This document includes two AI prompts that help you prepare a complete and structured request.

Prompt #1

I am preparing a request for Electronics Development Services by the EnCata team and want to make sure my input contains enough information to start the work without delays or unnecessary PCB redesigns.

Here is my current input:

"<<<INSERT YOUR INPUT HERE>>>"

At EnCata, a request for electronics development should clarify the following areas:

1. Product overview and current stage

- What type of device or physical product is being developed
- What the product should do
- What stage the project is currently at: idea, proof of concept, functional prototype, integrated prototype, or pilot-ready device
- Whether any electronics, firmware, mechanical design, or physical prototype already exists

2. Required product functions

- What the electronics must sense, measure, calculate, control, display, store, or transmit
- Which functions are essential for the first version
- What result would demonstrate that the electronics work as intended

3. Electronic system architecture

- What major electronic blocks the product requires
- Whether it needs sensing, processing, power conversion, motor control, connectivity, data storage, a display, user controls, or other functions
- Whether the architecture has already been selected
- Whether development boards, ready-made modules, or custom electronics have already been tested

4. Power requirements

- How the device will be powered: battery, mains electricity, external power supply, USB, vehicle power, or another source
- Expected input voltage and power consumption, if known
- Required operating time for battery-powered products
- Whether charging, battery monitoring, wireless charging, or power-saving modes are required
- Whether any overheating or unstable power behavior has already appeared

5. Sensors, inputs, and outputs

- What physical values or events the device must detect
- Which sensors, cameras, buttons, encoders, or other inputs are required
- Which motors, relays, valves, displays, lights, speakers, or other outputs must be controlled
- Required measurement accuracy, range, or response time, if known

6. Processing and control platform

- Whether a microcontroller, processor, programmable logic device, or industrial controller has already been selected
- What calculations or control operations the electronics must perform
- Whether several functions must operate at the same time
- Whether strict response-time requirements exist

7. Connectivity and communication

- Whether the product must communicate through Wi-Fi, Bluetooth, BLE, LoRaWAN, cellular networks, Ethernet, NFC, GPS, RFID, UWB, Zigbee, Thread, or another technology
- What other devices, applications, gateways, cloud systems, or industrial equipment it must communicate with
- What data should be sent and received
- Whether the device must continue operating when the connection is unavailable

8. Electrical interfaces

- What components, boards, or external systems must be connected
- Whether USB, SPI, I2C, UART, CAN, RS-485, Ethernet, HDMI, MIPI, or other interfaces are required
- Required connector types, cable lengths, or external ports, if known
- Whether compatibility with existing equipment is required

9. PCB requirements

- Whether a custom PCB is required
- Approximate board size, shape, and number of boards, if known
- Whether the design may require a multilayer, flexible, rigid-flex, high-speed, radio-frequency, mixed-signal, or high-current PCB
- Known restrictions on component placement, board thickness, connector position, or mounting holes

10. Firmware integration

- Whether firmware already exists or must be developed
- What the firmware must control or monitor
- Whether special hardware support is needed for programming, debugging, logging, calibration, or firmware updates
- Whether another firmware team will work with the electronics

11. Mechanical and enclosure integration

- Available space for the PCB and electronic components
- Required connector, antenna, sensor, camera, button, or display positions
- Cooling, airflow, mounting, cable-routing, vibration, or sealing constraints
- Whether enclosure CAD files or internal layouts are available

12. Signal quality and electrical noise

- Whether the product contains sensitive analog signals, high-speed data lines, antennas, high-current circuits, motors, or switching power components
- Known concerns about unstable readings, interference, signal loss, or communication errors
- Whether signal integrity, power integrity, grounding, filtering, or electromagnetic interference analysis may be required

13. Operating environment and reliability

- Where and how the product will be used
- Expected temperature, humidity, dust, vibration, impact, moisture, or other environmental conditions
- Required service life or operating cycle
- What should happen if a sensor, communication module, power rail, or another subsystem fails

14. Certification and compliance

- Countries or markets where the product will be sold or used
- Known certification requirements, such as CE, FCC, TÜV, EMC, electrical safety, medical, industrial, or wireless requirements
- Whether pre-compliance or laboratory testing is expected
- Whether any certification testing has already been completed

15. Prototyping, bring-up, and validation

- Whether physical PCB prototypes are required
- What functions must be tested on the first assembled boards
- Whether the scope should include initial power-up, firmware flashing, peripheral checks,

measurements, debugging, and integration testing

- What result would be considered a successful prototype

16. Manufacturing and production testing

- Expected production volume
- Preferred PCB manufacturer or assembly supplier, if any
- Whether the product requires test points, programming connectors, production test fixtures, calibration, or end-of-line testing
- Whether the design must be optimized for reliable PCB manufacturing and assembly

