning, hazards, sensors

Zoning and hazards

Pilots and Operators

Industry Service Providers

Manufacturers

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NEOFIX Northeast Ohio Flight Information Exchange

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NEOFIX Outreach Strategy

ARPA start up funding will set the conditions to for a www and social media presence, and the convening agency of the BWU to create a stakeholder affinity group. Initially this stakeholders will concentration on:

- Public Safety Officials throughout the NEO region, then the state of Ohio and nationally
- Advocate with state legislators to build endorsement and support for the concepts among the public sector departments which rely on Drones such as ODOT and Ohio EPA, ODNR and public works.
- Engage local and regional offices of the Federal Government such as the FAA and NASA.
- Develop support from national stakeholders such as Crown Castle, DroneUp likely to buy into the infrastructure
- Local and regional economic development actors
- As a public private partnership. funding streams will arise through user memberships, project development with third parties

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ARPA FIT

ARPA Goal	NEOFIX Benefit
Support urgent COVID-19 response efforts to continue to decrease spread of the virus and bring the pandemic under control; Direct COVID-19 containment, testing, vaccination, mitigation, medical care and supplies, quarantine facilities, public health surveillance health communication and enforcement in hospitals, clinics, schools, clinics.	NEOFIX provides basic infrastructure for flight planning and operations to support fast developing usage and efficiency for drone delivery of COVID-19 testing kits, medications and other urgent health and medical related transportation uses to underserved communities in Cuyahoga County.
Support immediate economic stabilization for households and businesses.	NEOFIX infrastructure will accelerate development and use of drone services and related jobs as remote pilot, maintenance, and flight operations personnel for workers starting with secondary education. NEOFIX also creates conditions for industry development; early adoption drone policy and education in professional and academic programming; technology innovation through research and development; public-private partnership engagement
Address systemic public health and economic challenges that have contributed to the inequal impact of the pandemic.	Using NEOFIX to develop infrastructure that supports drone delivery of medical services (such as testing and medication) which specifically benefits lower income communities that may not have access to transportation or work flexibility to easily access medical services.
Capital investments in facilities to achieve the above.	NEOFIX will draw on existing "FIX" models to spur additional investment in infrastructure by private entities, including smart cities sensors and drone support facilities.
Water, sewer, and broadband expenditures.	NEOFIX willspur additional investment in infrastructure by public utilities (Northeastern Ohio Regional Sewer District and the Cleveland Metroparks for example), and private entities (drone friendly and familiar business and nonprofit entities) familiar with smart cities sensors and drone support facilities.

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Use-case Opportunities

- Deliver medicine and diagnostic tests to underserved communities within a year
  - Working poor frequently can't access medical services
  - Drones provide a solution to this for certain types of services
  - The technical and regulatory framework to deliver medical services by drone exists **today**
  - With Cleveland Clinic, Metro, and University Hospitals, all you need is the base infrastructure and you will be providing services in 2023
- Use freight drones to deliver large international freight across Lake Erie between Port of Cleveland and Canada – reduce the Friendship and Rainbow Bridge freight bottlenecks
  - Technology is largely ready
  - Vehicles could easily be made in Cleveland
  - Easy to do given geographies and infrastructure
  - Straightforward safety case given geography

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County Funding Stops

Sustainability

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NEOFIX Northeast Ohio Flight Information Exchange

Phase I: 2 Years

Phase II: 2 Years

Phase III: Ongoing

Development and Initiation

Year 1
- Establish NEOFIX: 90 days
- Establish Governance: 90 days
- Outreach to: 120 days
  - Communities and agencies to join system
  - Local and regional economic development actors
  - Public Safety Officials throughout the NEO region
  - National stakeholders: 30 days
- Onboarding national stakeholders: 90-120 days
- Loading data and zoning assets to provide navigation to UAS: ongoing
- **County Contribution: $225,000**

Critical Mass and Transition

Year 2
- Deploy initial resident services (medical and package)
- Extend data services, including sensor integration
- Sponsorships
  - Industry
  - Infrastructure Providers
  - Local government
- **County Contribution: $225,000**
- **Stakeholder Contribution: $150,000**

