

# TYPICAL STAGES OF A PRODUCT DEVELOPMENT PROJECT

Product development project structures can vary depending on the size and nature of the project, the capacity of the client, the complexity of the project, the available resources and the time frame. The following table outlines a typical approach. Clients may choose to involve Proen all of these stages, or selected stages only.

FEASIBILITY PHASE		
	STAGE	TASKS
1.	Background Research	<ul style="list-style-type: none"> <li>• Obtain a clear understanding of the customer needs.</li> <li>• Technical feasibility.</li> <li>• Materials and processes.</li> <li>• Order-of-magnitude cost calculations.</li> <li>• Other research.</li> </ul>
2.	Design Brief Preparation	Based on the research, tabulate criteria that the new product must meet including; <ul style="list-style-type: none"> <li>• Market segment/s</li> <li>• Functional specification</li> <li>• Features</li> <li>• Ergonomics</li> <li>• Performance &amp; range</li> <li>• Product life cycle</li> <li>• Service &amp; maintenance requirements</li> </ul>

DESIGN PHASE		
	STAGE	TASKS
3.	Preliminary Design	<ul style="list-style-type: none"> <li>• Concept development</li> <li>• Prelim industrial design</li> <li>• Prelim mechanical engineering</li> <li>• Prelim electronics/ controls design</li> <li>• Prelim general assembly development.</li> <li>• Refined cost estimates.</li> </ul>
4.	Preliminary Component Procurement	<ul style="list-style-type: none"> <li>• Identify and liaise with appropriate suppliers.</li> <li>• Source preliminary pricing.</li> <li>• Identify limitations.</li> </ul>
5.	Preliminary Prototyping & Testing	<ul style="list-style-type: none"> <li>• Develop design to suit prototyping.</li> <li>• Build workshop prototypes for functional testing of selected major elements of the technical package.</li> <li>• Test for function.</li> <li>• Develop 3D renderings for visual assessment.</li> </ul>
6.	1 <sup>st</sup> Design Review	<ul style="list-style-type: none"> <li>• Review design.</li> <li>• Review manufacturing requirements.</li> <li>• Review process requirements.</li> <li>• Review cost targets.</li> <li>• Review quality targets.</li> </ul>

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7.	Detail Design	<ul style="list-style-type: none"> <li>Refine the preliminary design based on the outcomes of the design review.</li> <li>Industrial design.</li> <li>Mechanical engineering.</li> <li>Electronics/ controls design</li> <li>General assembly development.</li> <li>Refined cost estimates.</li> </ul>
8.	Detail Design Review	<ul style="list-style-type: none"> <li>Review detail design.</li> <li>Review manufacturing requirements.</li> <li>Review process requirements.</li> <li>Review cost targets.</li> <li>Failure mode analysis.</li> <li>Performance analysis.</li> <li>Safety analysis.</li> <li>Tolerance Analysis.</li> </ul>
9.	Full Prototyping	<ul style="list-style-type: none"> <li>Build functional prototype/s for functional testing of key elements of the technical package.</li> <li>Develop 3D renderings for visual assessment.</li> </ul>
10.	Testing	<ul style="list-style-type: none"> <li>Prototype testing.</li> </ul>
11.	Design Iteration (if necessary)	<ul style="list-style-type: none"> <li>Re-iterate previous stages if required.</li> </ul>
12.	Documentation & Sign Off	<ul style="list-style-type: none"> <li>Detail drawings for the product.</li> <li>Final documentation &amp; CAD data.</li> </ul>

## IMPLEMENTATION PHASE

	STAGE	TASKS
13.	Process Development	Design Product Graphics Instruction Booklets Brochures Packaging Planning
14.	Component Procurement	Sourcing suppliers Quotation Design Manufacture Off tool sample verification & adjustments
15.	Tooling	Quotation Design Manufacture Off tool sample verification & adjustments
16.	Pilot Run	Limited manufacture Product field testing
17.	Quality Assurance	Process capability Product capability Supplier capability Authority approvals (if required) Product & process sign off