

Hyppha

Summary of Coincidental Study
Outreach June – July 2022

September 1, 2022

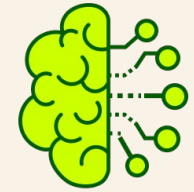
Project Overview

Background

- CIMM commissioned HyphaMetrics for a third party validated study designed to measure the accuracy of Hypha's television viewership data
 - Goal: understand the effectiveness of Hypha's proprietary hardware and software leveraged by our in-home panel using a coincidental survey to prove the accuracy of passively measured viewership data
- Third party vendor made phone calls to households every other week asking questions related to TV viewing
- Results used to establish validity between coreMeter's person detection and panelist self-reported responses

How it Works

A multi-layered approach creating the only definitive persons' level media exposure data



A Frame-by-Frame analysis is conducted with the application of Computer vision used in combination with a proprietary optimized-OCR (Optical Character Recognition) and Machine Learning to measure the *entire* omnichannel experience

Our router creates a WiFi network that households join facilitating the measurement of all IP traffic in the home



We detect each household member's proximity to each TV using proprietary technology, WiFi and Bluetooth

Project Overview

Measurement Methodology

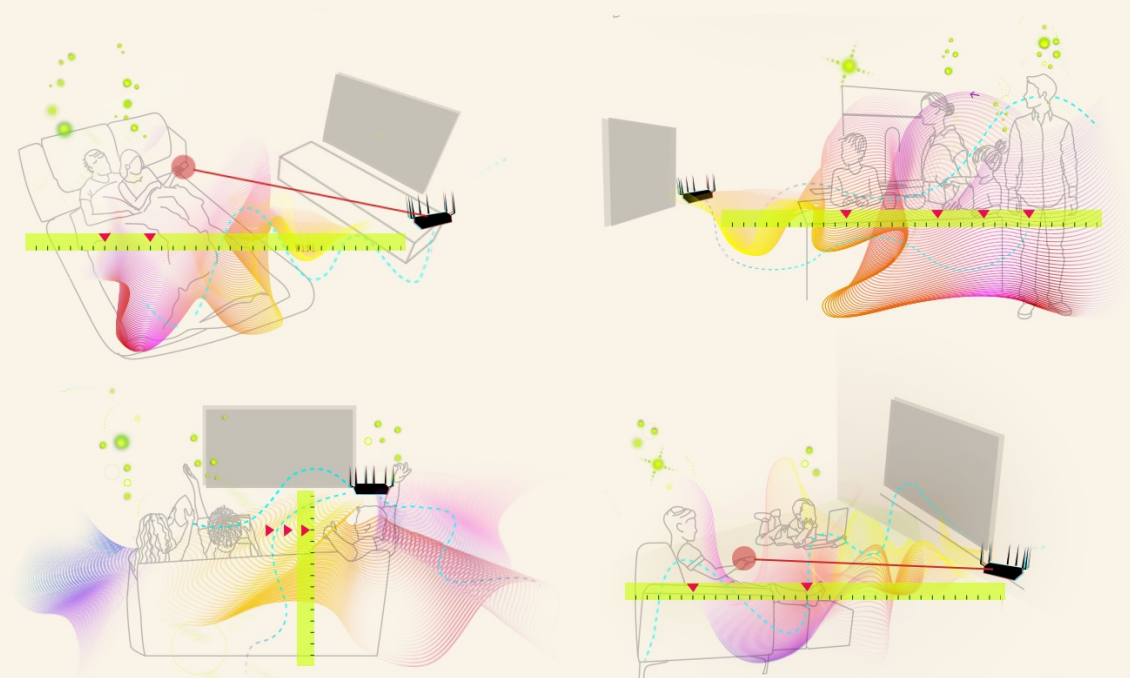
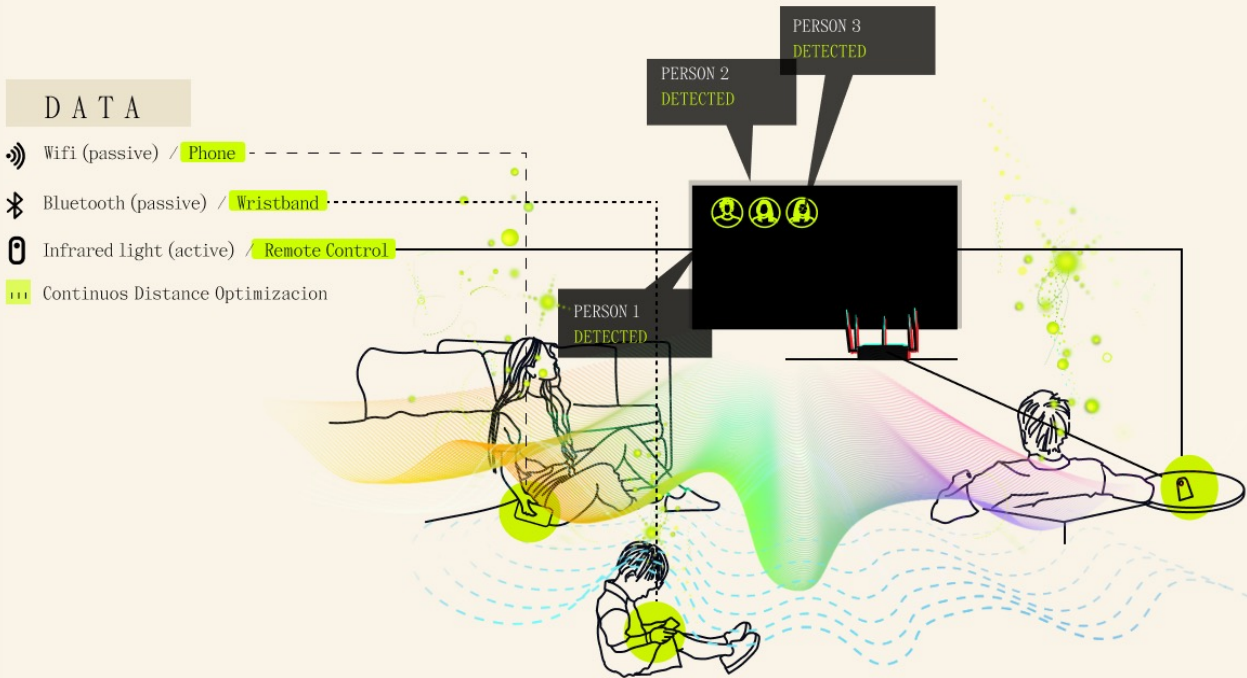
- Hypha's coreMeter leverages Artificial Intelligence, comprised of state-of-the-art computer vision, machine learning, and advanced optical character recognition, to ensure the definitive measurement of all media behaviors in the home
- Machine Learning is used to perform object recognition and determine what is being watched, for how long, and from which platform in addition to advertising and product placement recognition.
- Uses a specific combination of Machine Learning techniques and algorithms based on the input device type, which allows the detection of each type of content to be specified based on the source from which it is derived.

