

Board Design Process

	Specification	Board Design	Testing & Debugging	Other	Production
Board Development	<p>Research</p> <p>Marketing: How it is going to be different from others</p> <p>Decide on: CPU, Format & Size, Functionality, Peripherals & Interfaces, Compatibility, Pinout, Connectors, Mounting holes, ...</p> <p>Buy Existing Boards to study & test them</p> <p>Search for the supporting stuff: Display, Camera, ...</p> <p>Connect reference boards with wanted peripherals and debug</p> <p>Compare & Test: e.g. Performance</p>	<p>Get information: Datasheets, Reference Designs, Design Guides, Application notes, Errata, ...</p> <p>Schematic Design</p> <p>Component selection: Ok for mass production (price, EOL, reliable chip manufacturer, availability and lead time, possible replacements or alternatives, ...), temperature range, footprint (considered for easy assembling)</p> <p>Library Design: Component = SCH Symbol + PCB Footprint + Purchasing info + Lifecycle</p> <p>Buy samples from all the components</p> <p>Small test board designs, to verify functionality of unknown and new circuits</p> <p>PCB Design</p>	<p>Hardware Testing & Verification:</p> <ul style="list-style-type: none"> - Measurements (Voltages, Currents, Ethernet, USB, etc) - Burn in tests (memories + peripherals) - Environmental chamber test - Long run test - Preliminary: EMC/EMI, ESD, Vibration, ... <p>Debugging: If something in hardware is not working, find out what the problem is and fix it</p>	<p>Improving, new version / revision:</p> <ul style="list-style-type: none"> - Fixing circuit issues - Fixing problems found during PCB manufacturing, board assembly, mechanical issues, software & hardware incompatibility, ... <p>Certification:</p> <ul style="list-style-type: none"> - EMC/EMI, ESD, .. <p>The production test hardware design:</p> <ul style="list-style-type: none"> - Designing Hardware needed to test the manufactured boards <p>Designing the supporting hardware:</p> <ul style="list-style-type: none"> - Developing hardware which will be shipped with the main product e.g. Adapter boards, breakout boards, ... <p>Documentation: Manual, datasheet, website, ...</p>	
Software Development	<p>Create basic software to test if the hardware will work ok</p>		<p>Hardware verification test software:</p> <ul style="list-style-type: none"> - Board bring up software - Test software and applications to verify hardware and test all peripherals <p>Debugging: some software development requires a lot of debugging (especially if there is also a hardware problem)</p>	<p>Software:</p> <ul style="list-style-type: none"> - Software which will be shipped with the board and/or used by users and customers <p>Production Test software:</p> <ul style="list-style-type: none"> - Software which will make it easy to test boards after they are manufactured 	
Mechanical	<p>Search for supporting stuff: Enclosure, Heatsink, How it is going to be sold to customers</p>	<p>Heat distribution, Cable design, Enclosure design, ..</p>		<p>Improving:</p> <ul style="list-style-type: none"> - If needed, adjust all the mechanical designs <p>Designing the support for production test:</p> <ul style="list-style-type: none"> - Test fixture - Test cables 	