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Public Report (Module 3)

Module Overview and Objectives

Module 3 focused on expanding Homelab's smart automation solutions into specialized markets, refining hardware solutions, and validating scalability strategies for both clinical and residential applications. With a clear transition from early experimentation to structured deployment, this module emphasized productization, automation logistics, and AI-assisted customer support. Five sprints were carried out to consolidate and validate technical, commercial, and experiential aspects of the Homelab offering.

Sprint 1 - The first sprint focused on the conceptual and functional development of a modular smart rail system designed specifically for autism clinics. The system was intended to enhance sensory therapy through immersive environmental stimuli, combining devices such as a compact fan, an RGB LED strip, and a mist sprayer to simulate weather or emotional sensations. These would be synchronized with audiovisual storytelling, so that specific scenes trigger relevant sensations—like a red light to represent urgency, or a breeze when the Big Bad Wolf appears in a "Three Little Pigs" video. The initial implementation faced engineering challenges, especially around refilling the misting device since ceiling-mounted systems cannot rely on conventional plumbing. Solutions under exploration included using wireless irrigation systems or quick-access refill modules. Initial metrics were also drafted to evaluate responsiveness, durability, and user satisfaction during sessions.

Sprint 2 - Sprint 2 focused on segmenting Homelab's product offering for smaller apartments, such as studios and two-bedroom units. A major breakthrough came with the design of pre-configured automation kits assembled and programmed in-house prior to delivery. This approach significantly reduced on-site installation time—averaging just two to three hours—and cut operational costs by over 60%. Simultaneously, commercial strategies were developed to offer tiered automation kits (Basic and Premium) that could be marketed directly to developers and buyers. The Basic kit included lighting, air conditioning, TV control, and a central panel, while the Premium version expanded to curtain motors, audio systems, smart locks, and switch customization. This sprint also introduced exploratory work on a new marketing strategy using humorous and provocative social media videos to increase visibility and emotional resonance with new audiences.

Sprint 3 - Sprint 3 advanced the engineering of the modular sensory kit. Materials were finalized—anodized aluminum for the support structure, polycarbonate for component casings, and a PE-based water reservoir for misting. Weight-bearing calculations were established, ensuring the rail could safely support all modules without deformation, and all components were designed with pediatric safety and isolation mechanisms. Installation guidelines were written to comply with NBR 5410 electrical standards. Warranty and lifecycle projections were added, including activation cycles per

component. Meanwhile, the WhatsApp AI support assistant progressed in conceptual design. It was decided that each smart device would have a QR code that, when scanned, auto-fills a WhatsApp message indicating the specific product, its room, and the type of issue, greatly facilitating technical support and enabling smarter interaction with clients.

Sprint 4 -In Sprint 4, efforts returned to the autism clinic application, now focused on defining functional and non-functional requirements for the sensory rail system. Each therapeutic session was mapped with associated sensory actions based on narrative cues—for example, wind during chase scenes or colored lighting to reflect emotional shifts. The storytelling protocol aimed to offer multi-sensory reinforcement for engagement and cognitive development. Simultaneously, a second decorated apartment was fully automated with Homelab's solutions, offering a full showcase of lighting, TV, and air conditioning control via a central panel. This installation validated both technical readiness and emotional impact in real estate environments. Collaborative discussions with the developer also defined commercial packaging and upselling strategies for automation kits. A new implementation protocol was developed: all devices are pre-programmed in the office, tested, and installed on-site with minimal configuration, accelerating delivery and reducing errors. Installation time for studios was measured to average 2.5 hours with this method.

Sprint 5 -The final sprint of the module focused on delivering a working prototype of the WhatsApp AI support agent using the n8n platform. Integrated with the WhatsApp Business API, the agent can receive messages,and respond in a more natural language, it can understand phrases. Although the system is not fully autonomous yet, it serves as a foundation for a scalable technical assistant that will reduce the volume of human support required. The QR code logic was also validated in this sprint, showing how scanned devices generate structured support messages. In parallel, deeper engineering work was completed on the autism rail product. Guidelines were created for safe ceiling installation, maximum load (3.5kg per meter), power draw, wiring diagrams, and waterproofing. The misting device's refilling challenge is now being addressed using smart irrigation reservoirs that sync with the control software. Finally, a third decorated unit was delivered with Homelab automation, marking a full validation of the core residential offering developed throughout Module 3.

Main Learnings -Module 3 demonstrated Homelab's maturity in transforming smart automation from a service into a replicable product. The integration of sensory design into therapy, along with advances in technical support automation and residential scalability, showed that the company is ready to operate in multiple verticals. A major insight was the power of pre-configuration and standardization—both in clinical and real estate settings—which enabled faster delivery, higher perceived value, and stronger user engagement. The application of automation in health-focused environments revealed untapped potential and added social impact to Homelab's core business.

Next Steps - Next, the sensory rail will enter testing in a live autism therapy clinic in Barra da Tijuca in partnership with UFRJ. Simultaneously, the WhatsApp assistant will continue to evolve, gaining richer device diagnostics and potential escalation logic. Sales protocols for Basic and Premium kits will be refined with partner developers, and new decorated showrooms are planned to support ongoing campaigns. Documentation, maintenance planning, and installer training are also set to begin, ensuring readiness for scale in the upcoming module.