

# StillCold — Week 5 Progress

**Reliable temperature data inside the system**

*A brief update on where the project stands*

# What Week 5 Was About

**Goal:** Make sure temperature and humidity data move reliably inside the device, from the sensor to the part that will later talk wirelessly.

- Have one small computer focus on **reading the sensor**.
- Have a second small computer focus on **holding and sharing the latest readings**.
- Build a simple, structured way for them to **talk to each other** and keep the data trustworthy.

*This week was about the “plumbing” inside the box, not the app or Bluetooth yet.*

# The Two Main Pieces

Inside the StillCold system, there are now two clearly defined roles:

- **Sensing component (Arduino Nano)**
  - Reads temperature and humidity from the sensor.
  - Sends those readings out as simple text messages.
- **Communication component (ESP32-C6)**
  - Listens for those messages.
  - Stores the most recent temperature and humidity.
  - Shows the results on a computer screen for easy checking.

*Think of it as one device doing the measuring, and another device preparing the data to be shared.*

# What Was Achieved

By the end of Week 5:

- **Internal data flow is reliable** — Readings consistently travel from the sensor board to the communication board without corruption.
- **Data has a clear, simple format** — Each reading is sent as a short text line like "temperature = X, humidity = Y".
- **Values are stored for later use** — The communication board keeps the latest numbers ready for when Bluetooth and apps are added.
- **The system is observable** — We can watch the data update on a computer screen every few seconds to confirm everything is working.

# How the Data Moves (Plain Language)

Every few seconds:

1. The sensing board reads the **temperature and humidity**.
2. It creates a simple message:
  - "T = 20.6, H = 28.7" (for example).
3. It sends that message over a short wired link to the communication board.
4. The communication board:
  - **Listens for a full line of text.**
  - **Pulls out the numbers** for temperature and humidity.
  - **Stores** them and shows them on the screen.

*This simple text format makes it easy to test, debug, and trust the readings.*

# Assumptions We Validated

- **Two-board design works well** — Splitting “sense the environment” and “share the data” across two devices is practical and reliable.
- **Simple text messages are enough** — Using clear text for readings makes it easy to confirm that the system is behaving correctly.
- **Regular updates are stable** — The system can send and receive new readings every few seconds without crashing or drifting.

# What We Corrected or Clarified

- **Pin choices matter** — The communication board needed its data pins explicitly assigned so that it listened on the correct wires.
- **Power and ground must be shared** — Both boards must share a common reference (ground) so that the data link works consistently.
- **Upload vs. operation** — We confirmed that certain connections can interfere with reprogramming one of the boards, and adjusted our workflow to avoid that.

*These details help prevent confusing behavior later, when more features are added.*

# Ready for the Next Step

## Current state:

The StillCold prototype now has a **trustworthy internal data pipeline**:

Sensor → Sensing board → Safe voltage conversion → Communication board → Stored values → Screen output

- Data flows steadily and accurately.
- The relationship between the two boards is well understood and documented.
- We have confidence in the numbers we see.

## Next:

Use this stable internal data stream to **expose readings over Bluetooth** and support user-facing applications.

# Summary

Area	Status
Internal data pipeline	Working; sensor-to-board link is reliable
Data format & storage	Defined, simple, and tested
Hardware interactions	Verified pins, shared ground, safe levels
Foundation for wireless	In place and ready to build on

*StillCold is on track, with a solid internal data flow ready for wireless and app integration.*

# Thank you

**StillCold** — *Environmental monitoring without opening the door*

There are also images of my code and output in my weekly\_presentations folder