Xailient

Whitepaper

How to Enter and Win the Smart Video Doorbell Market

Overview

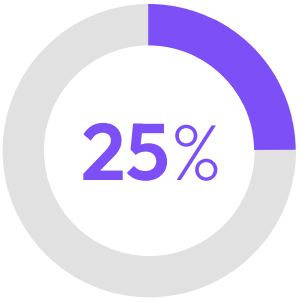
Smart Video Doorbells (SVD) is a rapidly growing category within the consumer electronics industry, and the #2 driver of "Smart Home" adoption. The category has proven to be an unexpected battlefield, with upstart and legacy consumer brands lining up to compete for consumer dollars. The competition isn't about the $150 devices, it's about establishing a brand in the mind of consumers that attaches convenience around the home to **ongoing services and the recurring monthly revenues** that companies need.

Consumer electronics brands have four key opportunities to establish daily contact with their customers and build up brand recognition and trust. First, of course, is the smartphone – but this market is mature and established with high barriers to entry. Second, is the smart speaker, an early 'trojan horse' product that started as a smartphone accessory and has become a standalone hub for delivering services (such as streaming music) to customers in their homes. Third is Smart TV, the "other" daily entertainment device, but one which has less flexibility in user interaction, less due to technology than customer norms and physical form factors (brands have taught that bigger is better for TVs, which also means they are more immersive and less part of the background functioning of a home). Finally, the emerging category of Video Doorbells, which generate daily interactions (and brand impressions) with homeowners as they monitor the comings and goings of family and deliveries.

As of 2023, these were the proven category opportunities to establish a primary 'hub' with consumers. Every other product is an accessory. Most manufacturers are cooperating with one or more interoperability platforms, but the control over the ecosystem will rest with the companies that do the best job of building a useful and usable front-face for the Smart Home system.

Daily Use Consumer Electronics

- ✓ Smartphone
- ✓ BT Speaker
- ✓ Television
- ✓ Smart Video Doorbell



# of US homes with video doorbells by 2027

SVD presents a rare opportunity for hardware brands to capture recurring revenue streams

Every platform needs its killer app, and for the 17% of US households that currently have a Smart Video Doorbell, it's a forward battleline for wrestling control of the consumer away from legacy brands and legacy platforms.

SVD is attractive to brands for another reason – recurring revenues and profits. Unlike Smart Speakers, where consumers typically mix and match between hardware (like Sonos) and services (like Spotify), or TVs (Samsung/Netflix) the SVD category converts customers from hardware to private-label or partnered services. SVD presents a rare opportunity for hardware brands to capture recurring revenue streams, which can also offer better profit margins than hardware due to their lower cost of goods. Ring sells both the hardware and the services.

Thus, **SVD presents an opportunity for consumer electronics brands to capture high-margin, ongoing service revenue, expand their brand presence and cross-sell additional products (and services), and get a toehold in the 'big game' of technology platforms.** As a result, competition in the category is heating up, with new entrants that include both startup companies and well-established brands. Strategies vary from build-everything, capital-intensive walled gardens (like Wyze), to white-labeling (the most common strategy), or explicit partnering (ADT & Nest).

In this eBook we'll examine the fundamentals of the category and look at strategies for maximizing the opportunity across a spectrum of budgets from zero to $96 million.

Why Enter

Right now, the market is still emerging and it's fragmented. The category creator and leader, Ring, does not have a dominant market share, in part due to the rapid growth in competition attracted by the opportunities. Big players are drawn by the vision of establishing a dominant platform for the next generation of technology. Apple and Google Play collect over $100 Billion in fees from companies seeking access to their captive audiences. Amazon (via Ring) hopes to have a seat at the table as consumers shift from smartphones to new platforms. But upstarts and legacy brands are also entering, despite leaner balance sheets. The reason is that SVD presents a rare opportunity for profitable growth. **This is a potential lottery ticket where winning pays a lot but even losing can be profitable – so why not play?**

One significant dynamic in the market is the relative strength of non-traditional players. SVD is, primarily, a home security device. Consumers are reaching out to their traditional home security providers to obtain them. ADT, Alarm.com and other home security companies are leveraging the opportunity to expand into the Smart Home category and expand their wallet share. They are getting a huge boost in this from the strong brand trust they've established over decades with consumers. Security companies have built sentiment among consumers that they can literally be invited into our homes and trusted with our sensitive data. Ring is ultimately Amazon, and Nest is ultimately Google. Brands that are already familiar to consumers have been scooping up data in order to deliver advertising and sell more products. Their spin-off brands are meant, in part, to sidestep skepticism, but it remains to be seen if this will work - especially if competitors start to attack security and privacy credibility directly. A recent breach at iRobot (an Amazon company) involving leaked photographs of a woman using her home lavatory was headline news.