Year 3
- Extend resident services, data, and Stakeholder Partners
- **County Contribution: $0**
- **Stakeholder Contribution: $250,000**

Sustainment and Growth

- Beyond Year 3
- Ongoing local and public safety outreach
- Ongoing infrastructure and data development
- Ongoing systems integration work
- Funding mechanisms
  - Industry User Fees
  - Integration Work
  - Workshops / Governance Support
  - Federally Funded Integration work (DHS – critical infra, CUAS)
- **Stakeholder Contribution: $300-$500,000**

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TAB 5

NEOFIX Working Launch

21 June 2023

Agenda

- Virtual Workgroup Updates (15 minutes)

- NEOFIX Demonstration -- http://www.oh-fix.com/ -- (5 minutes)

- Data Sharing, Design, and Sensor Integration Working Discussion (40 Mins)

- Next Steps (15 minutes)

- Provision User Accounts (45 Mins)

Data Sharing

- Obtaining Critical Infrastructure Hazards data from First Energy, FirstComm, Crown Castle

- Commitment for integration from Strongsville CAD dispatch in fall (Sep-Oct)

- Key Data Sets from County Planning

  - LIDAR topography / elevation data

  - Metroparks (geography to match policy)

  - Cleveland UAS Ordinance (ground rules)

  - Assistance with towers and schools (OH) and highway right of way (OH)

- OH State Assets – schools, highway lighting, highway rights of way

- Key Data Sets from County Emergency Management

  - Ground hazards (critical infrastructure, power lines and above ground substations and facilities, chemical and fuel storage)

  - Restricted public safety facilities (police, fire, prisons, etc.)

- Industry integration: Aloft (flight plans); Zipline (onboard sensors)

- Industry integration: sensors (DeDrone, etc)

Design

- Area 1: 10-mile radius around Cleveland Clinic Administrative Campus

  - VLOS, EVLOS moving to BVLOS

  - Medical Delivery, DFR, Infrastructure Inspections

  - Assume Group 1-2 (Under 55 Lbs) in the near term

  - Hazards and critical infrastructure; ditch sites; TOLAs

- Area 2: Cleveland Lakefront – 5 x 2 mile strip encompassing Burke Lakefront Airport

  - VLOS, EVLOS moving to BVLOS

  - Medical Delivery, DFR, Infrastructure Inspections

  - Assume Group 1-2 (Under 55 Lbs) in the near term

  - Much more hazardous / challenging area than Area 1: commercial airport, tall structures, more restricted areas

Sensor Integration

- Existing Sensor Inventory: Burke Airport, deployed public safety sensors for mutual aid and planning

- Weather Sensors: low-cost sensor deployment, including crown towers and anemometers

  - Determine rooftop accessible locations and tower distribution

- Crown Castle: access to cellular-on-wheels (COW)

  - Understanding of full coverage area, operational goals, and local constraints

- Iridium: coordinate with partners for sensor locations and available connectivity options (internet, power)

- Iris Automation: minimal power requirement, LTE modems used for connectivity, approximately 3km coverage per sensor

  - System consists of power brick, camera node (vision-based detection), ADS-B receiver

  - Ideal placement on tallest structures clear of obstructions (10 degrees down to 33 degrees up from horizon)

- Cellular data ingestion and integration into UTM for analysis

Policy

1. Public-Private Partnership
2. Need for additional use-cases
3. FAA friendly approach to policy
4. Municipal, State and Federal funding
5. User fees

Stuart Mendel

Working Agenda

- Status on Data Sharing and Next Steps

- Design Around Areas 1 and 2 – Service Volumes and Configuration

- Sensor Integration – Planning and Budgeting

- Policy

NEOFIX

Northeast Ohio Flight Information Exchange

Northeast Ohio Flight Information Exchange (NEOFIX)
Stakeholder Meeting
Wednesday, June 21, 2023 at 12:30 PM (EST)

Hosts: Stuart Mendel, PhD, Baldwin Wallace University Project Director
John Eberhardt, ATA, LLC
Scott Drew, ATA, LLC
Howard Thompson, EHM Advisors and Manufacturing Works
Chelsea Treboniak, Critical Ops

