



An Introduction to Product Development Critical Path Management

For Healthy Food & Drink
Products

 **Interreg**
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Why do I need a Critical Path for my Product Development ? What does it entail ?

Explaining the benefits of following a structured approach to product development and what steps help to ensure success.

Why should I follow a “Critical Path” for my development?

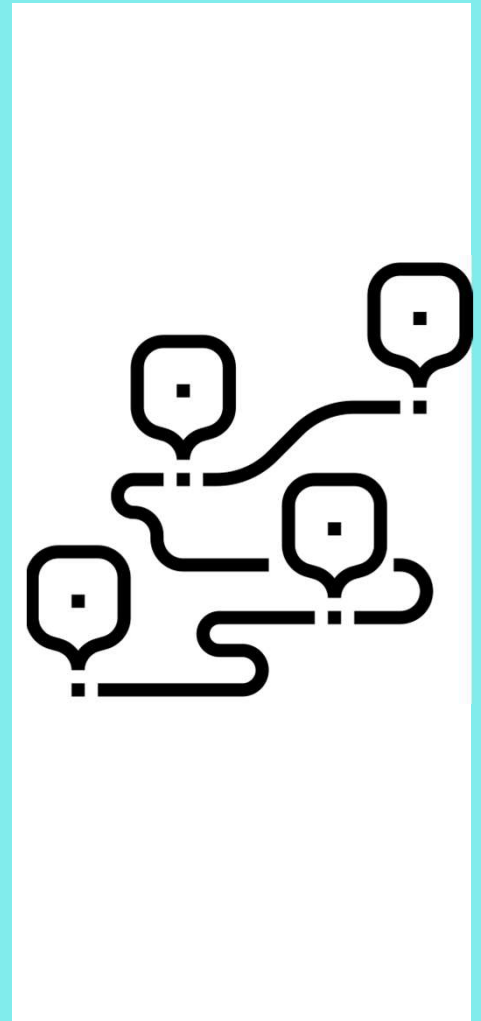
There is a wry observation that Product Developers will recognise, which says “managing product development is where inspiration becomes perspiration!”

Launching delicious, safe and legally compliant food and drinks, which appeal to consumers and bring your business strong sales, profit and a return on your development costs, is a complex and multi-faceted process.

At its simplest, it involves working through the necessary tasks leading to your launch in a logical sequence, but when you are bringing innovative products to market there can be many obstacles to overcome and “loops” in the path.

Tasks may need to be repeated and the product itself may evolve and alter as you conduct your product trials. The new product will be influenced by feedback from your consumers and customers, impacted by the nature of your supply chain and production methods and have a reality check as you review and update your costings.

Having a critical path checklist against which you can monitor progress can help ensure that nothing important gets missed during your development process.



A Complex Process Benefits from a Structured Approach

With numerous disciplines involved in achieving a successful launch, a well-structured plan is essential to ensure all tasks are completed and that you can track your progress



Food Science & Technology

Your products need to be delicious and meet all food safety and legal standards, be stable and perform as desired over their allocated shelf life.



Consumer Insight & Culinary Arts

Your products need to be grounded in a clear understanding of what consumers will buy and created using sound culinary skills.



Commercial & Supply Chain

Your products need to be produced at a price that is attractive in their market context, deliver a return on development costs and make a profit. A robust supply chain is needed to ensure you can make the product consistently at the desired volumes.



Production & Engineering

Your products need to be made and packaged using viable, cost-effective production methods which may require specific engineering solutions and a well trained, skilled workforce to be successful.

Defining Your Critical Path

There are a few key elements that you will need to know or work out so that you can construct your development critical path : –

1. what tasks need to be done
2. how long will each task take
3. in what order do the tasks need to be undertaken
4. is a particular task dependent on the task before it having been completed, before it can be started

Working through this list in a logical way will help you define your critical path.