Persons Detection

The ability to collect data on exactly who is watching what

*Each member of the household registers their identifying device to the coreMeter.
The person detection technology recognizes each individual viewer present*

*Our Machine Learning Models continually learn the room that the
coreMeter device is in to optimize data collection and calibration*

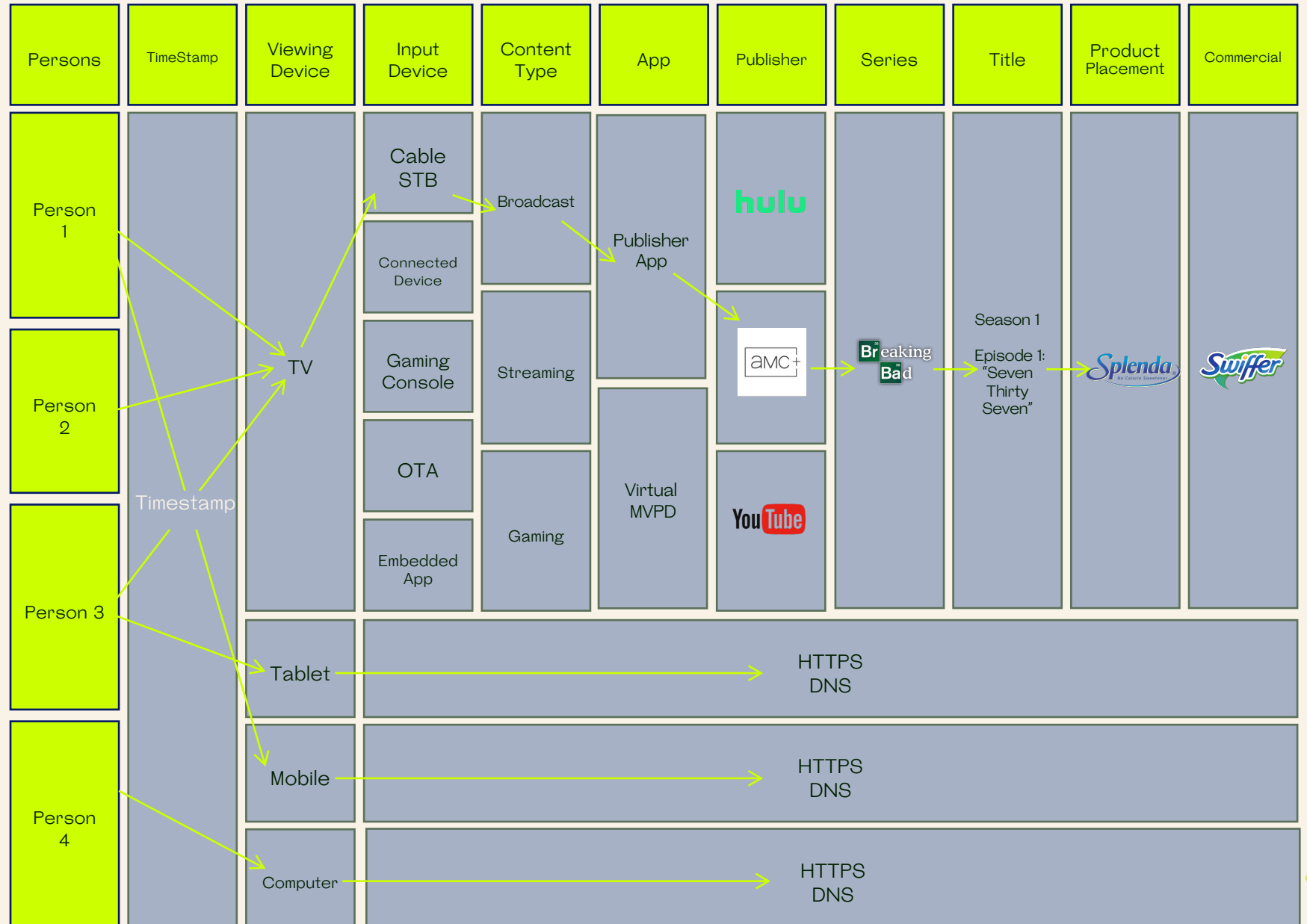


Project Overview

Persons Detection Methodology

- Active detection has long been the standard for person detection, but they drive higher respondent burden, lower compliance, and increase attrition, whereas passive measures are less burdensome
- Hypha leverages active and passive detection
- The coreMeter's detection technology utilizes both Bluetooth and Wi-Fi technologies embedded in the CoreMeter, which allow each household member to utilize a mobile device or a Bluetooth enabled bracelet/beacon register to indicate each viewer who is present during media consumption occasions
- HyphaMetrics' detection methodology applies Machine Learning to improve our person detection capabilities over time
- Active methods are integrated to validate passive measurement
 - Remote control is used as a means to confirm that viewer is still present by receiving an on-screen prompt asking if they are still watching if no passive method is detected

