



# Ambeent

**Ambeent-Millenicom**

**"Best in-home Wi-Fi Network"**

Elevating Wi-Fi Networks Worldwide

**Ambeent is helping Millenicom identify home blind spots  
and upsell customers on mesh systems**



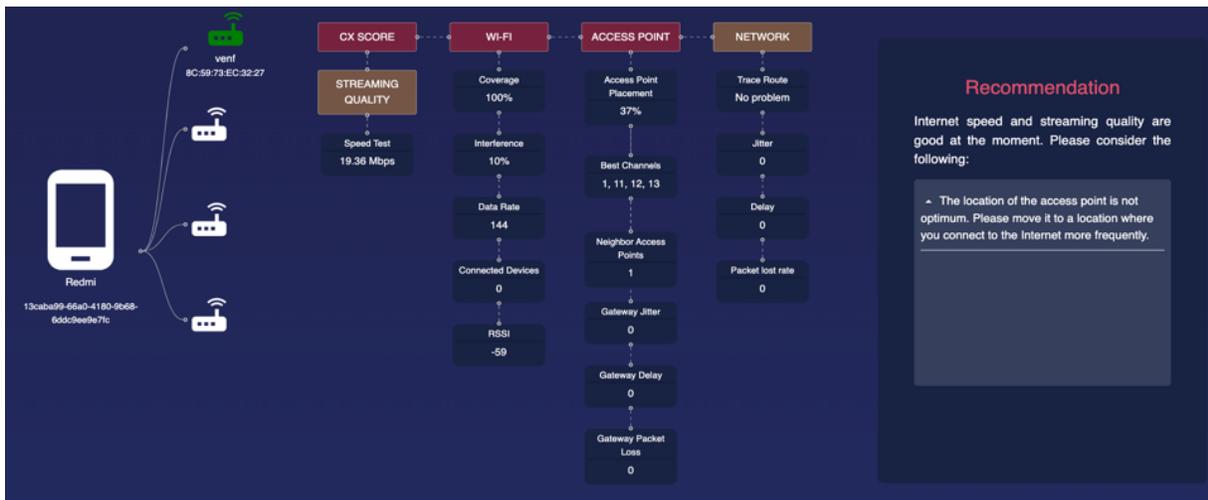
### Executive Summary

The lack of visibility Internet Service Providers (ISPs) have into in-home Wi-Fi networks is the reason for poor subscriber experience leading to high operational costs and customer churn. Ambeent solves this challenge by providing cloud native engine to map in-home Wi-Fi network performance and help ISPs optimize user experience. The key innovation includes unique use of AI/ML techniques to identify faults in the in-home network and provide critical information on when subscribers need to upgrade their access points or deploy mesh systems.

Millenicom, the fifth largest ISP in Turkey, has implemented Ambeent’s Wi-Fi monitoring, diagnostics and optimization solution in a matter of days across its 280,000 subscriber base and has achieved the following:

- 28% decrease in customer calls to its support center due to proactive monitoring of user experience
- 22 % increase in revenue from the sales of mesh systems
- 48 % decrease in average call center handle times because Ambeent’s solution has identified the root cause of problems (interference, access point placement, coverage) quickly
- 6% decrease in trucks rolls to customer premises
- 87 % improvement in baseline Wi-Fi performance with Ambeent’s patented spectrum optimization and remote access point configuration technologies.

**Technical innovation:** Ambeent developed the industry’s first cloud-native platform leveraging end-user device data to provide ISPs with end-to-end broadband experience visibility. ISPs are able to map performance in the home or the office down to the user device. By analyzing data of individual subscribers using AI techniques, Ambeent provides insights into the Wi-Fi experience to identify the root cause of problems, provide recommendations and predict future performance.