Try to be thorough and not to miss important tasks. The product development checklist that accompanies this module may help suggest some of the tasks needed but collaborating with the key stakeholders is a good way to understand, in detail, the activities needed to progress to launch.

Be ambitious but realistic about how long each task will take – for example, some tasks will be complex and require several people to be involved, so even coordinating diaries will add to the time needed.

Equally, you may need to factor in receiving back test results from external laboratories, understand the specific lead-times for raw materials or new machinery to be delivered or wait for customers to give you feedback.

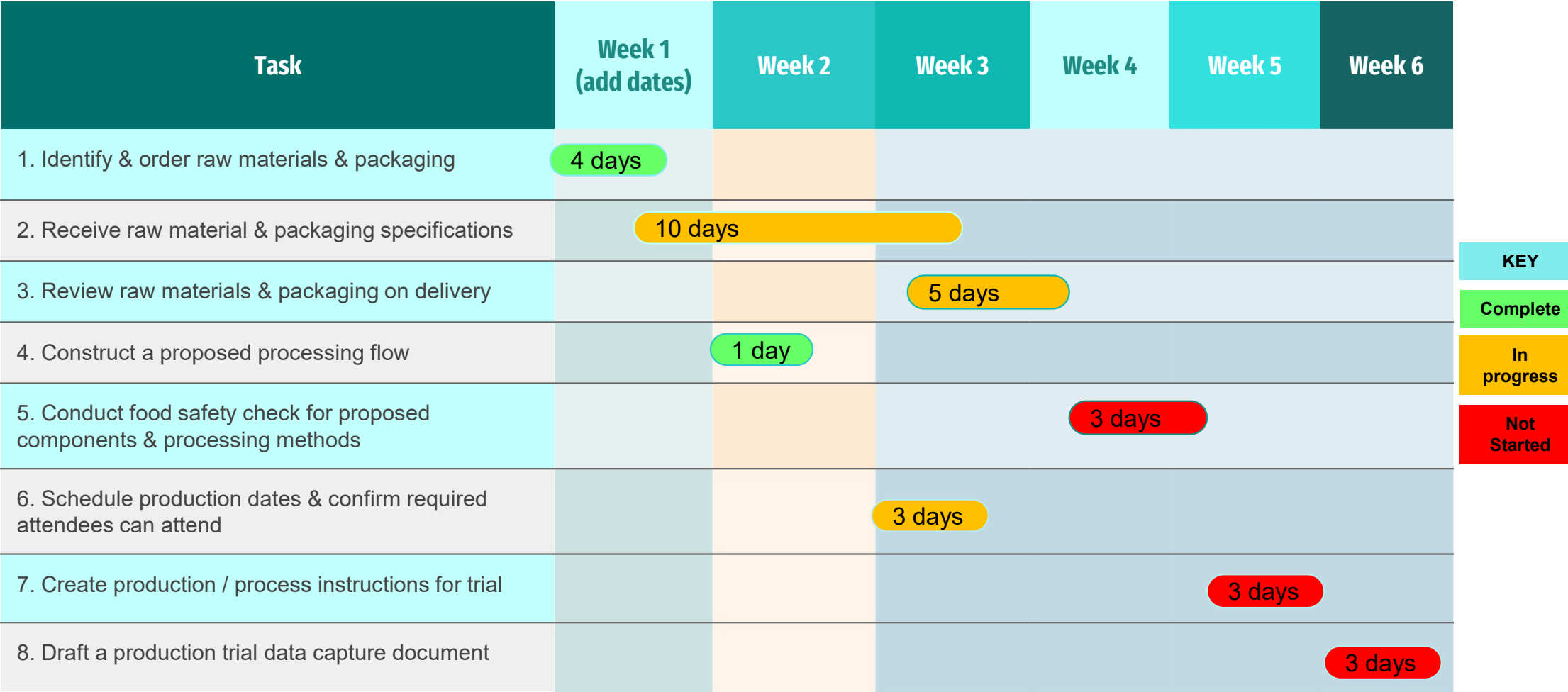
Defining Your Critical Path Tasks

Each stage of your critical path can be broken down so you can assemble the key facts about that needs to take place – this is an example of some of the possible tasks involved in planning production trials

