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2020 BEST PRACTICES AWARD

Plume®

2020 GLOBAL SMART-HOME-AS-A-SERVICE ENTREPRENEURIAL COMPANY OF THE YEAR AWARD

Contents

Background and Company Performance

Industry Challenges

The smart home market is expected to pick up pace in 2021 after a sharp decline in consumer demand in 2020 due to the global lockdown and worldwide job losses that reduced consumer purchasing power. However, some smart home segments, such as home safety and security as well as health and wellness products, have partially offset the negative impact of COVID-19. Indoor air quality products integrated with smart window automation, remote patient monitoring, indoor cameras, fire safety products, video doorbell products, and cloud-based smart home services have been relatively resilient during the pandemic. While there has been a growing acceptance and adoption of home energy management, home automation, and home entertainment gadgets, such as smart plugs, locks, speakers, thermostats, and lighting control products in the past couple of years, vendors have witnessed a sharp decline in sales volume due to decreased consumer demand due to COVID-19. Additionally, substantial growth in versatile products from large consumer electronics companies (e.g., Amazon, Google, Xiaomi) makes it possible for such technologies to act as smart home hubs. In this regard, most of these products have a range of integration opportunities for other hardware and applications (apps), driving the smart home ecosystem's total expansion by also making integration easier for users.

Frost & Sullivan forecasts that the global smart home market will reach nearly $263 billion by 2025, growing at a compound annual growth rate of 7.5% from 2018 to 2025.[1] The main contributor for market growth is the home entertainment segment, with the largest share contributing 82.7% of the total smart home market revenue. The key drivers for this extensive market are the growing acceptance of new products and the safety and comfort features offered through those products.[2]

Nevertheless, several significant hurdles hinder industry players from increasing market share in the smart home industry, including data privacy and security, lack of interoperability and standards, and lack of customer engagement features to involve end-users in managing smart home platforms.

Entrepreneurial Innovation and Customer Impact

Excelling in the Smart-Home-as-a-Service Market

Since 2015, Plume, a US-based company, has earned a stellar reputation by providing an industry-leading Consumer Experience Management (CEM) Platform, allowing Internet Service Providers (ISPs) worldwide to provide their users with high personalization, control, security, and Wi-Fi performance through a new bundle of Smart Home Services. By leveraging its CEM Platform and in-depth understanding of complex ISP market needs, Plume outpaces its competitors and maintains an excellent standing among its partners in the smart-home-as-a-service market.

One considerable area of competitive advantage for Plume is that it leverages an open-source platform, having founded the OpenSync initiative that it announced together with

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[1] *Future of Smart and Connected Homes*, Forecast to 2025, (Frost & Sullivan, September 2019)
[2] *Ibid*

leading ISPs Bell Canada, Comcast, Liberty Global, consumer electronics giant Samsung, and silicon provider Broadcom in October 2018. OpenSync provides a complete silicon-to-service framework to enable the rapid deployment and management of Smart Home Services from the cloud, ensuring that ISPs can benefit from fast time-to-market, lower cost hardware, and enhanced scalability. Following its inception, OpenSync has gained significant industry momentum with many ISPs such as Charter Communications, key standards organizations including the Facebook-led Telecom Infra Project (TIP), and an array of device makers including ADTRAN and Technicolor Connected Home leveraging the benefits of the open source framework. In securing the industry-wide adoption of OpenSync, Plume has at the same time increased the reach of its Smart Home Services proposition.

Notwithstanding harsh competition and a challenging economy, Plume has boosted its CEM Platform, improving its position in the market and bringing its varied high-performance cloud-based delivery services to ISP customers worldwide. The establishment of reliability in Plume's services is evidenced by the up-to-30% reduction in customer churn rate that ISP's can achieve when deploying the company's full CEM Platform. This reduction in customer churn represents a 2.9 year increase in overall customer lifetime and a 70% increase in customer lifetime value. Plume also enables ISPs to achieve revenue growth by increasing average revenue per user by up to $15 per month for customers with whole-home Wi-Fi offerings, and a $5 per month increase for customers without extenders. ISP Customers deploying Plume's CEM whole-home Wi-Fi coverage with extenders reduced their cost by 22.4% in a year[3].

Plume's artificial intelligence (AI)-driven CEM Platform increases ISPs' time-to-market advantages through its high-performance cloud-based delivery model to enable them to stay ahead of the competition. Plume allows agile development process and feature enhancement by significantly reducing ISPs' upgrade timelines when compared to network-wide firmware upgrades.

Competitive Strategic Partnerships to Increase Customer Base and Enhance Product Portfolio

In five years, Plume has gathered nearly 100 service provider partners and connects close to 20 million homes across its software defined network. Moreover, the company secured funding from various investors (e.g., Liberty Global, Shaw Communications) collectively amounting to $127 million. In February 2020, Plume received another $85 million in funding from several additional investors (e.g., Charter Communications, Qualcomm Ventures, Belkin, Service Electric Cablevision). Frost & Sullivan recognizes Plume's effort in drawing financial support to focus on strengthening its CEM Platform, thus expanding the reach of its whole-home Wi-Fi and Smart Home Services to support the versatile needs of ISPs' customers.