Stakeholders: https://bw-centers-tech-partnerships.org/members-supporters/

Meeting Recording: Zoom
https://us02web.zoom.us/rec/share/BA_MSHnIdRDD-
jOb0lLXGfsLY9PzvNt9BWlkQldqpy82J39D6ThPO0OkKqDg7yU.j3bkcHbQRr65K5r7

NEOFIX Site: https://oh-fix.com/index.html

Service Area Sensors:
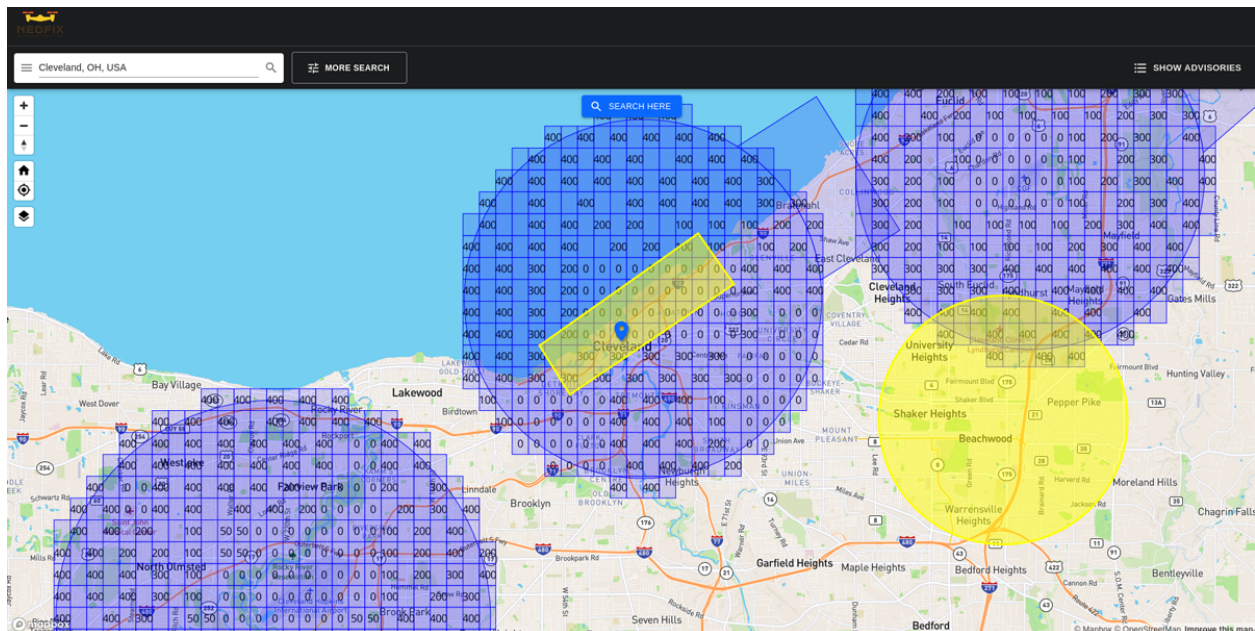
Minutes
Virtual workgroups were conducted in May. Follow-up meetings are scheduled for the data sharing, design, and sensor integration groups. The policy group will reconvene in August. Highlights from each group are captured in the presented slides and were summarized by group leaders.

The NEOFIX site (https://oh-fix.com/index.html) is available and running. After entering the site, accounts can be requested through the "About" tab. The NEOFIX program office

will work on agency approvals, provisional accounts, and instructions based on frequently asked questions. NEOFIX training is available Mondays from noon – 1 PM (EST). Requests for training can be submitted to the NEOFIX program office.

Stakeholder Discussions
Roundtable conversations focused on the following:
- NEOFIX: Provisional accounts, advisories (types and creation)
- Common Language: Creating a common language library is an opportunity to work with the FAA.
- Certifications: The industry is moving away from the word certification and transitioning to
- Sensors: Types, location, use cases, redundancy, and sensor integrity were introduced and discussed.