Task Required	Task No.	Time Required	Is Task Dependent Upon Other Tasks ?	Who will complete the task ?	Who will be involved ?
Identify & order raw materials & packaging	1	4 days	Yes – see previous Concept Generation checklist	Add the names of the person responsible for driving the task to completion	List the key team members who will participate
Receive raw material & packaging specifications	2	10 days	Yes - 1		
Review raw materials & packaging on delivery	3	5 days	Yes – 1 and 2		
Construct a proposed processing flow	4	1 day	No		
Conduct food safety check for proposed components and processing methods	5	3 days	Yes – 2, 3 and 4		
Schedule production dates & confirm required attendees can attend	6	3 days	Yes – 3, 4 and 5		
Create production / process instructions for trial	7	2 days	Yes – 4 and 5		
Draft a production trial data capture document	8	1 day	Yes – 4 and 7		

Creating A Critical Path Timeline

Mapping your tasks onto a timeline, or using a Gantt chart, gives you a good visual way to check & communicate your progress. It may be possible to commence some tasks which depend on others having been accomplished before them, but they cannot be completed until the previous task has also been completed – for example receiving raw material deliveries and documents.



Meeting Deadlines with Critical Paths

Your new product launch might have a specific deadline you need to meet – for example if a product is to be sold over Christmas, or perhaps your food service client has a new menu launching for summer or maybe you intend to promote the product at a trade fair or other event.

In this case you may need to compare the list of task, and the total time you have estimated they will take to accomplish, with the time between your starting point and when the product needs to be launch ready.

So, if you are starting on 1st May and the product is for Christmas sales and needs to launch on the 9th October, then you will have 23 weeks to complete all your tasks.

If your critical path plan indicates your tasks would take 26 weeks – then perhaps you can carefully review the tasks and see where you could save the extra 3 weeks needed.

Could you allocate extra resources to the project, pay extra for faster deliveries of raw materials or turn-around of laboratory results; can you prioritise this product to bring production trials forward or ensure its pack design or consumer acceptance tests are completed sooner ?

If you really have no “slack” in the critical path, you need to flag this up to your key stakeholders so that expectations can be managed and to ensure that your reputation as a reliable supplier is not damaged.



Key Steps in the Development Critical Path

**Concept
Generation to
Customer
Acceptance**

**Product
Acceptance to
Production
Trials**

**Verification,
Testing and
Information
Documentation**

**Design &
Artwork**

**Launch
Processes**

By using a critical path, you can track your products as they progress, from the time they emerge as an idea to when they are launched onto the market.

Our previous training modules have addressed many of the steps involved in generating ideas and confirming that consumers would buy that concept.

The path then moves on into the sequence of tasks needed to scale up those concepts.

You will need to ensure that production of the new products, in the volumes needed for your anticipated sales, is feasible with the intended ingredients, processing techniques and packaging formats available.

Also, that they meet food safety, legal and environmental requirements.

They must also be commercially viable and meet customer expectations on aspects such as taste, texture, aroma, appearance, packaging formats and shelf life.

An Introduction to Development Paths

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Every product and project may have its own specific needs and nuances, which will require their launch path to be adapted,. However, there are certain key elements that remain important, regardless of the product being developed.

Subsequent modules in Programme 5 of the AHFES training will go into more detail about some of these topics, but the following slides provide an introductory overview of typical components of most product development critical paths.

Using Development Critical Path Checklists

Using a checklist is a good way to ensure that all the things that you need to do during your product development process are accomplished successfully and we have prepared a suggested checklist template to accompany this training module.

The checklist outlines many tasks and is based upon 20 years of practical NPD experience, but you can easily amend it to suit your individual circumstances and the needs of your products.

