WHAT WE DO:

Product Development

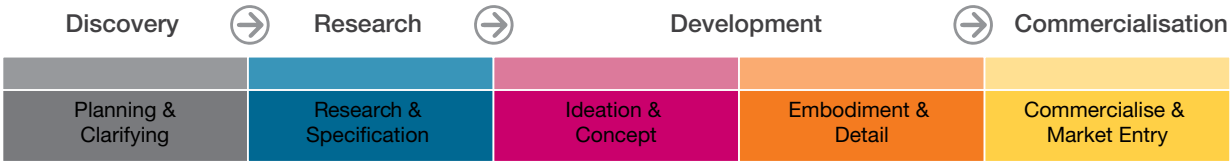
How We Develop Innovative New Products

Product Development is our core business. We research, create, develop, and deliver innovative products to market that deliver breakthrough results for our clients.

Locus Research works in a wide range of industries and domains. Our development framework has been used in the development of materials, physical products, services, software, and functional foods. It is research driven and seeks to establish programme feasibility at an early stage prior to entering technical development.

Our development framework is a structured methodology consisting of a series of phases. This assists to accurately and effectively manage the process of developing new ideas and taking them to market. It has evolved over ten years of managing low- to high-risk development opportunities.

FIGURE 1: OVERVIEW OF FRAMEWORK



We advocate a concurrent approach, which seeks to prototype brands, communication material, and even packaging through the product development process and works to develop distribution partners early on in the programme life cycle. This differs from traditional development where branding may often be done after the Technical Development. This should be discussed and investigated early.

Product Development is capitally intensive and as such requires effective financial assessment and evaluation to assess the cash flow requirements over the duration of an entire project, including commercialisation. Research and Development can also be capitalised according to IRD guidelines and may best be considered at the outset prior to development.

If external investment is required to fund the programme, 6-12 months should typically be allowed as a time frame to develop a business case and secure external funding.

Note: The development of new materials, products, foods, and start-up businesses may require more robust business cases at an earlier stage to provide more detail about the variable applications and the financial requirements through commercialisation, which would sit outside of this development framework.





Estimating Phase Costs

We can only provide estimates, and do not provide fixed costs for complex product development projects. We do, however, take the management of budgets and costs seriously and have the operational systems in place to actively manage a programme's schedule and cost.

1. Discovery:

a. Is provided as a fixed cost prior to starting;

2. Research and Specification:

a. During Discovery, the Research and Specification cost will typically be provided as a firm estimate subject only to major changes or critical information coming to light during the research. These would be by discussion and agreement with the client.

b. The Product Development Specification (PDS) information helps to provide a robust full development cost through to the Commercialisation phase (the Technical Development phase).

c. A total programme cost (including commercialisation) is generally estimated, with attempts to understand capital cost implications as well as the direct costs and expenses that the programme might incur. This enables a true business case to be formed; however, capital requirements for commercialisation remain inherently difficult to estimate prior to defining the principal solution.

3. Technical Development:

a. These costs are estimated in detail during the Research and Specification Phase.

b. Firm costs are projected phase by phase, but may be subject to change based on findings made and information coming to light during the development.

c. Formal reviews of cost should be conducted monthly and in greater detail at the terminal point of each phase and at each major gate (generally detailed within this outline). Any major changes in direction or scope will trigger a formal review of costs and programme plans which would be reported through the programme management reporting structure.

4. Commercialisation:

a. Generally, costs for this phase are not provided prior to the end of the PDS Phase, and can only generally be estimated through a business case at a high level.

b. Any estimates prior to principal solution approval are indicative only and need constant review and careful consideration and planning from a financial perspective.

c. Typically this is the phase that major capital costs such as tooling, productionisation (including production of product in volume), compliance and certification testing, sales, and marketing occur, and can quite easily incur costs greater than the developmental costs.

Phase Descriptions

This section describes each phase outlined in Figure 1: Overview of Framework.

DISCOVERY

FIGURE 2: DISCOVERY

Discovery	Research	Development		Commercialisation
Planning & Clarifying	Research & Specification	Ideation & Concept	Embodiment & Detail	Commercialise & Market Entry
Output: **Defined Project & Research**				

At the start of engagement, our team needs to quickly build an understanding of the context of the product development including:

- The Project/Programme;
- The Product System;
- The Company;
- The Market;
- The Consumer.

The work is typically completed within 2-5 days, and results in a structured series of recommendations about the programme and the suggested pathway for development. It is typically used as a short review and guide at the outset of a project prior to embarking on any structural research or development activity.

Artefacts Delivered:

- Structured series of recommendations delivered in an A4 report;
- Summarised recommendations and comments in a PowerPoint Presentation;
- May involve a projected plan for the Research and Specification Phase.



