# Hey everyone, and welcome to IoT Forge Unplugged! Every two weeks, we dive into the latest and most intriguing happenings in the world of IoT with this bite-sized podcast, where I break down key updates and emerging trends.

# I’d love to hear from you—whether it’s feedback, story suggestions (because, let’s be real, my picks often align with my own interests), or just sparking discussions within the community.

# So, let’s jump in! Today is February 18th, and this is our fourth episode of 2025.

# Home Assistant

<https://www.youtube.com/watch?v=kCuA3EWLvIw>

The first thing that caught my attention was the video from [Snazzy Labs](https://www.youtube.com/@snazzy) where the author outlines four key principles for building a smart home: (1) devices must function manually, (2) control should be centralized, (3) devices must be locally controllable without reliance on external servers, and (4) automation should never interfere unexpectedly. These principles have held strong over the years, but the landscape has evolved significantly with the introduction of Matter, a universal smart home standard.

Matter ensures cross-platform compatibility, allowing devices to work with various ecosystems like Apple, Google, Alexa, and SmartThings. It relies on local networking via IPv6 and supports communication through Ethernet, Wi-Fi, or Thread, a low-power mesh network. While Matter simplifies connectivity, its real-world implementation is inconsistent across platforms, with different ecosystems adopting Matter updates at different paces.

Another challenge is that Matter doesn’t mandate full adoption of all features, leading to fragmented support. For example, dishwashers might work with Amazon but not Apple, and robot vacuums might only be supported on select platforms. Multi-admin support theoretically allows devices to be shared across platforms, but manual setup and missing features make it cumbersome.

Despite Matter’s potential, the author finds Home Assistant to be a more powerful and flexible solution. Home Assistant already supports the latest Matter updates, integrates with non-Matter devices, and enables advanced features like camera streaming. Unlike closed ecosystems, it is open-source, community-driven, and ensures long-term support.

Ultimately, while Matter is pushing the industry toward better compatibility and local control, it remains a work in progress. Home Assistant offers a more robust and future-proof alternative for those seeking complete smart home control. You can watch the whole video by the link in the description below.

# STMicroelectronics STM32N6

<https://www.mouser.com/new/stmicroelectronics/stm-stm32n6-mcus/>

1 - $20 , 1000 - < $10

**STM32N6: A New Powerhouse for Edge AI—But Is It Right for Your IoT Project?**

**February 17, 2025** – The IoT world just got a major upgrade with the launch of the **STM32N6**, STMicroelectronics’ most powerful microcontroller yet. Now available at Mouser Electronics, this **Neural Processing Unit (NPU)-accelerated MCU** is designed for **automotive, robotics, drones, smart buildings, and AI inference at the edge**. But is this new chip a game-changer or overkill for most IoT projects?

**Why the STM32N6 Stands Out**

The STM32N6 is **the first STM32 MCU** featuring ST's **Neural-ART Accelerator™, a 1GHz machine-learning engine** that delivers up to **600 GOPS** with an average **3 TOPS** for AI applications. This enables **real-time computer vision, audio processing, and even H.264 video encoding**—all on a **Cortex-M55** running at **800 MHz** with **4.2MB embedded RAM**.

With **high-speed interfaces** like **MIPI CSI-2, Hexa-SPI, and Octo-SPI**, this microcontroller isn’t just powerful; it’s also highly flexible for **AI-driven embedded systems, wearables, and industrial automation**.

**What’s the Catch?**

Despite its impressive specs, the STM32N6 isn’t perfect for every IoT project. Compared to popular alternatives like the **ESP32 and nRF52 series**, there are a few drawbacks:

* **No Built-in Wi-Fi**: Unlike the ESP32, which is a go-to for IoT applications requiring **wireless connectivity**, the STM32N6 **lacks native Wi-Fi** and requires an external module.
* **Power Consumption**: While **nRF52 excels in ultra-low-power Bluetooth applications**, the STM32N6 is **power-hungry** due to its **high-performance AI and multimedia capabilities**. Battery-operated projects may need extra optimization.
* **Higher Cost & Complexity**: The STM32N6 offers **exceptional AI and computer vision performance**, but for simpler IoT applications, an ESP32 or nRF52 might be **more cost-effective** and **easier to develop for**.