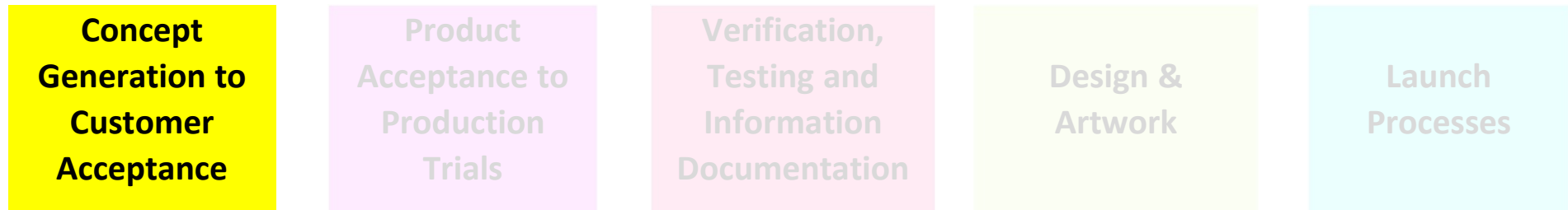
Best practice is that **every** product should be treated as a separate entity and monitored and tracked individually, even if you are launching several product variants into the same range.

This is because each individual product must meet the required food safety and legal standards **in their own right**. It is dangerous to assume that one product will behave like a similar product. They may well perform differently during trials, have different ingredients issues, behave differently over shelf life and will certainly have product specific legal on-pack declarations.

The image displays four overlapping NPD Checklists from AHFS, each representing a different stage of the product development process. The checklists are color-coded and contain various sections for tracking progress and ensuring compliance.

- AHFS NPD CHECKLIST: Concept Generation to Customer Acceptance** (Yellow header): Includes sections for Product Name & Weight, Product Leader, Customer Feedback, and a table for Activities (e.g., Product Name & Weight, Product Leader, Customer Feedback).
- NPD CHECKLIST: Product Acceptance to Production** (Pink header): Includes sections for Product Name & Weight, Product Leader, Customer Feedback, and a table for Activities (e.g., Product Name & Weight, Product Leader, Customer Feedback).
- NPD CHECKLIST: Validation, Testing and Evaluation** (Blue header): Includes sections for Product Name & Weight, Product Leader, Customer Feedback, and a table for Activities (e.g., Product Name & Weight, Product Leader, Customer Feedback).
- NPD CHECKLIST: Design & Artwork** (Green header): Includes sections for Product Name & Weight, Product Leader, Customer Feedback, and a table for Activities (e.g., Product Name & Weight, Product Leader, Customer Feedback).

Key Steps in the Development Critical Path



The task at this stage take you from your market research to assessing and acting upon the insight you have gathered. See the training modules in Programme 1 for ideas on how to build your Market insight, gather Consumer Insight, conduct informative Benchmarking and then Generate your Ideas and Filter the Sparkle Ideas to pursue.

The checklist then assumes that you will need to produce physical product samples to present your product to potential customers, seek consumer feedback or to influence and inform investors or other stakeholders. This may be a multi-step process during which product are submitted more than once as you reflect feedback and “fine tune” your product concept.

It is very important that any samples shown are **truly representative** of the finished product you will bring to market. Otherwise, your final products may fail to live up to expectations and damage your credibility with customers. It may be possible for you to achieve an accurate product using what are termed “bench or kitchen” samples, or your product may dictate that representative samples can only be produced on pilot or production equipment.

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Once your product concept is confirmed as acceptable to potential customers, you can plan the production trials you will need to prove that the product can be produced at scale.

See our training on planning process flows and production trials for more ideas on how to approach this stage of development.