Over the next 5 years the number of households in the category will almost double, and many of the 17% already owning a device will replace their early devices with more advanced products. However, customers are also installing more devices (an average of 2.7 cameras per household). This trend will make it increasingly difficult to replace the brand (rather than the device). Consumer brands have a window of opportunity over the next 3-4 years, after which it will likely be harder to capture market share or have break-out success.

30M

households will own a smart camera by 2027.
10 million more than 2023.

2.7

Each household has an average of 2.7 cameras.

Over the next 5 years the number of households in the category will double

Who & Why of Consumers

Residential consumers are purchasing peace of mind and convenience.

For the family, it's about monitoring, controlling, and securing the doors when everyone is away. Comings and goings can be chaotic, and knowledge provides comfort. For cleaners, dog sitters, baby sitters, contractors and other people with special access, but limited trust, consumer needs circulate around monitoring and security. When strangers are around the vicinity of the home, the need is security and alerts.

Consumer anxieties and desire to protect their homes and loved ones has driven strong growth of video devices. Research has further validated **86% demand one or more AI-related features**. But they also want to know their privacy is protected; **26% admit concerns over privacy** cause hesitation in their buying journey.

Social media memes of crime videos or amusing moments helped demonstrate the value of Video Storage, but also illustrated the limitations of after-the-fact review. Consumers demanded real-time notifications. When these notifications led to nuisance alerts and false alarms, it triggered demand for intelligent notifications.

AI can differentiate a friend from a stranger (Face Recognition), can detect packages, vehicles, pets (Smart Detections), and see unauthorized break-ins. With smart locks that use Face Recognition, families can go keyless or enable temporary guest access.

As the technology evolves the consumer demands and needs are also evolving. Automation of a personalized experience leads to higher consumer satisfaction, and customer brand loyalty that can last decades.

57%

of video doorbell owners report safety and security as a factor for purchasing the device

54%

of consumers in US households with internet report that their home is their most significant investment and put effort into protecting it

35%

report having far more concern about the physical safety of their home than five years ago, up from 27% in Q2 2021

9%

of consumers in US internet households have experienced a vehicle break-in

12%

have experienced package theft

What You Need

SVD service consists of a camera, software services, and a mobile App.

The camera can monitor for events, triggered by motion or other changes in the field of view to push notifications to the user. A visitor can press a button, which usually chimes a bell inside the home and also notifies the App and sends real-time streaming video. Some systems include a two-way voice connection. Consumers can also use the app to access an archive of videos and images that were captured and saved (some of which triggered the notifications).

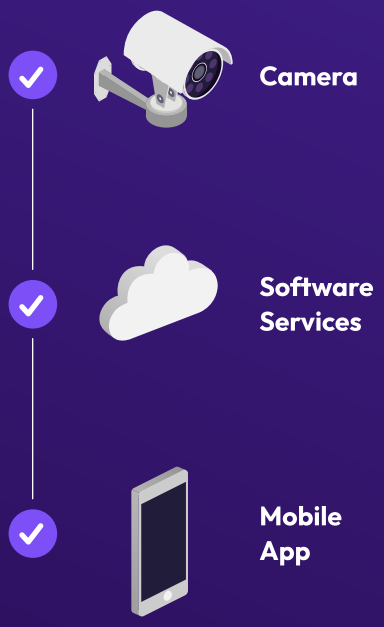
The technology to deliver these services have become increasingly easy. AWS, Google Cloud, and Microsoft Azure have 'recipes' online for how to configure pre-existing services into nearly complete solutions. Multiple manufacturers offer standard hardware that meets the need and can be customized for a brand's industrial design.

Differentiation comes in the quality of service and the user experience. Early products in the category generated large volumes of nuisance alerts, but AI filtering has improved the services so that customers can now expect to get meaningful notifications. This enhancement is a major driver of replacement purchases by early adopters.

Table stakes in the market now is using AI to filter out key events and statuses. For example, notifying only when a person or animal is in the field of view, or if a package has been delivered (and is still sitting on the porch). Category leaders also use AI to differentiate between similar events such as a 'child returning home after school' versus a 'postal worker making a delivery'.