**Who Should Use It?**

The STM32N6 is a **perfect fit** for projects needing **high-speed edge AI, real-time video processing, and embedded inference**, such as:  
✔️ **Autonomous drones & robots**  
✔️ **Smart security cameras**  
✔️ **Healthcare monitoring & AI wearables**  
✔️ **Automotive sensor fusion & ADAS**

For traditional IoT applications that need **low-power operation, Wi-Fi connectivity, or simple BLE communication**, the **ESP32** or **nRF52** might still be a better choice.

**Final Verdict**

The STM32N6 **brings desktop-level AI performance to embedded systems**, pushing the limits of what’s possible in IoT. However, its **lack of built-in Wi-Fi and power efficiency trade-offs** mean it won’t replace the **ESP32** or **nRF52** in every scenario. If your project needs **real-time AI at the edge**, the STM32N6 is a **game-changer**—but for simpler IoT tasks, you might want to stick with the classics.

Would you use the STM32N6 in your next project? Let us know in the comments!

# IoT Security

<https://informationsecuritybuzz.com/data-exposure-at-mars-hydro-highli-iot/>

**Massive Data Leak at Mars Hydro Exposes IoT Security Risks**

Cybersecurity researcher Jeremiah Fowler uncovered a major data exposure involving **2.7 billion records** linked to Mars Hydro, a Chinese manufacturer of **IoT-enabled grow lights**. The unprotected database, totaling **1.17 terabytes**, contained **Wi-Fi credentials, IP addresses, device details, and API logs**, posing significant security and privacy risks.

The database appeared to belong to **LG-LED SOLUTIONS LIMITED**, a U.S.-registered company associated with Mars Hydro, and also contained references to **Spider Farmer**, another grow light manufacturer. Despite Fowler's responsible disclosure, Mars Hydro initially remained unresponsive but later confirmed the Mars Pro app as an official product. It remains unclear how long the database was exposed or if malicious actors accessed the data.

**Wider IoT Security Concerns**

The breach highlights systemic IoT security issues, such as weak encryption, **default credentials**, and **outdated software**—problems that make connected devices prime targets for cyberattacks. **Unsecured Wi-Fi credentials** can enable **"nearest neighbor attacks,"** allowing hackers to infiltrate networks and **manipulate smart devices, steal data, or launch botnet attacks**.

**Preventing Future Incidents**

Experts urge IoT manufacturers to implement **stronger encryption, restrict public access to cloud storage, and conduct regular security audits**. Without proactive security measures, IoT vulnerabilities could lead to **privacy breaches, cyberattacks, and real-world disruptions**.

While there is no evidence of wrongdoing by Mars Hydro or its affiliates, this incident underscores the **urgent need for better security in IoT ecosystems** as adoption continues to grow.

# Cellular connectivity

<https://iotbusinessnews.com/2024/12/23/64060-the-500-largest-cellular-iot-deployments-together-account-for-632-million-units/>

<https://media.berginsight.com/2024/12/22173751/bi-500toplist8-ps.pdf>

<https://iotbusinessnews.com/2025/02/12/94641-survival-of-the-fittest-uneven-growth-and-vendor-challenges-ahead-as-2024s-iot-cellular-module-market-remained-flat/>

"Welcome to [Podcast Name], your go-to source for the latest insights on IoT, technology, and innovation. I’m your host, Mart, and today we’re diving into one of the biggest shake-ups in the IoT world—the current state of the cellular IoT module market."

"The industry is at a crossroads. While large-scale IoT projects continue to grow, the cellular module market has faced a rough patch in 2024. Some vendors have lost half of their business, while others, like Quectel, have stayed ahead. And yet, forecasts predict over 1 billion cellular IoT connections by 2028. So, what’s really going on? That’s what we’re exploring today—let’s break it down."