Your trials should aim to confirm that it is possible to produce your product :-

1. At the desired speed, throughput levels and labour levels needed to meet the sales volumes forecasted
2. At a cost which allows a realistic market selling price and meets your profit targets
3. With your desired nature and quality of appearance, taste, texture, pack sizes and packaging formats
4. With your desired brand & product attributes - such as free from certain allergens or meeting nutritional claims
5. Meeting all food safety criteria and compliant with food law and other relevant legislation in your target markets
6. Conforming to your desired social responsibility, environmental and sustainability goals

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When you plan to place a food or drink product on the market you have a duty of care to anyone who will be consuming it.

You need to be able to prove to the competent authority who is responsible for food safety in your target markets that you have shown “due diligence” during the development process and taken all the necessary steps to produce a safe, consistent quality product.

To do this you will need to conduct your trials in a well planned and structured manner which is representative of how the product will be produced once launched.

You can then use the representative products created during your production trials to prove that they meet all the necessary food safety standards and maintain their desired organoleptic attributes over their intended shelf life.

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It is essential to rigorously document all aspects of your product, and its production, to create a comprehensive record for future reference and scrutiny by auditors or legal authorities, should it ever be needed to prove your due diligence.

This will include

- ensuring your suppliers provide you with detailed raw materials and packaging item specifications,

- clearly defined processing steps which are followed consistently in the production environment,

- detailing how check weighing, metal detecting, and correct packing/ labelling will be conducted

- reflecting accurate information on your packaging to meet food labelling legislation

- providing evidence that you can substantiate any claims about your product – for example provenance of ingredients, nutritional or “free from” claims, fair trade status, organic or other farming-based claims

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An attractive pack design which creates the desired impact with purchasers is an important component of the overall marketing strategy for your new product.

The pack must also be robust and protect the product during packing, transport, storage and, for retail products, when on display.

Your packaging may also need to be functional – such as being suitable for microwave or oven cooking, easy to drink from on the move, resealable or easy to open.

Consumers are increasingly demanding that packaging does not have a negative impact on the environment, expecting their chosen brands to minimise unnecessary packaging and to ensure that packaging components are recyclable.

You may find our training module on Packaging Selection helpful, and our [Pack Design](#) module explains how to work with a design agency and has a useful template which you can adapt and use to create a design brief.

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In addition to the aesthetics, composition, materials and functionality of your packaging, you must provide at least the mandatory information on the pack that is required for it to be legally placed on the market.

This varies depending on the nature of the product and how you plan for it to be sold, for example whether the product is pre-packed or non-prepacked, is for retail sale or for mass catering, and is reliant on its external or internal packaging to provide information. You may find our Legal Labelling training module helpful and your government and/or other competent authorities may provide training and advice.

It is critical that any wording – called “packcopy” – that you generate for your primary/inner and secondary/outer packaging is backed up with evidence.

You must be able to prove you took every possible care and exercised due diligence in its composition and had a robust checking procedure in place to ensure that the final pack contains accurate and true information. Best practice would be that more than one suitably trained person conduct these checks, to ensure no errors occur.

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Once the outcomes of your production trials have been reviewed and the product is confirmed as being feasible to produce, cost effective to launch, and your product verification tests have proven food safety you can pursue sales listings with interested customers.

The new product will need to be “set up” within your business and added to all necessary databases – such as order fulfillment and invoicing.

The product must be integrated into your HACCP systems and food quality checks, with any allergen management, or other critical intake, storage and handling procedures, defined and implemented.

Production schedules will need to reflect your launch and ongoing volume requirements.

All product components will have to be purchased and be on site for the launch, and subsequent production runs.

Staff may need training in any new production techniques or packaging requirements.

If new machinery or other equipment is to be deployed, it must be on site, approved as compliant with healthy and safety standards and suitable for use within a food production environment. Equipment will need to be tested, commissioned and ready to run at the desired throughput rates.

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Your customers will need all the information they require on product format, size, weight, units per outer case, shelf life, pricing and legal descriptions, this allows them to create your new product within their own internal systems.