Data Collection Path

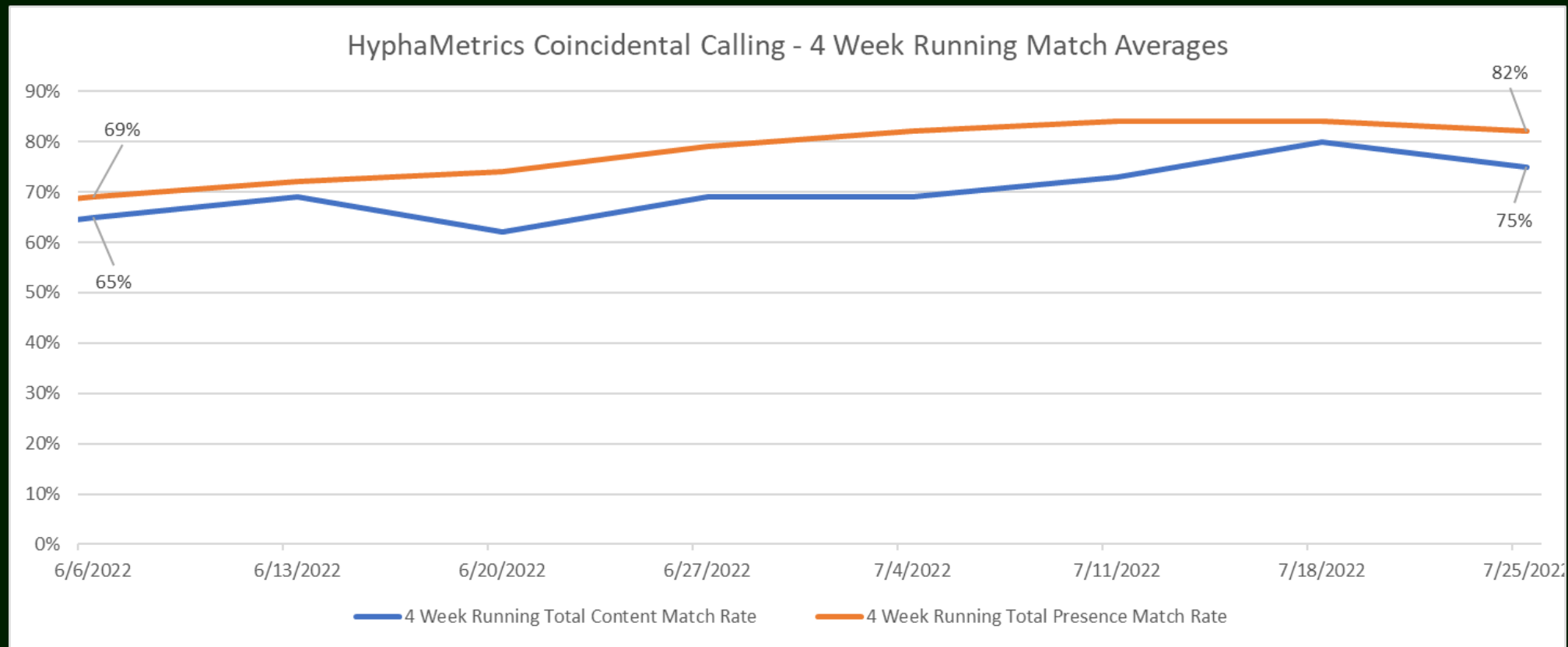


Coincidental Calling Methodology

- Data validation via coincidental calling has been around for many decades and remains an excellent tool to assess the accuracy of a measurement device such as HyphaMetrics' coreMeter
- All active households in the Panel were eligible to participate and were called every other week
- Calls took place each week Tuesday – Saturday. Most calls completed from 5pm – 9pm ET when people were likely to be home and watching TV, though some calls were completed earlier in the day. The average call was completed in 2-3 minutes.
- HyphaMetrics would look up viewing information collected by the TV meter for the households that completed the survey for approximately 15 minutes before and 15 minutes after the exact time of each call (regardless of whether TV viewing was reported) and review whether both content and presence detection in the data matched what was reported

Content and Presence Detection Results

- Presence Detection consistently in upper 70s & 80s (on par w/ legacy / active-only measurement)
- Weekly presence match rate 75%+ & Final 4-week average 82%
- Multilayered Persons Detection successfully captures w/ minimal intrusion & optimal data integrity



Presence Method Results

Persons Detection Method Distribution at the Time of the Call

Remote	45.9%
App	12.6%
Beacon	55.4%
Any Active	45.9%
Any Passive	63.5%

Passive measures were the primary choice

Panelists reported they were “easy to use”

Study Conclusion

- By achieving consistently high match rates for both learning what households are watching on TV as well as what members of the home are watching TV, we have proven our technology's high-quality ability to passively measure people in a non-intrusive manner
- The match rates for both content and presence illustrated both consistent and directional improvement throughout the effort and is due to on-going panel management best practices and compliance efforts
- We will continue to leverage next-generation approaches (e.g., applying Machine Learning to continually improve panelist detection at the panelist and meter level) to make sure the panelist experience is as seamless as possible

The “so, what”

- Individuals’ media viewing habits at home are unpredictable. People have their preferences which differ by the location of TVs within a household, device types used and evolving habits over time.
- Therefore, a one-size-fits all method cannot capture all people in their natural viewing environments.
- Due to its’ nonintrusive nature, a passive approach is the most encompassing method of capturing that natural state. The introduction of actions skews results due to the interruption and intrusion of the preferred viewing method.
- Checks and balances are required to validate the detection of an individual and guarantee preciseness.
- This is vital because the detection of an impression can be lost in cumbersome persons’ measurement environments.

- Hypha’s proprietary multi-layered persons’ approach to measurement facilitates the most precise detection of an individual in relation to their media exposure.

Thank You

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