**Segment 1: The Aftermath of the 2021–2022 Chip Shortage (2:00 – 8:00)**

🎙 *[Subtle transition sound]*  
**Host:**  
"To understand what’s happening now, we need to go back a few years. In 2021 and 2022, the world was still feeling the effects of the pandemic, and manufacturers panicked over chipset shortages. The result? Companies stockpiled cellular IoT modules to avoid supply chain disruptions. It seemed like a smart move at the time—better to have extra inventory than risk losing sales."

"But here’s the catch—fast forward to 2024, and that inventory is still sitting on shelves. Instead of needing new modules, manufacturers are still using up what they bought years ago. This has led to a massive sales slump for module vendors, and some companies are struggling to stay afloat."

"I recently came across data showing that some vendors saw their sales drop by as much as 50% compared to 2023. And this trend isn’t expected to reverse until at least mid-2025. The big question is: which companies can survive this dry spell?"

**Segment 2: Winners and Losers – Who’s Thriving and Who’s Struggling? (8:00 – 15:00)**

🎙 *[Subtle transition sound]*  
**Host:**  
"Let’s talk about some of the key players in this market. One name that stands out is **Quectel**. Unlike most of its competitors, Quectel isn’t just about cellular IoT modules. It also has strong revenue streams in automotive and mobile broadband. That flexibility has helped it weather the storm, and by Q3 of 2024, it had already matched its full-year revenue from 2023!"

"On the flip side, companies like **u-blox** decided to exit the cellular IoT module business altogether. They’re shifting focus to other technologies instead of fighting in a market with razor-thin margins. And then there’s **Unionman**, a newer Chinese vendor that’s making waves by selling large quantities of low-cost Cat-1 and NB-IoT modules—but only in China. That’s great for growth, but their impact on the global market is still limited."

"So, what we’re seeing is a natural selection process. Companies that can diversify or innovate are staying ahead, while those that rely solely on cellular modules are facing a tough reality."

**Segment 3: The Rise of Large-Scale IoT Deployments (15:00 – 22:00)**

🎙 *[Subtle transition sound]*  
**Host:**  
"While individual module sales are struggling, the IoT industry as a whole is still growing. In fact, according to a report from **Berg Insight**, the 500 largest IoT projects worldwide accounted for **632.2 million active connections by the end of 2023**. That’s nearly **one-fifth of all cellular IoT connections globally**."

"What’s driving this growth? The biggest sectors include:

* **Automotive** – This is the largest vertical, with nearly **230 million IoT connections** powering everything from vehicle tracking to autonomous systems.
* **Utilities** – With **139 million active units**, smart meters and energy management systems are a huge part of the IoT landscape.
* **Transport & Logistics** – Another major player, with more than **100 million active connections** used for fleet tracking, cargo monitoring, and supply chain management."

"And here’s the kicker—these projects are expected to grow at a compound annual growth rate of **10.7%**, reaching over **1 billion active IoT connections by 2028**. So, while individual vendors are struggling, the broader IoT ecosystem is thriving."

**Segment 4: What’s Next for the IoT Cellular Market? (22:00 – 28:00)**

🎙 *[Subtle transition sound]*  
**Host:**  
"So, where does this leave us? The short-term picture is challenging. Vendors that rely solely on module sales are in for a rough ride, and we might see more market exits like u-blox."

"But looking ahead, there’s a lot of opportunity. Some trends to watch:

1. **5G and Beyond:** As next-gen networks roll out, companies that invest in advanced connectivity solutions will gain a competitive edge.
2. **Diversification Strategies:** Vendors that expand into multiple IoT sectors—like Quectel—are more likely to survive.
3. **Geographic Expansion:** While China is leading in low-cost modules, global demand is shifting, and companies that can scale internationally will benefit."