Many SVD providers now offer managed security service, where video alerts are reviewed by dedicated staff. This 24/7 monitoring can escalate to emergency services or take other action as warranted.

As with any service company, an operational framework of technology and people is needed.



Features & Standard Techniques	
Arrival Alert	Push notification such as AWS Simple Notification Service (SNS)
Streaming Video	WebRTC such as AWS Kinesis (KVS)
Two-way Audio	WebRTC
Video Archive	Cloud storage and Video-on-Demand streaming such as AWS Foundation & Simple Storage Service (S3)
Cloud AI	Pre-trained AI such as AWS Rekognition

Building a working prototype is as easy as following online recipes from the big cloud providers.

Without AI, 20% of security cameras generate 80% of OPEX

Technical Operations

- ✓ **Deliver** new features and enhancements
- ✓ **Fine-tune** & improve performance
- ✓ **Adapt** to unexpected customer scenarios &/ or AI countermeasures

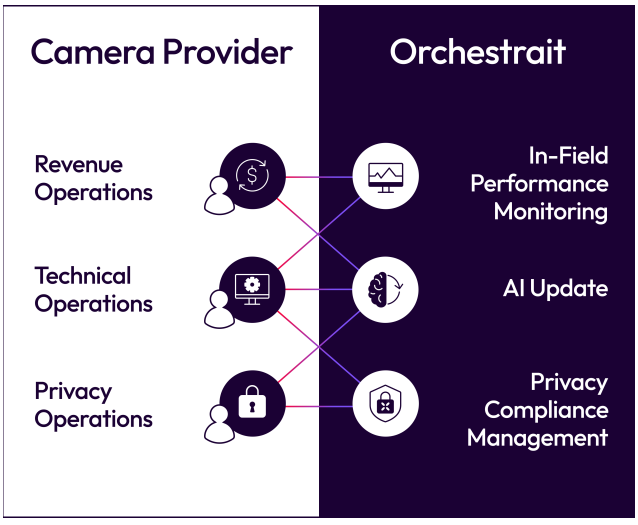
Customer Support & Technical Operations

A large customer base also comes with a support burden. The diversity inherent in a large fleet means that some customers will have service levels that fall below any product's goals. Hidden in a 99% number is an ambiguity: is a product working perfectly for 99% of customers, or working 99% of the time for all customers?

Problematic scenarios have a disproportionate impact on operational costs. In a recent review, **20% of legacy (non AI-equipped) security cameras imposed over 80% of storage and data processing costs**. This was primarily due to overactive triggering of motion events. US security monitoring companies report that false alarms that require call centers to remediate drive over 90% of their labor cost.

Problematic scenarios can also impact revenue retention, for example if a dissatisfied customer cancels their service.

Additionally, over the 5+ year life of a camera product, providers should **'expect the unexpected'**. Five years ago, most did not anticipate that the wearing of face masks would become commonplace. Today, we cannot predict how criminals will respond to the proliferation of AI security cameras. However, countermeasures have been proven in concept, and it is likely that at some point we will experience an 'arms race' similar to computer virus-versus-antivirus seen in cybersecurity.



Computer Vision Operations (CVOps) tools such as Orchestrait help teams reduce the burden of managing hundreds-of-thousands or millions of cameras in production.

Revenue optimization through RevOps

Best practice is for a customer success team or revenue operations team to proactively monitor in-field performance to optimize profitability.

Data Stewardship with Privacy Ops

Best practice is for a privacy officer or compliance authority to own the Policy Manager Control. In the EU, GDPR requires organizations to appoint a Data Protection Officer.

Monetization & Profitability

Consumers purchase their hardware through a variety of channels, but purchase their subscription services directly from the provider. The addition of subscription services creates a new stream of revenue and empowers manufacturers to renegotiate the value chain.

Service offerings typically follow variations on a 3-tier line-up. Many providers offer a free tier, with limited entitlements, as loss-leader. Entry level paid 'premium services' deliver fully-automated enhancements for an annual or monthly fee. Top tier services usually offer 24/7 monitoring services, where notifications are sent to security professionals rather than the consumer's smartphone. Variations on the included entitlements, service level agreements, and bundled features provide a dynamic battleground for brand differentiation and competitive advantage. Add-ons and sub-segmentation create incremental revenue opportunities within the captive customer base.