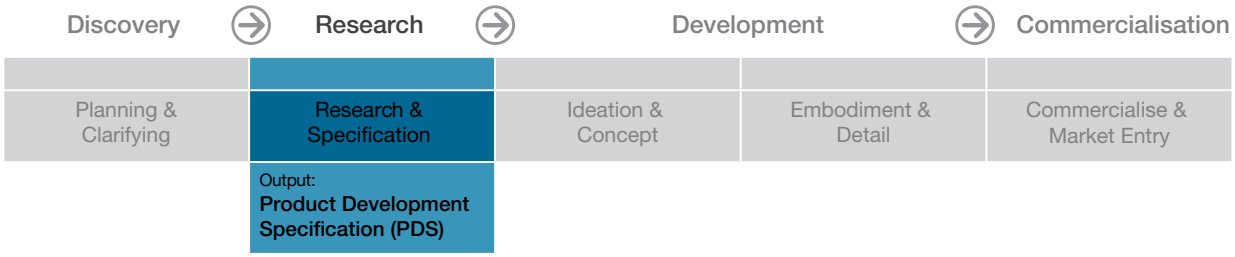







RESEARCH & SPECIFICATION

FIGURE 3: RESEARCH & SPECIFICATION



The Research and Specification phase is undertaken before any ideation or concept development. It seeks to research and define the key factors that could influence the development and commercial success while assessing its viability. Any user and customer research should be built into the process to clearly understand their needs. It culminates in the completion of a Product Development Specification (PDS) document.

A PDS compiles all factors related to the development such as:

- Project vision, aims, and objectives;
- Developed product strategy;
- Programme structure and scope;
- Detailed development plans and cost estimates:
  - Clear development costs (resource and fixed costs);
  - Provisional commercialisation costs (for guidance purposes only);
- Definition of the 'product system':
  - Users, customers, stakeholders and influencers;
  - Product Life Cycle and Interactions; definition of core product function, attributes, criteria, and parameters;
  - Definition and prioritisation of technical parameters and targets;
- Projected financial and capital requirements;
- Financial models (SP, ROI, NPV, IRR);
- Business model assessment and definition;
- Proposed product structure and offer;
- Materials processing and finishes;
- Manufacturing and supply chain;
- The product offering;
- Sales, marketing, and distribution;
- Channels to market;
- Pricing structure, margins, and targets;
- Standards, testing, and certification pathway;
- User testing program for validation;
- Environmental sustainability;
- Intellectual property;
- Risk and risk management.

The PDS has worked across multiple sectors and industries successfully over a ten year period and has a high record of market entry and success. It helps to drive development and establish the best direction; it can help mitigate risk, but cannot eliminate it. It is a dynamic document that needs to be continually referenced, reviewed, and revised throughout the development process.

In certain programmes, research may continue after the completion of a PDS and into the technical development. This would be typical in complex R&D or science oriented programmes. The research is inherently part of the first true development phase in these programmes but would be analysed generally in this phase.

The PDS may still be subject to budget and time limitations externally. Where information is deemed insufficient or lacking this will be noted or signalled to the client within the PDS.

Artefacts delivered:

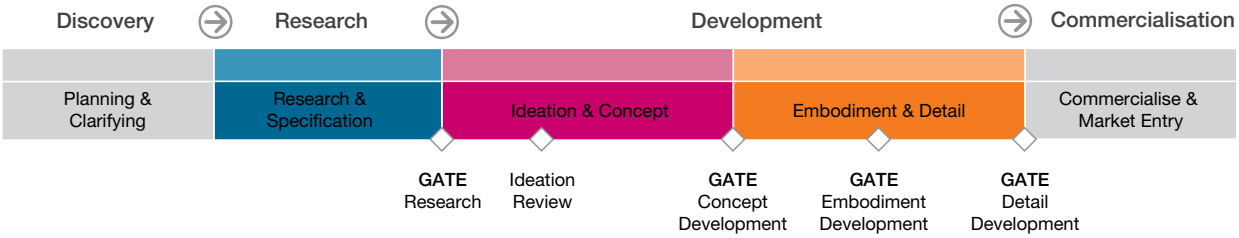
- Product Development Specification (PDS): A complete and detailed assessment of the opportunity, full development cost, and development pathway;
- A4 Document (PDS) with individual A4 research summaries appendicised;
- PowerPoint summary of opportunity, programme, and outline;
- Project Prospectus (optional, depending on programme).

TECHNICAL DEVELOPMENT

The development series of phases is the typical backbone of the development project and is broken down into four general steps with three structural gates.