Action Plan
- Virtual workgroups will assemble in July and August.
- The next in-person meeting is pending for July or August and seeks to include a legislative update.
- Participation from FEMA, Homeland Security, and military services would be ideal.

Next Meeting
The next in-person meeting is pending in July or August 2023, at Baldwin Wallace University from 12:30 – 2:30 PM. The date, time, and registration will be available shortly.
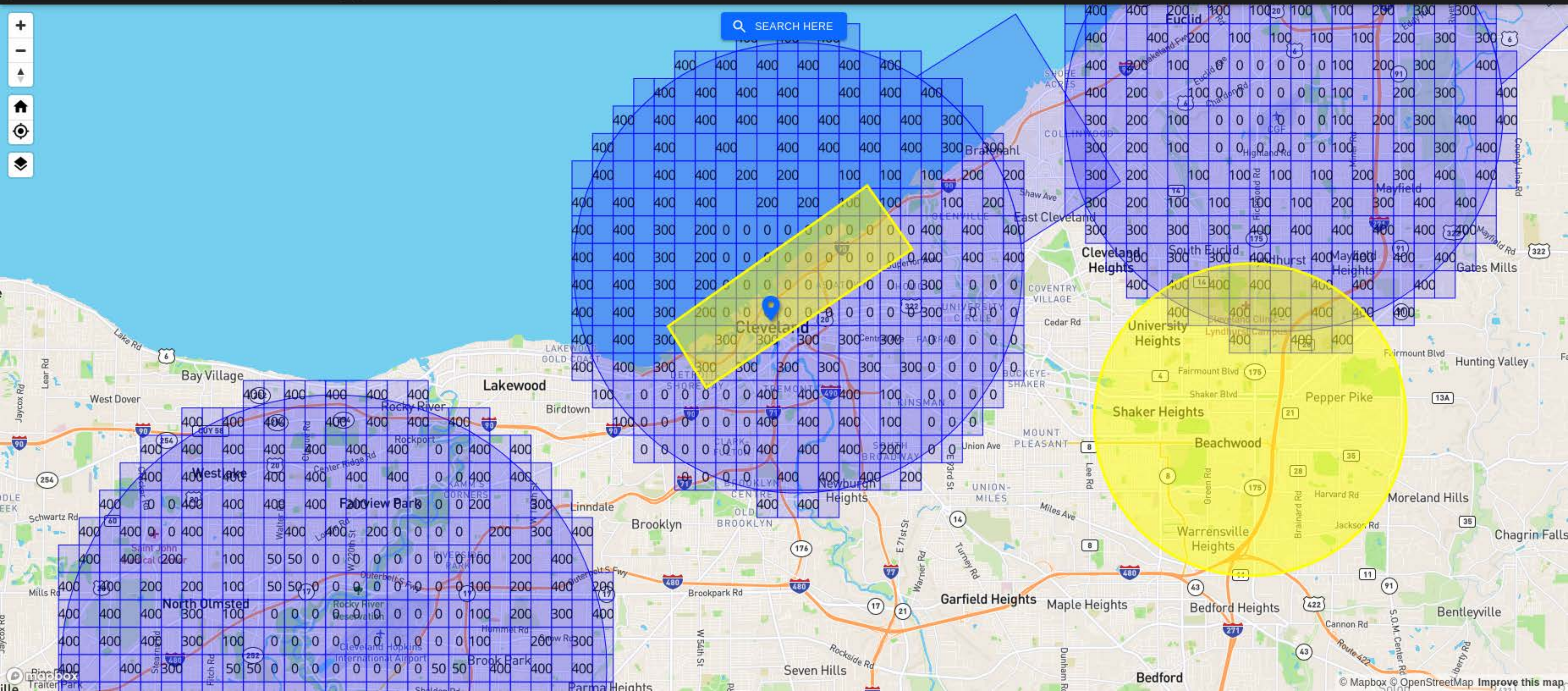
https://oh-fix.com/index.html#/?address=&zip_code=&agency=&advisory_name=&city=&start_time={%3Aoperator+"gte"}&

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Cleveland, OH, USA

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