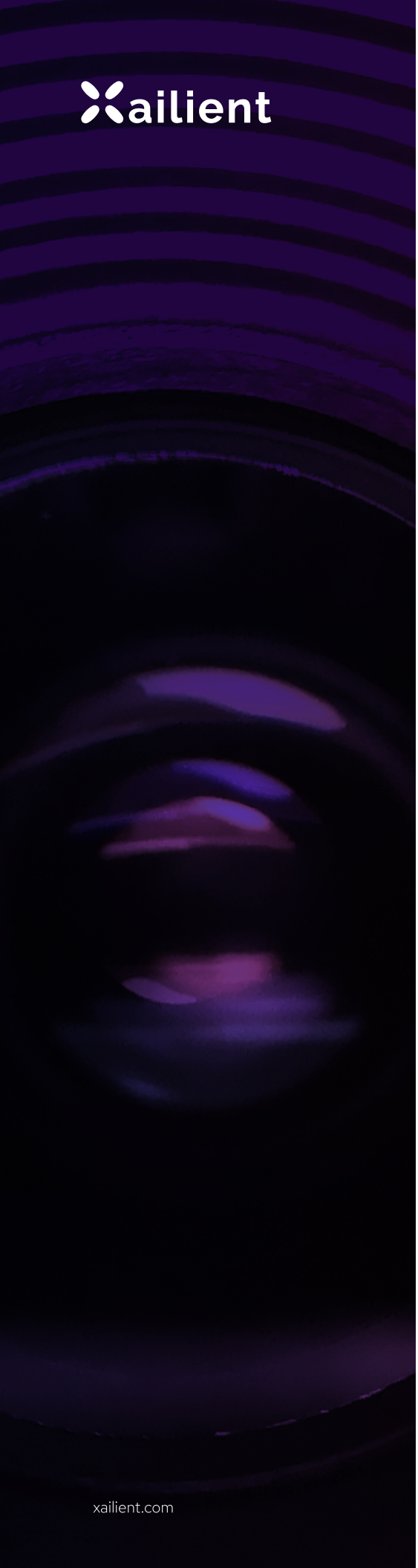
Subscription services present an opportunity for higher margins, but recurring revenue comes with ongoing operational costs. AI, and in particular, Edge AI, can provide significant improvements in operational costs. Residential security disruptors such as Nest, Ring and Wyze have leveraged automation to undercut traditional security providers. However, a closer look at the implementation of these strategies reveals an important difference in profitability.

Revenue Operations

- ✓ In-field monitoring
- ✓ Revenue optimization
- ✓ Support cost minimization

Privacy Operations

- ✓ Review & enforce privacy policy
- ✓ Ensure customer consent
- ✓ Reporting & compliance



Ring, Wyze, and many other 'smart camera' providers are in fact delivering 'dumb' cameras which connect to smarts in the Cloud. This implementation is largely the same from the customer experience, but has profound implications for operating profit (additionally, this presents privacy and security risks which are addressed on page 12 in Privacy: Regulations and Public Relations). AI inference leverages computers to deliver the context of people, packages, pets etc. that customers expect. When this computation is performed in the Cloud, the provider incurs operational expense which eats into the subscription margin. **These costs average over $1 per camera per month, with especially busy cameras costing 10 times that much.**

Consumer subscription services average $10 per month for unlimited cameras, but challengers like Nest have offers starting at $8/month for unlimited cameras. Additionally, free tier customers still incur costs for the service provider, and these loss leaders can be anywhere from 25 cents to over a dollar per camera. Feature inclusions and conversion ratios to premium tier are a critical factor in profitability.

Edge AI moves most of this cost to the camera, eliminating the operational expense and improving margin. Nest and Abode are examples providing "Edge AI" features to customers. This makes each customer more profitable, setting up a growth flywheel that takes on less risk.

Heavily capitalized challengers such as Ring and Wyze are aggressively capturing market share with an intent to improve monetization and profitability downstream. Nest and Abode offer a more traditional model of profitable growth. The principal difference between the two is Edge AI.

These alternate strategies were largely driven by an obsolete market segmentation. Edge AI historically required more expensive hardware, but new hardware coming to market largely erases this difference. The impact of these low-cost systems is already being seen in the market. Ring now offers some products with Edge AI, a trend being picked up across the market.