17. Components and supply constraints

- Preferred, mandatory, or prohibited components
- Target component cost or total electronics cost
- Known availability, lead-time, or lifecycle concerns
- Whether alternative components should be included in the design

18. Required files and documentation

- Whether you need schematics, PCB source files, Gerber files, drilling files, a bill of materials, assembly files, test procedures, debug reports, or production notes
- Whether another engineering or manufacturing team will continue the work after delivery
- Required file formats or documentation standards, if known

19. Existing project inputs

- Available product requirements, block diagrams, schematics, PCB files, bills of materials, firmware, enclosure models, component datasheets, test reports, photos, videos, or hardware samples
- Existing technical decisions that should not be changed
- Known problems with the current electronics

20. Timeline, cost, and expected outcome

- Desired timeline and important milestones
- Target electronics cost or project budget limitations, if known
- Whether the expected result is an architecture, schematic design, PCB prototype, tested PCBA, production package, or pilot-ready electronics
- What should happen immediately after this development stage

21. Risks and open questions

- What is still unclear or undecided
- Known concerns related to power stability, signal quality, sensors, wireless communication, component availability, PCB size, overheating, firmware integration, certification, or production

Your task:

- Compare my input with the requirements above
- Identify missing, unclear, or weakly defined areas
- Structure your answer by the categories above
- Phrase each missing item as a short, practical question that I can answer
- Briefly explain why the requested information matters for electronics development

Important instructions for your response:

- Use clear, everyday language that a non-engineer can understand
- Avoid unexplained abbreviations and specialist terminology
- If a technical term or abbreviation is necessary, explain it briefly in simple language
- Keep every clarification request concise
- Make it clear exactly what information I should provide
- If an exact value is unavailable, ask for an approximate range or a practical example
- Do not assume that I already know which components, PCB type, interfaces, or manufacturing method are required

- Do not rewrite my request
- Do not propose a final electronic architecture
- Focus only on identifying what information is still needed

Prompt #2

I am continuing preparation of my Electronics Development Services request based on your previous analysis.

Here is my initial input:

"<<<INSERT INITIAL INPUT HERE>>>"

Here is the additional information I have provided to fill the gaps:

"<<<INSERT ADDITIONAL INFORMATION HERE>>>"

At EnCata, an electronics development request requires clarity in the following areas:

1. Product overview and current stage
2. Required product functions
3. Electronic system architecture
4. Power requirements
5. Sensors, inputs, and outputs
6. Processing and control platform
7. Connectivity and communication
8. Electrical interfaces
9. PCB requirements
10. Firmware integration
11. Mechanical and enclosure integration
12. Signal quality and electrical noise
13. Operating environment and reliability
14. Certification and compliance
15. Prototyping, bring-up, and validation
16. Manufacturing and production testing
17. Components and supply constraints
18. Required files and documentation
19. Existing project inputs
20. Timeline, cost, and expected outcome
21. Risks and open questions

Your task:

1. Re-evaluate the combined input: initial input + additional information
2. Check whether the available information is sufficient to prepare a useful Electronics Development Services request
3. Based on the available information, compile a structured request specifically for the EnCata team

If some information is missing:

- Make reasonable high-level assumptions only where necessary
- Clearly mark every assumption
- Clearly mark any information that still needs to be confirmed
- Do not invent exact voltages, currents, component models, board dimensions, signal requirements, interfaces, certifications, production volumes, costs, or test limits

Structure the final request as follows:

1. Project overview
2. Current product and electronics stage
3. Required product functions
4. Proposed electronic system blocks

5. Power and battery requirements
6. Sensors, outputs, processing, and control requirements
7. Connectivity and external interfaces
8. PCB size, form factor, and layout constraints
9. Firmware and software integration
10. Mechanical and enclosure integration
11. Signal quality, thermal, and electrical reliability requirements
12. Operating environment and failure behavior
13. Certification and compliance targets
14. Prototype, board bring-up, and validation scope
15. Manufacturing, assembly, and production testing requirements
16. Component availability and cost considerations
17. Required engineering files and documentation
18. Existing project files, hardware, and test results
19. Timeline and milestones
20. Risks, assumptions, and open questions
21. Expected development outcome and deliverables

Output requirements:

- Produce a structured, ready-to-send request for EnCata
- Use clear and concise language
- Preserve all relevant details provided by the user
- Clearly mark assumptions and missing information
- Keep technical terms only where they improve accuracy
- Do not add explanations outside of the final request