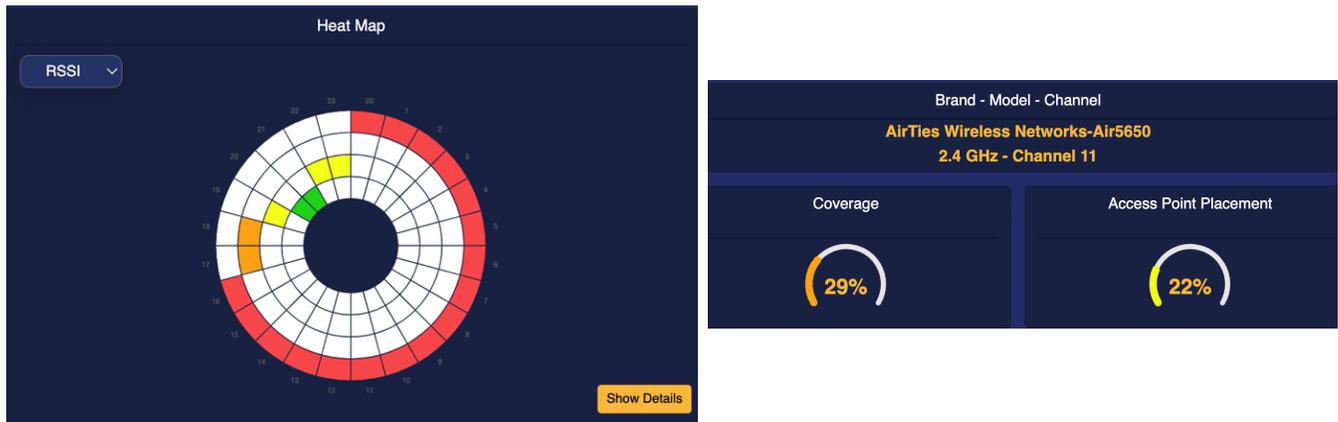


End-user data is processed with intensive AI/ML techniques to provide ISPs the following insights into Wi-Fi networks to reduce customer complaints and increase revenue streams:

- **Identification of coverage blind spots and access point placement issues:**

Ambeent’s unique algorithms detect signal coverage holes and access point placement issues in the home. This way, ISPs are able to upsell mesh systems to their subscribers that suffer from poor coverage or recommend Ambeent’s unique tool to enable users to discover the optimal spot for the access point in their home.

**Example of heatmap\* showing AP placement and coverage issues for individual subscriber**



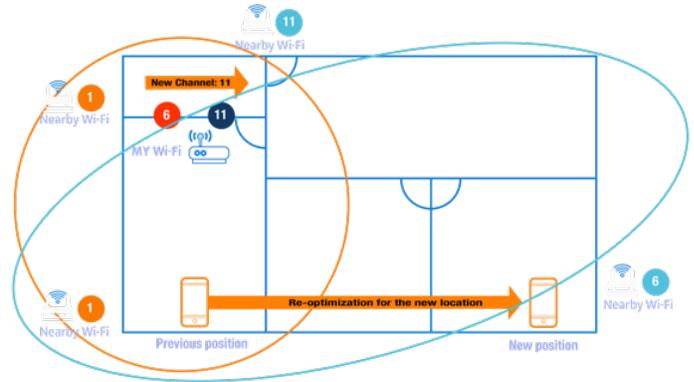
\*The heat map shows the three-month average of RSSI values for a specific users in a 24-hour cycle. The inner and outer circles represent the users proximity to the access point.

- **Fixing radio frequency interference:** Ambeent’s unique formulation of the signal-to-interference plus noise ratio (SINR) and compares the level of the Wi-Fi signal to the level of neighboring interferers. This unique formulation allows us to characterize the architectural setting of the premise with respect to neighbor interference.

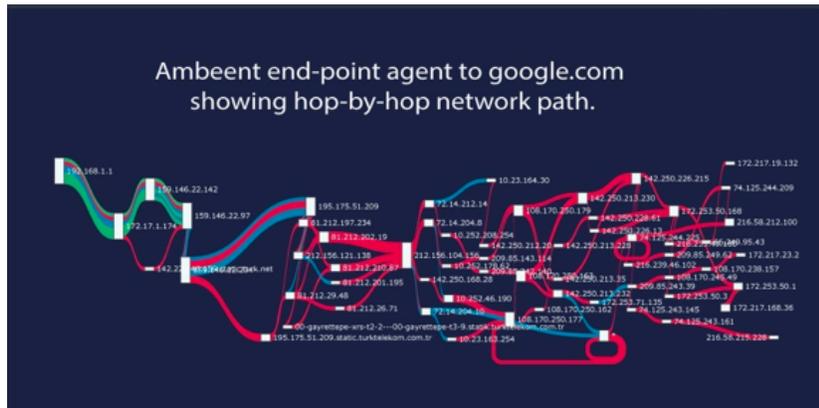
Ambeent’s industry first channel optimization algorithms based on AI/ML techniques with clustering determines the optimal channel assignment for large networks quickly and efficiently.

