Project OWL

Field Test 2: Houston, TX Report

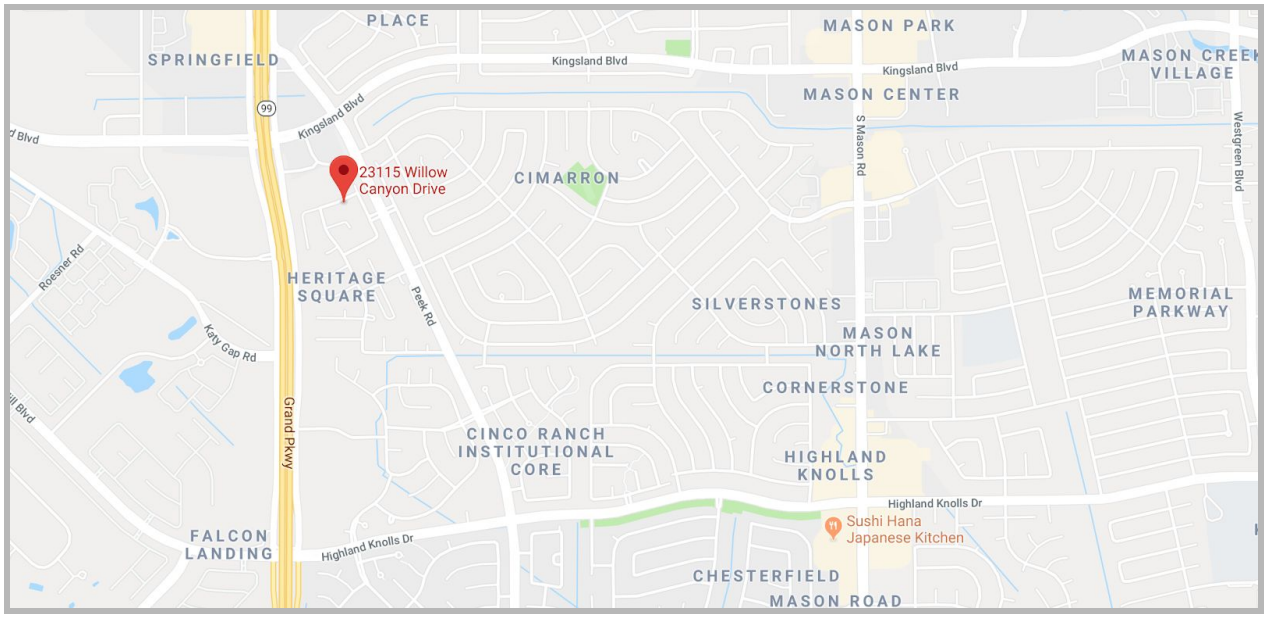
This report details Field Test 2: Houston, TX in sections:

Field Test 2: May 30th to June 2nd, 2019 was the second large field deployment of Project OWL technology and this time focused on a new region of Houston, Texas. This report details statistics, challenges, conclusions, and outlook forward as a result of this event.

The objective of Field Test 2 was to improve Project OWL technology based on challenges identified in the first Field Test (Puerto Rico). During Field Test 2: Houston, the Project OWL team deployed the wireless network solution throughout Katy (a suburb of Houston) to gauge progress made in two particular areas. Those were 1) improving the speed and efficiency of deployment, and 2) improving the performance of the network once it is online. In Puerto Rico, each DuckLink required 15 minutes to deploy and the network performed at a high error rate of about 50%.

The results of this deployment were positive. The deployment efficiency was decreased from 15 minutes to around 120 seconds per DuckLink. At the same time, the network operated with more consistent connectivity and fewer network transmission errors. While Houston is viewed as a success, the Project OWL team expects to continue to improve these key performance indicators at future field tests.

Katy, Texas | Houston Suburb



Location of the "OWL Nest" during Field Test 2

The location of the second field test was selected for several reasons. Notably, Houston endured a significant Category 4 Hurricane that inflicted extraordinary damage to the Gulf of Mexico region, and in particular Houston. As a result, Project OWL saw Houston as a high value region to deploy technology and observe the efficacy of use.

Houston presents some unique elements that were not present throughout Puerto Rico. This region, at the time of deployment, was hotter (90+ degrees F) and even more humid at times (90+%). Additionally, this was more of a suburban region with larger homes and more concrete and brick obstructions that could impact networking technology.

Total Deployed DuckLinks

50 DuckLinks

A DuckLink sits in the wild

Friday, May 31st Deployment

10 DuckLink devices, one deployment team, covered 0.25 square miles. Project OWL members spent time walking around, joining the network and sending transmissions. Quickly, a challenge was encountered during this initial test deployment.