Since 2015, Plume has entered into several strategic partnerships with various ISPs and device makers worldwide. For instance, in April 2020, Plume entered into a partnership with ADTRAN, a United-States-based provider of next-generation open networking and

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[3] https://blog.plume.com/resources/white-papers/total-cost-of-ownership-study.

subscriber experience solutions. ADTRAN is now able to improve the consumer broadband experience while equipping operators with advanced analytics and performance capabilities to achieve increased penetration in the smart home market. ADTRAN will incorporate Plume's CEM Platform through its Mosaic Subscriber Suite, offering ISPs a holistic view of their access and smart homes network.

In August 2020, Plume partnered with Technicolor Connected Home, a French-based provider of services and products for the communication, media, and entertainment industries, to deliver superior digital in-home experiences to broadband users. By deploying Plume's CEM Platform, Technicolor Connected Home will be able to enrich their broadband Customer Premises Equipment (CPE) portfolio. In turn, Plume will benefit from the expanded market reach via access to new broadband open common platform enumeration platforms provided by Technicolor Connected Home.

In October 2019, Plume entered into a partnership with Jupiter Telecommunications (J:COM), Japan's largest cable TV operator. J;COM will utilize Plume's advanced CEM Platform and its different services and tools to understand their subscribers' home network better, deliver new services at scale, and ensure that its customer support teams swiftly detect and address issues when needed. This relationship was further expanded in June 2020 enabling J:COM to resell Plume's CEM platform to cable service providers throughout Japan – early success was evident with 10 companies contracted to deploy in 2020.

In February 2020, Plume also partnered with Liberty Global, a leading converged video, broadband and communications company to provide its consumers with more tools to manage devices connected to their home network. Specifically, the client integrated Plume's Smart Home Services into its Connect App and rolled it out free of charge to customers across Europe (e.g., UK, Switzerland, Poland, Ireland, and the Netherlands).

Plume offers three flexible deployment models and go-to-market strategies for ISPs to maximize their profits. The Individual Upsell model is provided only to customers that separately purchase services. New-customer-roll-out services are provided as a part of the base offering for all new customers, along with OpenSync-enabled gateways and extenders. Finally, Full-scale-roll-out is provided to all customers after enabling OpenSync gateways on the full fleet of existing CPE.

Frost & Sullivan recognizes and lauds Plume's efforts in forging strategic partnerships with leading companies and its efforts in offering profitable deployment models to ISPs. Many clients value the top-performance and business impact of Plume's solutions and services as it meets and exceeds customer expectations:

"Plume understands the critical needs, demands, and challenges of today's smart homes and has become an established partner to ISPs, including cable operators, around the world. Cable operators across Japan are now empowered with the tools and technology they need to remain competitive and provide high-value services to their subscribers."

-Corporate Officer and GM, Business Innovation Unit, J:COM

"This new partnership with Plume will revolutionize the subscriber's experience across every broadband delivery platform, whether its cable, DSL, or fiber and will further cement

Technicolor's position as No. 1 in the broadband customer-premises equipment space. This is key as the relationship between operators and subscribers rises in importance. Consumers are counting on network service providers to help manage their connected home environments' growing complexity."

-Chief Technology Officer, Technicolor Connected Home

"The ADTRAN and Plume collaboration will vastly improve the consumer broadband experiences while helping operators achieve faster time-to-market and time-to-revenue, improved analytics and performance capabilities, and fostering the creation of new and expanded high-value services."

-Chief Product Officer, ADTRAN

"Our partnership with Plume has been critical to the success of Charter's 'Advanced In-Home Wi-Fi' roll-out and has enabled Charter to accelerate innovation and more rapidly deliver new features to our Spectrum Internet and Wi-Fi customers – from the ability to optimize their home networks to greater control over their devices. Charter has seen first-hand the Plume team's technical innovation and is pleased to join Plume's syndicate. I look forward to supporting the next phase of Plume's expansion."

-Senior Vice President, Emerging Technology and Innovation, Charter Communications

The Cornerstone of Plume's Success: Customer Experience Management Platform

Today, many consumers increasingly count on network service providers to assist in handling the complexity of their connected home environments. They expect a more advanced level of security, control, speed, and personalization from many ISPs and cable operators, requiring providers to gain a more holistic view of subscribers' home networks and a set of tools to find and address any emerging issues proactively and pre-emptively.

Plume is at the forefront of providing a CEM Platform that enables ISPs–including cable operators–to ensure a positive, in-home Wi-Fi experience for customers and to substantially cut their costs. Plume's mobile-app-driven customer-self-install feature enables service installation and activation by customers, thereby eliminating the need for on-site technicians, which can reduce installation costs by up to 97%[4].