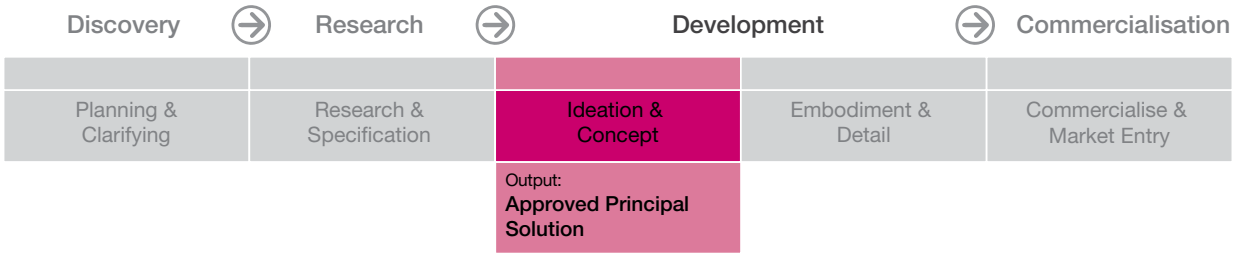
1. Ideation Review;
2. Concept Development Gate;
3. Embodiment Development Gate;
4. Detail Development Gate.

FIGURE 4: DEVELOPMENT GATES & REVIEWS



IDEATION AND CONCEPT DEVELOPMENT

FIGURE 5: IDEATION & CONCEPT



An idea generation (Ideation) phase aims to conceptualise and create a wide range of ideas or potential solutions for consideration. These ideas would leverage the PDS requirements and endeavour to accurately provide potential solutions. This culminates in an ideation presentation, where the key ideas are selected and assessed against preliminary criteria. Speed and breadth are important in this stage.

Ideation flows into Concept Development, where the selected ideas are developed to a higher level of resolution and presented for a more detailed and critical assessment. It is likely to incorporate early prototyping and more detailed specifications. The principal solution(s) or system is generally selected at this point and taken forward to Embodiment and Detail Development for further more detailed exploration.

Ideation and Concept should consider how the ideas would be communicated to the end customer and we promote exploration of brand issues and ideas at a conceptual level in this phase.

Concept development leads to the First Technical Development Gate.

- Approval of the principal solution;
- Assessment of the efficacy of the solution;
- Assessment against the prioritised requirements;
- Early assessment of cost efficacy;
- Early assessment of production pathway and supply chain;
- IP Novelty search.

EMBODIMENT & DETAIL DEVELOPMENT

FIGURE 6: EMBODIMENT & DETAIL

Discovery	Research	Development		Commercialisation
Planning & Clarifying	Research & Specification	Ideation & Concept	**Embodiment & Detail**	Commercialise & Market Entry
			Output: **Developed Principal Solution**	

Embodiment takes the principal solution and develops it out with greater focus and detail. It will involve more developed prototyping and iterative testing (both performance and user based) to develop and prove the performance of the product.

Embodiment development leads to the Second Technical Development Gate.

- Developed principal solution;
- Testing and validation of performance;
- Testing with end users and customers;
- Production and commercial factors assessed in detail;
- Verify against requirements and targets;
- Provisional production pathway;
- Provisional production cost estimates;
- Provisional brand, features, benefits, and messages.

Detail Development drives toward the approval of the principal solution and is the last significant step before commercialisation. Prototyping and testing are taken to a more developed and complete level for final review and approval. Documentation is developed to support the product's commercialisation and market entry. This phase does not typically incorporate productionisation, which is a part of the commercialisation phase.

Detail development leads to the Third Technical Development Gate.

- Approval of principal solution or system;
- Detailed validation of performance, not compliance;
- Detailed validation with end users;
- Full product specification:
  - Manufacturing;
  - Materials;
  - Performance.
- Defined production pathway and supply chain;
- Firm production cost estimates;
- Developed brand, features, benefits and messages;
- IP: draft provisional specification and trademark;
- More accurate and detailed commercialisation costs.

COMMERCIALISATION

FIGURE 7: COMMERCIALISATION

Discovery	Research	Development		Commercialisation
Planning & Clarifying	Research & Specification	Ideation & Concept	Embodiment & Detail	Commercialise & Market Entry
				Output: **Market Ready**

In many instances the most challenging phase of a development programme is commercialisation. It can incur the largest capital costs and commitment.

It will typically involve the following types of tasks, some of which are directly influenced by suppliers, and ultimately the market.

- File all IP – both patent (utility and design) and trademark prior to uncontrolled disclosure;
- Manufacturing and quality control documentation;
- Operational requirements;
- Resource demands and requirements;
- Take the product/system through to production including any packaging requirements;
- Market compliance and certification testing on production product;
- Final brand guide and collateral, both print and digital;
- Develop Content:
  - Photography and audio visual;
  - Copy.
- Point of sale;
- Sales training and presentation information;
- Market tests and trials with end customers and distributors;
- Product launch and trade shows;
- Marketing:
  - General marketing work;
  - Awards and recognition to raise profile;
  - Press and promotional marketing;
  - Research papers and journal submissions.

This list cannot be definitive, but it attempts to provide an indicative guide to some of the key aspects from our experience. It should enable some planning and estimations to occur to ensure the costs are planned for.