

IMMERSIVE WEATHER RISK ANALYTICS

User Manual

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OVERVIEW

This document is the user manual for a virtual reality (VR) pilot project between BadVR and Holo-Light for MunichRE. The VR app is comprised of a 3D environment in which a hurricane is striking New York City and the ability to analyze the impact of storm damage on insurance over time. Intuitive interfaces enable the user to watch and control different hurricane trajectory paths in full geospatial context.

The app shows real weather and building data from public sources. Using natural hand gestures, the user can switch vantage points, filter property by zoning type, choose which wind speeds are visible, and vary how fast the hurricane sweeps through the city. Future upgrades include: integration of insurance datasets, real-time sensor feeds, ability to customize storm paths, and multi-user collaboration.

Goals

With this immersive analytics tool, insurers can view 3D building damage to understand severe weather impact from all dimensions. By seeing this information visually, insurers can more easily explore and analyze how various storm conditions factor into risk calculations. The end result is faster decision-making for location risk analysis.

Equipment

The app is designed for the Oculus Quest 2. This is a consumer grade VR mobile headset. The experience uses hand-tracking, so does not require controllers during usage.



WARNING

Do not expose the lenses on the rear side of the VR headset to direct sunlight! When transporting, make sure to keep the device inside its case, or covered.

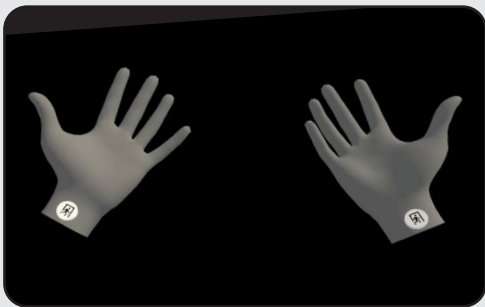
Direct sunlight exposure can damage the displays inside the headset.

GETTING STARTED



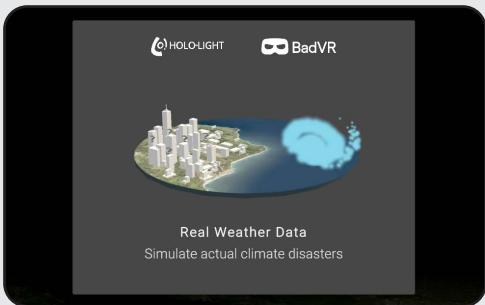
1. VR Headset

To achieve a comfortable fit, you can adjust the side and top straps until the weight is balanced and the picture is clear.



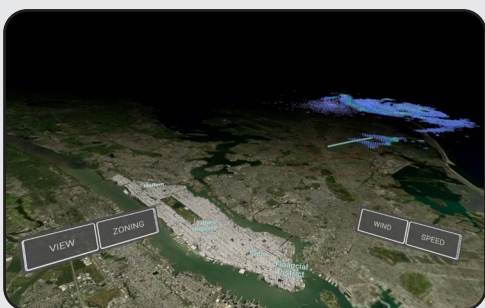
2. Hand Tracking

To enable hand tracking, put down the controllers and hold up your hands until they appear and the controllers disappear. You can now use your hands to interact with the product.



3. Welcome

Upon entering the experience, you'll see a diorama overview of the features.