Plume's CEM cloud engine is driven by the following key components:

HomePass: a new and highly scalable bundle of Smart Home 2.0 services that includes Adaptive WiFi, AI Security, advanced parental controls, unique and intelligent guest access, Plume Motion for motion detection and home awareness, and more. These features are accessible and controlled via the Plume App.

Haystack: A comprehensive back-end monitoring tool that provides a set of instruments to ISPs' engineering and operations team to oversee network health while pinpointing unsatisfied customers and ensuring outbound customer care outreach to minimize calls and boost customer satisfaction.

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[4] https://blog.plume.com/resources/white-papers/total-cost-of-ownership-study.

Harvest: A market insight tool based on network analytics that enables ISPs to analyze and identify essential usage behavior, app patterns, and customer device trends. Thus, ISPs can undertake well-informed product and marketing decisions while benefiting from understanding customer purchase decisions.

Plume's CEM Platform is deployed in three key components: Plume App with HomePass, Plume Cloud, and OpenSync open source firmware. All three delivery models offer greater benefits to customers through installation flexibility, instant deployment and scalability, ease of access and control, interoperability, mobile app support, and substantial operational expenditure savings.

Conclusion

Despite the negative impact of COVID-19 followed by the economic slowdown that continues to impede many industry participants from increasing market share, Plume maintains an excellent reputation for its Customer Experience Management (CEM) Platform that meets and exceeds customers' expectations. Through 2020, Plume has been scaling impressively, activating over 850,000 households per month. This proves the reliability, flexibility, and cost-effectiveness of Plume's innovative CEM Platform that supports ISPs with tools to ensure a positive in-home experience for customers while significantly lowering their operational costs and allowing them to achieve higher margins.

At a time when the traditional services model is under threat from over-the-top service providers, Plume offers ISPs the ability to capitalize on the growth of the smart home market, and leverage broadband through a new services play.

For its strong commitment to customers and innovative service delivery and deployment practices, Plume is recognized with Frost & Sullivan's 2020 Global Entrepreneurial Company of the Year Award in the smart-home-as-a-service market.

Significance of Entrepreneurial Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. In a sense, then, everything is truly about the customer. Making customers happy is the cornerstone of any successful long-term innovation or growth strategy. To achieve the dual goals of customer engagement and growth, an organization must be best in class in 3 key areas: understanding demand, nurturing the brand, and differentiating from competition.

- Acquire competitors' customers
- Generate awareness and interest
- Increase market share
- Grow the total size of the market
- Win more customers than you lose

- Increase brand equity
- Foster a strong corporate identity
- Improve brand recall
- Inspire customers
- Adhere to a clear value proposition

DEMAND

BRAND

Entrepreneurial Company of the Year

COMPETITIVE POSITIONING

- Identify unique selling points
- Offer superior value to customers
- Deliver on the promised value proposition
- Carve out a market niche
- Balance price and value

Understanding Entrepreneurial Leadership

Demand forecasting, branding, and differentiation underpin an entrepreneurial company's journey toward forming deep relationships with customers and permanently altering the market with their actions. Entrepreneurial Innovation and Customer Impact are the cornerstones of this award, as discussed further in the next section.

Key Benchmarking Criteria

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated Entrepreneurial Innovation and Customer Impact according to the criteria identified below.

Entrepreneurial Innovation

Criterion 1: Market Disruption
Requirement: Innovative solutions that have genuine potential to disrupt the market, obsoleting current solutions and shaking up competition

Criterion 2: Competitive Differentiation
Requirement: Deep understanding of both current and emerging competition to create and communicate strong competitive differentiators in the market

Criterion 3: Market Gaps
Requirement: A clear understanding of customers' desired outcomes, the products that currently help them achieve those outcomes, and where key gaps may exist

Criterion 4: Blue Ocean Strategy
Requirement: Strategic focus on creating a leadership position in a potentially "uncontested" market space, manifested by stiff barriers to entry for competitors

Criterion 5: Passionate Persistence
Requirement: A deep belief in the "rightness" of an idea and a commitment to pursuing it despite seemingly insurmountable obstacles

Customer Impact

Criterion 1: Price/Performance Value
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience
Requirement: Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience
Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience
Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity
Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and

assess their fit with select best practice criteria. The reputation and integrity of the awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 **Monitor, target, and screen**	Identify award recipient candidates from around the world	• Conduct in-depth industry research • Identify emerging industries • Scan multiple regions	Pipeline of candidates that potentially meet all best practices criteria
2 **Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best practices criteria • Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3 **Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best practices criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4 **Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best practices positioning paper
5 **Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized award candidates
6 **Conduct global industry review**	Build consensus on award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible award candidates, representing success stories worldwide
7 **Perform quality check**	Develop official award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8 **Reconnect with panel of industry experts**	Finalize the selection of the best practices award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best practices criteria
9 **Communicate recognition**	Inform award recipient of recognition	• Present award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of award and plan for how recipient can use the award to enhance the brand
10 **Take strategic action**	Upon licensing, company is able to share award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess award's role in strategic planning	Widespread awareness of recipient's award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of the research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's growth team with disciplined research and best practices models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit http://www.frost.com.