In-Home Wi-Fi Expert – Dr. Kenneth J Kerpez, Ph.D., Director of Standards, ASSIA, IEEE Fellow

Dr. Kerpez received his Ph. D in EE communications from Cornell University in 1989. He worked at Bellcore and Telcordia, for 20 years, and now he has been working at ASSIA for 11 years. Dr. Kerpez became an IEEE Fellow in 2004 for his contributions to broadband. He has published a hundred papers and nine hundred standards contributions. Dr. Kerpez has many years of experience working on communications systems and networks of all sorts, including DSL, fiber access, home networks, IP QoS, triple-play services, Virtualization, 5G and Wi-Fi. He is an avid sailor, skier, and bicyclist.

"The Way Forward from In-Home Wi-Fi to Operator-Managed Wi-Fi"

WBA helps to define the reference architecture to benefit operators as well as equipment & chipset manufacturers, taking a leadership role to collaborate and work with industry standardization bodies to address the needs of industry players for deploying managed residential Wi-Fi networks.

There are many solutions that help to deploy an "operator-managed" residential Wi-Fi network, and every operator has to figure out which solution would fit their deployment needs and provide the best In-Home Wi-Fi services to their customers.

By aligning on a reference network architecture for deployment of the residential network as well as the management architecture, a lot of time and money can be saved on investigating alternative solutions or redeveloping the same features on a different architecture.

Operator Managed Wi-Fi

To help operators and other providers of in-home Wi-Fi understand the advantages and differences of multi-AP systems, this In-Home Wi-Fi Multi-AP Solutions Trial Final Report provides testing and analysis of relevant Multi-AP features and capabilities and defines a set of performance metrics and subsequent test plans which have been collected from live use cases conducted in a real operating environment.

WBA's Operator-Managed Wi-Fi is now collecting and categorizing a wide range of use cases that will cover all phases of deployment, operation, and management of both single AP and multi-AP in-home Wi-Fi. These use cases will be used to drive the definition of a reference network management architecture both for deployment and ongoing operation of the residential Wi-Fi network. Mesh protocols, data models, and cloud communication protocols will be considered toward solutions. Outputs will include a whitepaper and liaisons to determine important features and management architectures for operators, and to push those features forward into other standardization bodies.

In-Home Wi-Fi is part of our daily life

In-Home Wi-Fi is being extended to support demanding applications and services, from gigabit broadband to XR, gaming, work-from-home, and beyond. It is important to provide the performance and reliability to support these applications, and to also be assured that the user experiences the necessary service quality levels.

Challenges & industry gaps with In-Home Wi-Fi

Wi-Fi comes from the IEEE 802 Ethernet world, where wired networks were built to specification and run with no worries about performance management. However, Wi-Fi is a highly complex and dynamic system, facing a myriad of challenges beyond the wired world including roaming, interference, congestion, coverage, airtime, availability, speed, and latency.

Wi-Fi is slowly being adapted to the world of carrier-provided broadband, but many challenges remain for “carrier-grade” Wi-Fi. Wide-ranging data collection and advanced analyses are needed to provide diagnostics visibility, while cloud and local configuration are needed to address the issues identified by diagnostics.

Bridging the gaps and enable widespread Wi-Fi management

ASSIA CloudCheck is a cloud and local system providing advanced diagnostics and optimization for Wi-Fi, helping to bridge a large gap toward carrier-grade Wi-Fi. However, cooperation with standards is needed to make our solution integrate within the larger Wi-Fi ecosystem to mix and match with different equipment including multi-AP extenders. ASSIA has worked closely with the WBA In-Home Multi-AP Solutions group, and now with WBA Operator-Managed Wi-Fi to enable widespread Wi-Fi management to be standardized across the industry.

“We need – Standard, Standard, Standard!”

Wi-Fi has a achieved a vast scale of deployment, beyond what any one company can do by themselves. Standards, particularly the WBA, and opensource, are needed to provide an open ecosystem for interoperability at the management and control layers. Standards such as WBA In-Home and Operator-Managed Wi-Fi can be used by all industry players to extend Wi-Fi to support future demanding applications with increasing user expectations. Standards supporting software-based solutions and cloud management enable future-proof systems.

ASSIA's In-Home Wi-Fi offerings, WBA, and Standards

ASSIA software manages broadband to the home (Expresse) and broadband in the home (CloudCheck), which we are combining to manage broadband to the device (Commande). ASSIA CloudCheck is a cloud-based solution for ISPs to monitor, manage, and optimize home Wi-Fi networks. CloudCheck uses software on gateways connected to a cloud-based system performing contextual analytics and machine-learning algorithms to proactively monitor and optimize subscriber Wi-Fi networks. CloudCheck encompasses multi-AP home Wi-Fi networks and standards including WBA recommendations from the In-Home Wi-Fi and Operator-Managed Wi-Fi deliverables, Wi-Fi CERTIFIED EasyMesh™, Wi-Fi CERTIFIED Data Elements, and Broadband Forum TR-369 and TR-181.