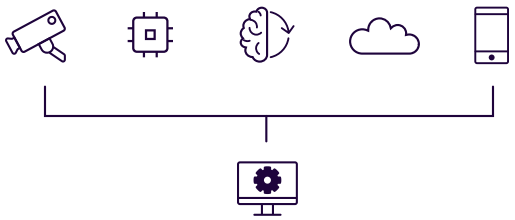
How to Enter

Camera providers have utilized various strategies to enter the Smart Video Doorbell market and drive differentiation depending on their maturity levels and core competencies. Most of the product differentiation is now pivoting on the experience the product can deliver.

To drive customization and differentiation through experience, implementation of AI has become critical. Once a smart camera provider has defined the experience the execution and entry into the category can be implemented in many different ways

1 Build Everything In-House

Build hardware, write embedded firmware, create proprietary AI, create and maintain Cloud Services for customers and management platforms for the organization.



For patient organizations with deep pockets and high-risk appetites, a proprietary build provides the ultimate control. But to enter, test, and succeed across every technology domain in a tech-based product category is prohibitively expensive for most organizations.

This approach requires building teams with core competencies in multiple, disparate competencies and aligning them to deliver an integrated solution.

This market space is fast moving and consumers expect updates and upgrades from service providers. Most organizations benefit from focusing on a few core competencies and differentiating around those strengths.

PRO

- ✓ Flexibility

CONS

- ✗ Maximum of cost and risk among all strategies
- ✗ You needed to start 4 years ago

PRO

- ✓ Almost as flexible as building in-house
- ✓ Much lower cost and risk

CON

- ✗ Product development cycles of at least 6 months, can take 1 year

Semiconductor Providers

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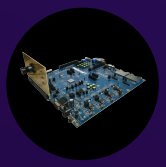
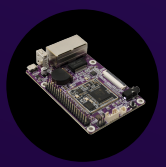
REALTEK



NOVATEK

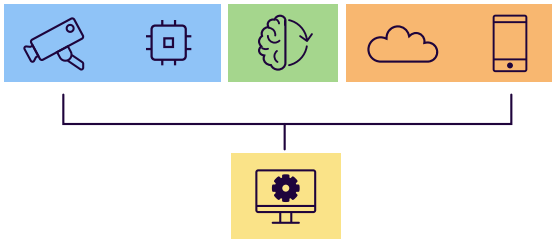


SigmaStar

2 Buy and Integrate Best-fit HW and SW

The most common strategy today is and a faster path to market is to work with an established ODM who can provide cameras built on the latest smart camera modules, and select a software vendor that has already integrated and optimized on the platforms.

ODMs will start with a reference design, and can provide flexibility in hardware and custom firmware to fit a product's specification. **Product owners can customize their user experience and work with proven point solutions - assembling a complete solution that is unique.**



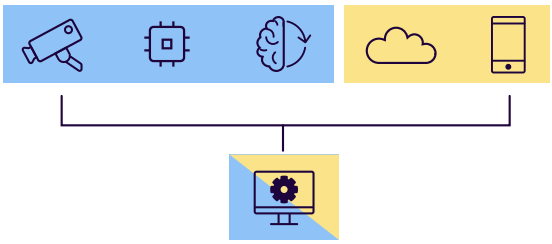
Product owners will want to understand and select the best camera System-on-Module to fit their specific needs. Semiconductor providers Ingenic, Realtek, Novatek and Sigmastar dominate the home camera market.

When selecting a hardware platform, variations in camera quality, battery consumption, performance, size, and cost need to be considered as does availability of supply. Brands will need to work through Original Device Manufacturers (ODMs), who will source camera System-on-Modules (SOMs) plus other components like flash memory, RAM, and battery. The selected ODM assembles these into a finished hardware product, boxed up and ready to ship to retail. The ODM relationship is crucial, and many brands select a SOM by first picking an ODM that fits their needs.

Software providers including Xailient have pre-integrated SDKs on camera SOMs and cloud platforms, so product owners can plug in off-the-shelf solutions that fit recipes for AWS, Tuya and others.

3 Whitelabel the Product, Build the Service

Providers can acquire a product where the hardware and software SDKs are already implemented. **This is the most common option for companies with strengths in 'user experience'** such as web and mobile Apps. The highest complexity technology is acquired from the vendor, and the provider focuses on the brand experience.