Example of neighbor interference graph for individual subscriber

Spectrum Optimization



- **Hop-by-hop monitoring:** Ambeent also monitors the pops to isolate faults to the IP link or the Wi-Fi home network, thus, helping ISPs to reduce fault resolution time.



Ambeent’s machine-learning-based spectrum optimization engine is an industry first. Ambeent has over 25 patents and patent applications. Ambeent is ranked the 4<sup>th</sup> organization in Turkey in the numbers of patents granted for 2022. In addition to spectrum optimization, our patents include Wi-Fi positioning and detection, extended communications and storage, and network monitoring, forecasting and optimization.

**Business innovation:** Millenicom was able to generate new revenue streams using Ambeent’s solution, which has helped Millenicom increase its revenues from the sales of mesh systems by 22 %.

Millenicom is able to gain insights into the architectural setting of the premises of its 280,000 subscribers and sell its mesh systems in a targeted way. Building on a SaaS/PaaS business and deployment models, Ambeent’s solutions scale to cover an ISPs networks within days with no dependency on legacy systems.

**User experience:** Millenicom has enhanced the digital experience of its subscribers:



- By recommending mesh systems to its most vulnerable subscribers
- Subscribers are able to determine the optimal location of access points for best coverage
- Average improvement of 87 % in baseline performance by reducing neighborhood interference

As mentioned above, complaints calls to support centers was reduced by 28% together with faster ticket resolution time (48%) that led to an increase in customer satisfaction and reduced churn.

**Scale of market impact:** Ambeent's platform is live in Millenicom (280,000 subscribers). It is also live in other ISPs including Turknet (800,000 subscribers) and Vodafone Turkey (1million subscribers). We are working to integrate our solutions with Wi-Fi AP vendors and silicon/SoC vendors to make the tool readily available to different types of clients including ISPs and enterprises.

### **About Ambeent**

Ambeent is an innovator in network intelligence and the management of Wi-Fi and 5G technologies, with a mission to enhance digital experiences and help organizations of all sizes meet their connectivity objectives. Ambeent substantially improves end-to-end service performance with its patented radio frequency interference management technology powered by AI/ML as well as by delivering deep visibility and highly contextualized management of networks and digital experiences in hybrid environments. Ambeent's SaaS/PaaS business and deployment models are available to customers across a variety of industries to enhance Wi-Fi as well as CBRS and 5G networks. For more information, visit [www.ambeent.ai](http://www.ambeent.ai).

### **About Millenicom**

Millenicom, one of the leading companies in the alternative telecom sector in Turkey, has been providing telecommunication services to its customers since 2004; Millenicom connects users to the world with an affordable, uninterrupted and high quality internet service. Millenicom is an important alternative in the telecom industry with different services. The total number of consumer and corporate customers of Millenicom is over 280,000.

Millenicom offers fiber internet service to consumers by using both Türk Telekom and Superonline infrastructures. Millenicom, reaches corporate users with fixed phone service, well internet connection solutions 'that increase the quality of work', with affordable prices and make life easier. Millenicom aims to develop 'fiber internet projects at home' for individual customers with 'SOCAR Fiber' in the near future.

Millenicom was selected as the "Alternative Operator Service Category Winner of the Year" in 2017, "Communication Services Sector Third" in Turkey's Top 500 Service Exporters survey in 2018, 2019 and 2021, and received the "Complaint Customer Satisfaction" GOLD award in 2020 and 2021. Millenicom is a telecommunication company that has adopted the principle of quality service to all its customers under all circumstances and has always tried to keep customer satisfaction in the first place. Millenicom is among the respected and leading companies in the Turkish telecommunication market.

Millenicom has been operating as a SOCAR Turkey subsidiary since June 2019.