4. Experience Begins

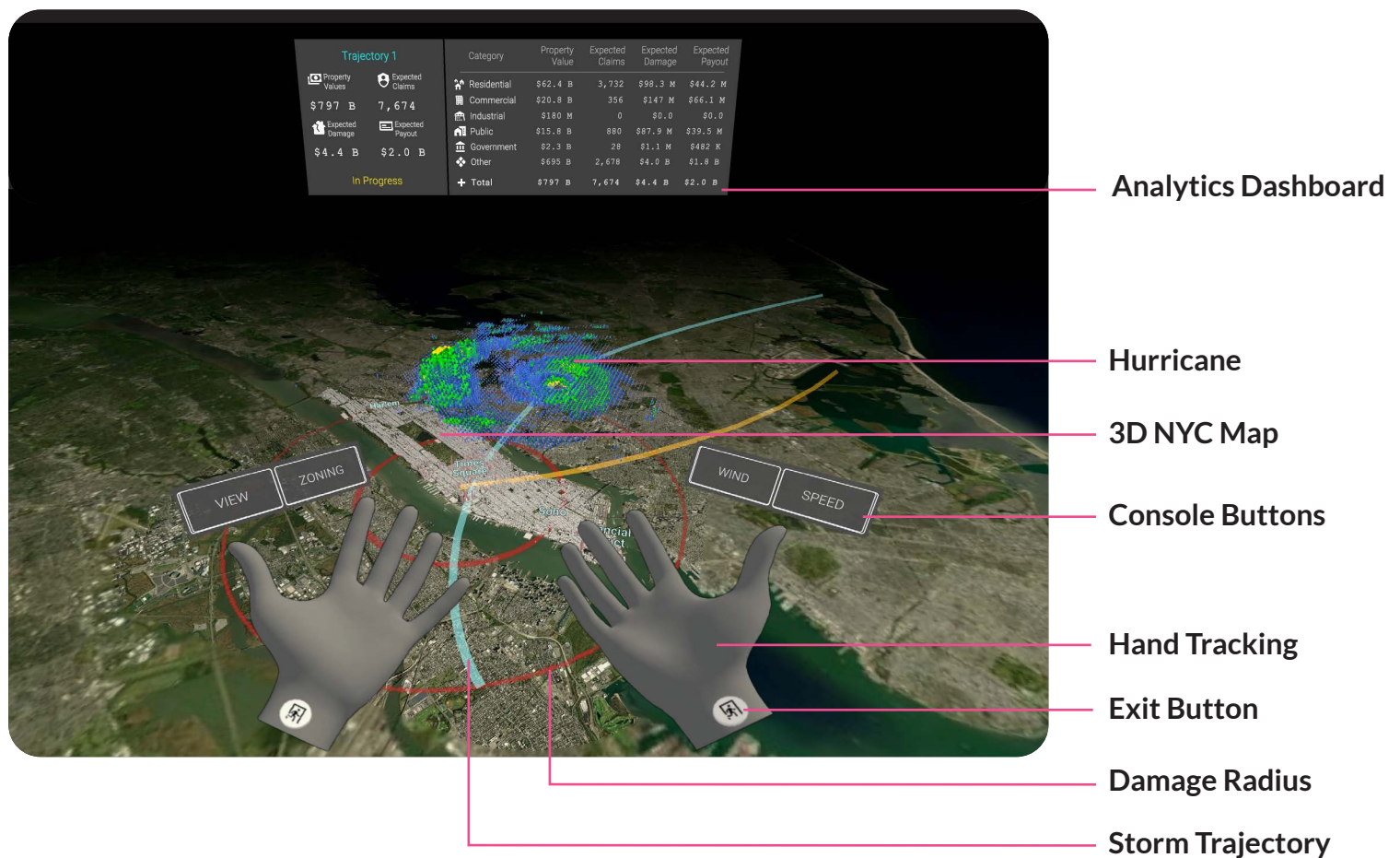
Diorama concludes and the hurricane will animate toward the city. Buttons can control aspects of the experience.

APPLICATION COMPONENTS

The VR app is comprised of a three-dimensional map and hurricane data with controls enabling comparison between two storm scenarios.

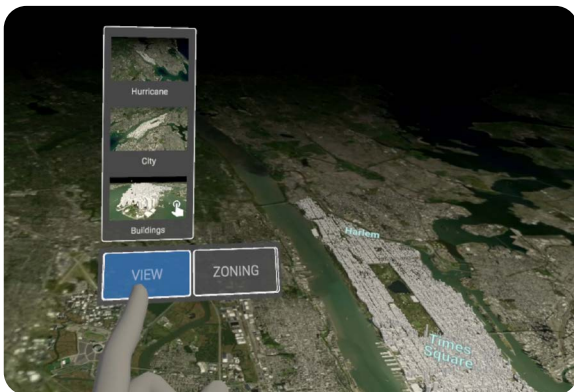
Controls are in front at arms length and an analytics dashboard remains in center view above the map at all times. The dashboard tracks high level insurance metrics on the left, and provides a breakdown of granular metrics on the right. The dashboard is persistent between scenarios for comparison.

