TYPICAL STAGES OF A
PRODUCT DEVELOPMENT PROJECT

Product development project structures can vary depending on the nature and size of the project, the internal capacity of the client, the complexity of the project, the available resources and the time frame.
As a guide, the following information outlines the typical stages in a product development project.
Clients may choose to involve Proen Design all of these stages, or selected stages only.
Product development can be very expensive and there are many factors that can affect a product's suitability for sale, some of which include design, performance, manufacturing, price, distribution and after sales service.
It is ultimately the responsibility of the client to ensure that the product is fit for sale, so it is important to thoroughly test the product to ensure that it is market ready.

FEASIBILITY PHASE

	STAGE	TASKS
1.	Background Research	• Obtain a clear understanding of the customer needs. • Web search for relevant information including similar products • Review Technical feasibility and potential for Intellectual Property protection • Financial feasibility - preliminary financial model
2.	Design Brief Preparation	Based on the research, tabulate criteria that the new product must meet including; • Target market details • Functional and ergonomic specification • Performance and range • Product life cycle • Service & maintenance requirements • The Client is required to identify and supply relevant test standards. If there is no identified test standard, the client should then create a set of performance criteria to define an acceptable product.

DESIGN PHASE

	STAGE	TASKS
3.	Preliminary Design	• Concept development • Preliminary industrial design • Preliminary mechanical engineering • Preliminary electronics/ controls design • Preliminary investigation of Materials and processes. • Preliminary general assembly development. • Refined cost estimates.
4.	Intellectual Property Protection (IP)	• Conduct Patent searches to check for potential IP infringements and assess patentability and engage patent attorney to develop and IP Protection plan
5.	Preliminary Component Procurement	• Identify, assess and liaise with appropriate suppliers. • Source preliminary pricing.
6.	Preliminary Prototyping and Testing	• Build basic non visual workshop prototypes to test selected major design elements of the technical package. Not for marketing purposes • Develop 3D photorealistic renderings for visual assessment and preliminary marketing purposes.
7.	1st Design Review	• Review design. • Review manufacturing requirements. • Review process requirements. • Review cost targets. • Review quality targets.
8.	Detail Design	• Refine the preliminary design based on the outcomes of the design review. • Industrial design. • Mechanical engineering. • Electronics/ controls design • General assembly development. • Refine project and product cost estimates.

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9.	Detail Design Review	• Review detail design. • Review manufacturing requirements. • Review cost targets. • Tolerance Analysis. • Revisit detail design if necessary
10.	Failure mode Effect Analysis (FMEA)	• Identify and prioritize potential weaknesses/risks within the product design • Identify possible solutions/actions to eliminate potential risks
11.	Full Prototyping	• Build functional prototype/s for testing of key elements of the technical package. • Provide photorealistic 3D renderings and/or animations for visual assessment and market research.
12.	Performance Testing	*This is process is very important and therefore necessary BEFORE the product is released to market. It includes;* • Laboratory testing • Field testing (client responsibility) • Accelerated life testing for performance (client responsibility)
13.	Design Iteration	• Re-iterate previous stages if required.
14.	Tooling Documentation release	• Detail drawings, CAD Data and parts list for the product are released for tooling purposes. This is called a "T "release (not for production)

IMPLEMENTATION PHASE		
	STAGE	TASKS
15.	Tooling	• Source quotations • Place orders for design and manufacture • Approve tool design
16.	Component Procurement	• Source quotations • Place orders for manufacture and supply
17.	Off Tool Samples	• Receive and check off tool samples for fitment and function • Final adjustments
18.	Process Development	• Manufacturing process design • Manufacturing planning
19.	Marketing *(Client task generally done in parallel with other stages)*	• Product Graphics • Packaging • Instruction Booklets • Brochures • Website
20.	Pilot Run	• Limited manufacture run of a small quantity of product to assess process capability and reassess product capability
21.	Quality Assurance *(Client responsibility)*	• Assess Process capability • Assess Product capability • Assess Supplier capability • Develop Process instructions • Develop QA procedures • Statutory Authority approvals
22.	Final product release approval *(Client responsibility)*	• Final sign off by all stakeholders including, finance, production, design, marketing, quality.
23.	Production Documentation release	• Detail drawings, CAD Data and parts list for the product signifying that the product is ready for production. This is called a "P "release • All future design changes require a formal change request to be documented and approved.