Organizations strong in UI may not have the technical expertise to understand how to manage hardware products within the overall service. **Product owners should focus on hardware platforms with strong remote management and monitoring tools.**

PRO

- ✓ Efficiency in time and cost, especially for organizations inexperienced in developing camera hardware
- ✓ Reduced risk from building costs, time for execution and delivery to market

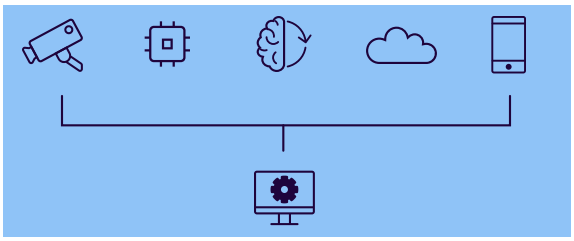
CON

- ✗ Service software can be updated, but customer experience on device is set by vendor, limiting agility
- ✗ Product owners should select a product with over-the-air update capabilities

4 Whitelabel both Product and Services

Companies with strong consumer brands but limited product development and delivery experience may choose to focus on marketing and channel.

Providers may build their own operations systems, or pass the entire burden for supporting the customer and optimizing lifetime value to the partner.



Regardless of strategy, consumers are likely to keep their products for 5 to 7 years. To optimize the total lifetime value of the customer, brands need to think holistically about product sales and service revenue. The ability to manage, maintain and update the AI and software throughout the lifecycle is critical. **Consumers are more likely to renew, and more likely to purchase add-on services if they are satisfied with the products and services** they already have.

PRO

- ✓ Fastest time to market with lowest overall costs of delivery
- ✓ Brands can customize superficial elements related to customer experience like user interfaces and naming

CON

- ✗ Limited or no differentiation on features and functions
- ✗ Brand risk for outsourced services; margin risk of in-house services with limited tooling
- ✗ Margins often dictated by resale agreements, potentially limiting upside

79%

of Smart Home consumers will live in jurisdictions with relevant laws in force **by 2026**. Compliance strategies are now an existential necessity for serving this market.

Privacy: Regulation and Public Relations

Consumers are concerned about their privacy. News about data breaches, and increased coverage about how companies use data have educated consumers. **26% percent of smart home buyers said data security and privacy were a concern.**

Regulators are taking note. In 2018 when Europe introduced the General Data Protection Regulation (GDPR) only two US states had privacy laws. In 2023, 8 states and 3 cities had passed similar laws and 13 states had pending legislation. In 2023 the EU is expected to pass the "AI Act", broadly regulating the application of Artificial Intelligence. The law is expected to provide 2 years for companies to come into compliance.

The regulatory landscape is fragmented, but ultimately the frameworks center around a similar set of principles:

1. Understanding Personally Identifiable Information (PII) data: What are direct and Indirect Identifiers?
2. Understanding the role of a Processor and Controller within the organization and in third party suppliers
3. Purpose Driven Consent
4. Storage of Biometric Templates & Other PII data
5. Data Segmentation & Handling (Psuedonomyous, de-identified, anonymous)
6. Controls and Safeguards (Technical, legal and organizational)
7. Minimization of Data Collection
8. Opt-In

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How to Win

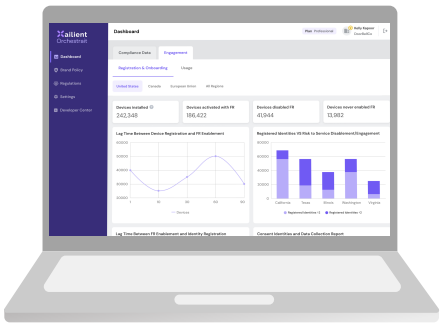
Dominant strategies are now clear. Consumer electronics brands should provide an ‘everyday’ product to build brand relevance in the mind of the consumer. **Smart Video Doorbells are a proven pathway to daily customer engagement which also includes profitable service attachment rates** for the provider. Profit margin is optimized by leveraging new smart camera hardware that enables Edge AI.

User experience is a critical aspect of differentiation. Quality apps are a must. Personalization through AI features is necessary for competitiveness and creates opportunity for differentiation.

Data stewardship and ownership are essential elements of AI. Companies that collect data from consumers need to have an auditable chain of custody rooted in opt-in consent of the subjects. Companies that build trust with consumers based on responsible stewardship of their sensitive data will have competitive advantage and less operational risk.

Maintaining lean operations, including Technical Operations, Customer Support and Revenue Operations directly impact the profitability of the service business. **Providers should take advantage of tools and automation to reduce costs and, more significantly, to optimize top-line revenues through high customer satisfaction.**

User experience is a critical aspect of differentiation.



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Delight customers & deliver recurring revenue

To enter & win, talk to a Xailient partner success manager: info@xailient.com