The controls and dashboard will follow the user's head position for easy access. Hand tracking is used for interaction and an exit button is on the wrist.



INTERACTION

Using the console buttons you can control the view location, building visibility on the map, hurricane data display and animation speed. Get information about specific buildings in the Buildings view.



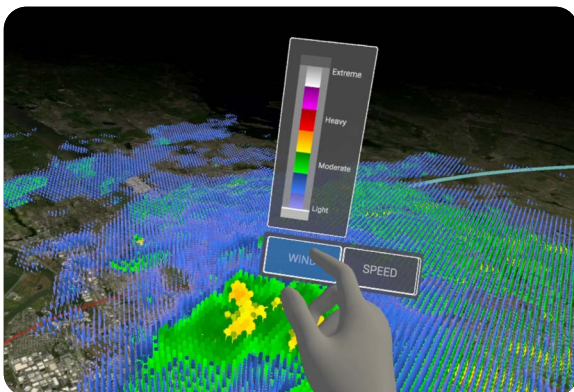
View

Change your vantage point to get different perspectives.



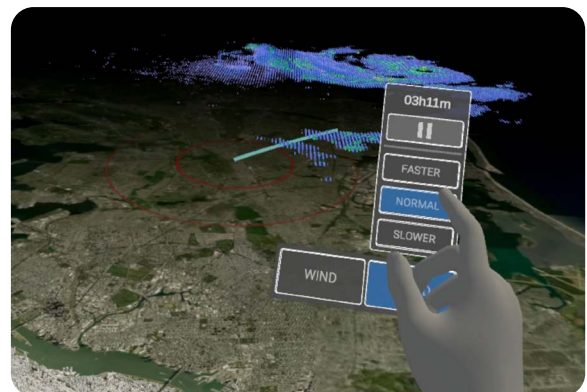
Zoning

Focus on specific property types while hiding others.



Wind

Explore storm composition and understand storm characteristics.



Speed

Control how fast the storm moves over the city.



Select Building

In Buildings view, point hand and pinch fingers to confirm selection.



Building Popup

Shows specific information. Select the same building again to close.

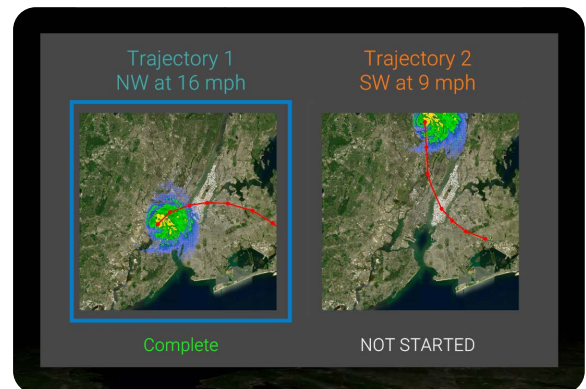
SCENARIO COMPARISON

There are two possible storm trajectories the user can play through. View and compare their impact on insurance values in the analytics dashboard.

Trajectory 1		Category	Property Value	Expected Claims	Expected Damage	Expected Payout
Property Values	Expected Claims	Residential	\$0.0	0	\$0.0	\$0.0
\$0.0	0	Commercial	\$0.0	0	\$0.0	\$0.0
Expected Damage	Expected Payout	Industrial	\$0.0	0	\$0.0	\$0.0
\$0.0	\$0.0	Public	\$0.0	0	\$0.0	\$0.0
		Government	\$0.0	0	\$0.0	\$0.0
		Other	\$0.0	0	\$0.0	\$0.0
In Progress		+ Total	\$0.0	0	\$0.0	\$0.0

First Trajectory

First storm trajectory starts playing automatically.



Second Trajectory

When first concludes, a popup window will let you select the next.