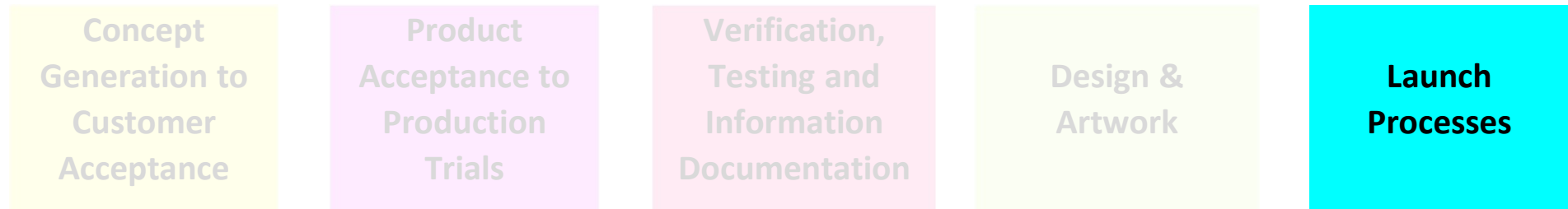
Your team may wish to undertake one last test production run – often called pre-production trials – to ensure they are ready for full production to commence.

This is often useful to “iron out” any final details when products are particularly innovative or will be using new processing techniques or machinery.

The date and times of your “First Production” should be planned for when all the relevant staff can attend to review how the production proceeds and be on hand to resolve any issues or problems that may arise.

At this point, if all is judged to have gone well, the new product can officially exit the development process and be deemed to have “gone live”.

Key Steps in the Development Critical Path



Launching new products is time consuming and at times very challenging. It takes a focused and targeted new product marketing strategy to create the market share, build a strong consumer base and produce the revenue. Therefore, it is very useful for everyone involved to understand the process is not finished when the product is produced and delivered, it is finished when the product has been sold.

So, a key final step on your pathway should be to :

- Coordinate the launch with your sales and marketing team.
- Make sure everyone is aware of the launch date and can explain the “benefits” of the product.
- Ensure sufficient stock is available.
- Focus marketing on target customers
- Employ a variety of marketing and advertising approaches to reach your target consumers
- Launch your campaign with as much gusto as your budget allows
- Monitor and revise your new product marketing strategy on a regular basis, after all the initial groundwork and launch activities are completed

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REVIEW, REFLECT & IMPROVE !

Every new product that you bring to market will be a different experience, and there is always something to learn and ways to improve for the future, regardless of however many times you undertake the development process !

It is very useful for everyone involved to take the opportunity to reflect on topics such as :

- what went well and how could this approach become best practice ?
- what issues, barriers or problems arose and how these can be avoided in the future ?
- are there any training gaps for any members of the team and how do we plan to provide this training ?
- do we have information gaps or need to expand our knowledge in certain areas ?
- did we achieve all our development objectives, or did we have to change tack or compromise ?
- are we up to date on the latest developments in our sector ?
- has the product achieved the sales and profit we targeted – if not, what actions are needed ?
- do we know what consumers and our customers are thinking and looking for next ?
- how can we scan the horizon for new opportunities that will give us competitive advantage & keep us ahead of our competitors ?



We hope that you have found this training module a useful and helpful support to your healthy food and drink innovation.

This training module is one of a number of training opportunities, organised into themed training programmes to support SME's (small & medium sized enterprises) in the participating regions of Wales, Northern Ireland, Ireland, Spain, Portugal and France to successfully bring new and reformulated healthy food and drink products to market.

The training was created by the partners within the AHFES project which is a quadruple helix Atlantic area healthy food eco-system for the growth of SME's funded by the European Union under the Interreg Atlantic Area Funding Programme.

This programme promotes transnational cooperation among 36 Atlantic regions of 5 European countries and co-finances cooperation projects in the fields of Innovation & Competitiveness, Resource Efficiency, Territorial Risks Management, Biodiversity and Natural & Cultural Assets.

For more information about other training available [please click here](#).



EUROPEAN UNION



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