"In short, we’re in a period of market correction, but IoT is far from dead. The industry is evolving, and the companies that adapt will be the ones shaping its future."

**Closing Thoughts & Call to Action (28:00 – 30:00)**

🎙 *[Outro music fades in]*  
**Host:**  
"That’s a wrap on today’s episode of [Podcast Name]! We covered the struggles of IoT module vendors, the booming large-scale deployments, and what’s next for the industry."

"What do you think? Are we witnessing a temporary slowdown, or is the industry heading toward a major transformation? I’d love to hear your thoughts! Drop a comment, send me a message, or join the conversation online."

"And don’t forget to subscribe for more deep dives into IoT, tech trends, and the future of connectivity. Until next time, stay curious and keep innovating!"

🎙 *[Outro music fades out]*

# LoraWAN

<https://iotbusinessnews.com/2025/02/12/32030-lora-alliance-releases-2024-annual-report-key-trends-in-lorawan-adoption/>

The LoRa Alliance® has released its 2024 End of Year Report, highlighting LoRaWAN®’s continued dominance as the leading low-power wide-area network (LPWAN) technology for Massive IoT. The report underscores LoRaWAN’s critical role in global digital transformation, with projections from Omdia estimating over 3.5 billion LPWAN connections by 2030. As of June 2024, over 350 million LoRaWAN end nodes and 6.9 million gateways have been deployed worldwide.

Industry leaders report strong growth, with Actility reaching 4 million connected devices, The Things Industries growing by 50% year-over-year to 2.7 million devices, and ZENNER surpassing 9 million deployments. LoRaWAN’s expansion also includes non-terrestrial networks (NTN) with three commercial service providers now offering satellite-based connectivity, setting it apart from competing technologies.

Major enterprises such as Starbucks, Volvo, Chevron, Chick-fil-A, and Logitech are increasingly adopting LoRaWAN for private and enterprise deployments. The Alliance has also strengthened its certification programs, introducing the LoRaWAN Web Certification System, enhancing testing tools, and offering a new self-certification option.

Additional highlights include Beecham Research validating LoRaWAN’s leadership in Smart Cities, Smart Buildings, and Smart Logistics. The Alliance has advanced technical standards, focusing on areas like GS1 integration, relay enhancements, mobile gateways, NTN satellite development, and crypto-agility. Regulatory efforts continue to harmonize spectrum use for satellite and terrestrial LoRaWAN networks.

LoRa Alliance CEO Alper Yegin describes 2024 as a pivotal year for digital transformation, reinforcing LoRaWAN as the foundational technology driving IoT at scale. Looking ahead, the Alliance remains committed to expanding its ecosystem, educating the market, and advancing the LoRaWAN standard to accelerate adoption.

That’s a wrap for today! I hope you enjoyed this episode of the *IoT Forge Unplugged* podcast. If you made it this far, don’t forget to hit the like button and share the link with your colleagues. Join *IoT Forge*, stay curious, and have an amazing day! See you next time—bye!

[Home Assistant rules the Smart Homes!](https://www.youtube.com/watch?v=kCuA3EWLvIw)

[STMicroelectronics STM32N6](https://www.mouser.com/new/stmicroelectronics/stm-stm32n6-mcus/)

[Massive Data Leak at Mars Hydro Exposes IoT Security Risks](https://informationsecuritybuzz.com/data-exposure-at-mars-hydro-highli-iot/)

[The 500 largest cellular IoT deployments together account for 632 million units](https://iotbusinessnews.com/2024/12/23/64060-the-500-largest-cellular-iot-deployments-together-account-for-632-million-units/)

[Survival of the Fittest: Uneven Growth and Vendor Challenges Ahead as 2024’s IoT Cellular Module Market Remained Flat](https://iotbusinessnews.com/2025/02/12/94641-survival-of-the-fittest-uneven-growth-and-vendor-challenges-ahead-as-2024s-iot-cellular-module-market-remained-flat/)