Trajectory Paths

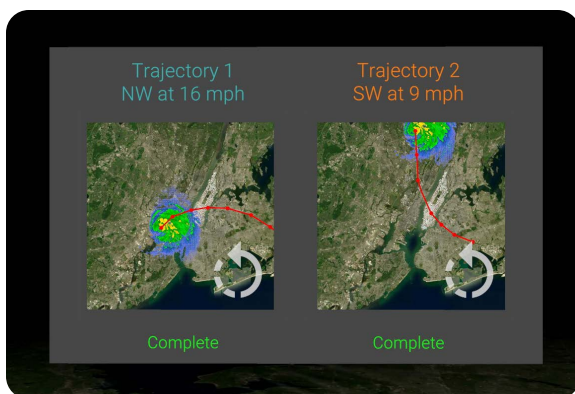
Observe where each trajectory passed over the city.

Trajectory 2		Category	Property Value	Expected Claims	Expected Damage	Expected Payout
Property Values	Expected Claims	Residential	\$57.4 B	3,787	\$162 M	\$72.9 M
\$815 B	9,424	Commercial	\$22.6 B	458	\$269 M	\$121 M
Expected Damage	Expected Payout	Industrial	\$131 M	0	\$0.0	\$0.0
\$8.2 B	\$3.7 B	Public	\$16.2 B	1,021	\$165 M	\$74.2 M
		Government	\$1.8 B	23	\$4.5 M	\$2.0 M
		Other	\$717 B	4,135	\$7.6 B	\$3.4 B
In Progress		+ Total	\$815 B	9,424	\$8.2 B	\$3.7 B

Trajectory 1		Category	Property Value	Expected Claims	Expected Damage	Expected Payout
Property Values	Expected Claims	Residential	\$44.6 B	18,810	\$462 M	\$208 M
\$911 B	34,769	Commercial	\$23.1 B	1,422	\$528 M	\$238 M
Expected Damage	Expected Payout	Industrial	\$103 M	4	\$12.6 K	\$5.7 K
\$17.6 B	\$7.9 B	Public	\$17.9 B	3,201	\$338 M	\$152 M
		Government	\$2.5 B	179	\$28.4 M	\$8.3 M
		Other	\$803 B	11,153	\$16.3 B	\$7.3 B
Complete		+ Total	\$911 B	34,769	\$17.6 B	\$7.9 B

Projected Impact

Directly compare projected metrics between the trajectories.



Restart

After the second completes you can choose to restart either trajectory.



Exit Application

Use the wrist button on either hand to select exit, then confirm yes.

WHAT'S NEXT

Envisioned features to deepen understanding of extreme weather impact on insurance.

- Insurance industry datasets integrated directly into the experience.
- Real-time sensor feeds for on-the fly decision making, planning and direct action.
- Storm movement control allowing for precise scenario planning.
- Multi-user collaboration enabling the whole team to step inside the data.



■ TECHNICAL SUPPORT

Please reach out to the BadVR team at any time for assistance in installing, using, and experiencing the product as described in this manual. The most common problems and their solutions are listed below:

No picture in headset

- To turn on the Oculus Quest, press and hold the small power button on the right side.
- If the battery is fully depleted, the headset may not give any visual indicators. To charge, plug the USB-C charging cord into a power source. The charging indicator will turn white while charging and green once fully charged. The headset can be used at any time while power is provided.
- A Facebook account is NOT required to operate the device. For more information, contact BadVR.

App isn't loaded / Cannot find app

- The Oculus Quest was not originally designed for business uses and thus does not make it easy to install or launch an enterprise application.
- To launch the application, navigate to the Oculus main menu, select Applications, and then select the "Unknown Applications" filter. Select "BadVR MunichRE" or "com.badvr.noaa" to enter the experience.

Hand-tracking is not working

- If hands are not visible, set down the controllers and wait a few seconds before bringing your hands into view and moving them around. The hands should appear when the controllers disappear.
- Hand tracking does not work when your hands overlap or cover each other, or in low light.

CONTACT INFORMATION



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