Friday Timelapse:
https://youtu.be/28BQ0VNMsRI

Saturday, June 1st Deployment

40 DuckLink devices were deployed from one deployment team - two individuals in a car. In around 90 minutes, a full network of 40 DuckLinks were operational. The resulting network covered about 1.00 square miles. Project OWL representatives were driving around the neighborhood, connecting to the network and sending messages. About 1000 network transmissions during this deployment.

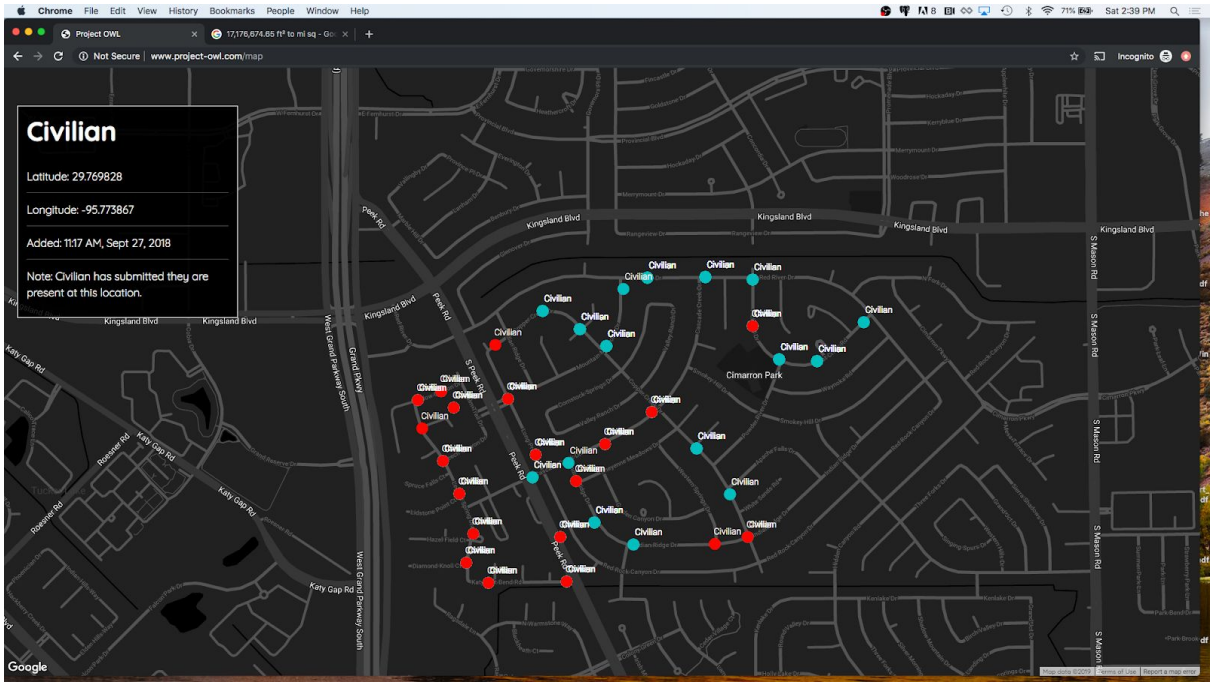
Saturday Timelapse:
https://youtu.be/18uypTZOO3U

Datapoints Collected

1,000+
recorded in database

Field Test 2: Houston, TX was the most efficient Project OWL deployment to date. The deployment improved efficiency by nearly 10x at an average DuckLink deployment time of about 120 seconds. The entire 40 DuckLink clusterduck took just over an hour and a half (96 minutes). At Field Test 1: Puerto Rico, the deployment duration (about 15-30 minutes per DuckLink) was significantly longer and thus network deployments would be time consuming. This efficiency improvement impacts the ability to deploy network connectivity quickly.

A secondary element of improvement was minimization of network errors. Dropping the network transmission loss rate from ~50% in Puerto Rico to less than ~10% similarly impacts the ability to deploy networks quickly. Project OWL hopes to further improve these metrics at future field test deployments.



A screenshot of the OWL incident management system from Saturday's deployment

Challenges & Moving Forward

Field Test 2: Houston, TX went well, however, as expected some challenges were encountered during the deployment. Project OWL noticed a problem with connectivity and DuckLink range during the first phase of deployment. Similar to Field Test 1: Puerto Rico, possible sources of error could have related to weather and the rather extreme climate. In Houston, Project OWL endured very high heat and humidity in the air (90+ degrees F and 90%+ humidity). Other sources of interference may have come from numerous concrete houses, metal cars and infrastructure. As a result, the small-scale deployment on Friday May 31 was cut short and forced an adaptation in preparation for Saturday June 1 to reduce focus on network size and instead focus on deployment efficiency and error minimization.

Future deployments will continue to focus on the key performance indicators of network deployment efficiency and network performance. Our goals for future deployments are to drop deployment to 30 seconds per DuckLink, and network performance to 97% or higher.

A DuckLink sits in the wild on a tree in Katy, Texas