Effective management and planning of the innovation process reduces the risk of failure, cuts development costs, reduces the time from concept to market, increases ROI and customer satisfaction.

This whitepaper covers best practice project management tools and techniques required for effective innovation management.

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1 INTRODUCTION TO FOOD INNOVATION MANAGEMENT

An essential element of developing successful new ideas is to have a formal market focused Innovation Management System. In particular such a system can be used to drive and manage new product, process and packaging developments in a food business. The aim is to manage the innovation process from idea to utilisation by defining and controlling key steps and activities such as marketing, technical development and financial analysis.

The process of innovation in the food industry involves moving from idea through to successful products, services or processes. It is a gradual process of reducing uncertainty through a series of problem solving stages. Following idea identification, increasing commitment of resources during the life of the innovation project makes it increasingly difficult to change direction. Managing new product or service development is a fine balancing act, between costs of development and the benefit or risk of going to market. As life cycles of products get shorter and shorter, pressure is placed on the development process to work with a wider bank of ideas in shorter lead times. This has the effect of increasing uncertainty and the risk of problems arising.

Innovation is a risky adventure by definition. The objective is not to eliminate the risks, since this is impossible, but rather to reduce and manage the risk towards picking the winners. Experience has shown that the best way to do this is to have some form of structured development system, with clear decision points and agreed rules on which to base go/no go decisions. The development team will be charged with the task of developing such a system and embedding it into the management structure, organization and culture.

1.1 The Benefits of Using an Innovation Management System

There are a number of benefits to using an innovation management system, and avoid the risks in financially supporting a new project development too heavily early on. Some of the benefits include:

- Faster new product introduction.
- Higher success rates at launch.
- Earlier detection of failures.
- Being on time and on budget.
- Greater customer satisfaction.
- Better launch plans.
- Cycle time reduction.
- Less recycling / rework.
- Improve teamwork.

This whitepaper will cover such a structured management approach tailored to the food industry. While innovation requires input from a variety of disciplines such as marketing, production, technical and finance, this module will focus mainly on the technical aspects of developing a product or project.
1.2 Innovation Model

Looking again at our innovation model we can identify three phases of innovation management. The first phase deals with generating new ideas for consideration for development. Phase 2 looks at selecting as far as possible those ideas with the greatest reward, while phase 3 concerns the development and implementation work leading to realisation of the original idea concept. This model provides an excellent overview of the process of innovation. However, within this model there are a number of specific steps concerned with the development of a product.

Figure: Innovation Model

Generate > Select > Implement

In the previous whitepaper, we dealt in detail with the phase of generating new ideas. We also covered the typical approaches to selecting and filtering these ideas for further development or implementation. We can now break this process down into a more detailed model of development including the application of specific points where decisions should be made to reduce the risk of picking projects that may fail. This approach is known by a number of names including the Stage Gate Process.

1.3 Management & Communication Skills

The food company needs to have access to skills in the technical aspects of food and process and in the areas of communication and business skills including project management.

In order for the Food Innovator to effectively manage the Innovation process, they must have a suite of personal, management and business skills. These skills are varied and are the focus of this development programme.

<table>
<thead>
<tr>
<th>Scientific Knowledge</th>
<th>This is the basic core competency of the food innovator developed and acquired at an undergraduate level. They are not specifically covered in the scope of this programme.</th>
</tr>
</thead>
</table>
| Communication Skills | The Innovator must possess a range of personal communication skills such as:  
  - Communication  
  - Leadership  
  - Influencing  
  - Social networking |
| Project Management and Business Skills | The Food Innovator in addition to communication skills must possess skills in the following areas:  
  - Project management  
  - Team building  
  - Problem solving  
  - Decision making  
  - Change management  
  - Project management will be covered in this module while the other above mentioned skills will be covered in other modules |
2 STAGE GATE SYSTEM FOR FOOD INNOVATION

2.1 Stage Gate Management Introduction

There are a number of management tools that may be employed in the management of the innovation process. However, the one that is most widely used and accepted in the food sector is Stage Gate. Successful food product development needs to operate some form of structured, staging process. As projects move through the development process, there are a number of discrete stages, each with different decision criteria or ‘gates’ which they must pass. Many variations to this basic idea exist (e.g. ‘fuzzy gates’), but the important point is to ensure that there is a structure in place which reviews both technical and marketing data at each stage. A common variation is the development funnel, which takes into account the reduction in uncertainty as the process progresses.

The development of new products and services is inherently complex and this makes it difficult to model for practical purposes due to the numerous theories and applications. However, we can summarise the basic tenet of all management systems for innovation:

- **Concept generation**: identifying the opportunities for new products and services.
- **Project assessment and selection**: Screening and choosing projects which satisfy certain criteria.
- **Product development**: Translating the selected concepts into a physical product.
- **Product commercialisation**: Testing, launching and marketing the new product.

These steps must be captured within your stage gate regardless of how you design it.
2.2 Designing & Developing your Stage Gate System

Innovation Team

The first step is to assemble your Innovation Team. This team should be made up of members representing the various business functions such as:

- Marketing
- Finance
- Operations and production
- Technical and quality
- Administration
- Logistics
- External experts as required

The team should receive training in the following areas:

- Principles and concepts of innovation
- Procedures for the innovation team (Reporting, meetings, decisions)
- The principles and procedures of the Stage Gate management system including their role and responsibilities
- Training in creative techniques if required

Design your Stage Gate

Here you should adopt the system that best suits your needs. The complexity of the system can vary depending on the business, number and type of products produced, market factors and customer demands. Typically your system will include the following stages:

Figure: Main Stages in Stage Gate Innovation Process
At this point you will also determine at which stage in the process you will establish Decision Gates where criteria will be applied and the progress and faith of the project determined.

Figure: Main Stages in Stage Gate Innovation Process with Decision Gates

Once you have decided on the required stages and decision gates you then need to establish the criteria to be applied at each decision gate. This will vary depending on the product, the company and the particular gate in question. The criteria should be clear and in the form of pointed questions. In other cases it may be based on a detailed review of various data including technical and market feasibility. You should then commence drafting your various records, forms and report templates to manage the process. These may include:

- Project specification
- Idea bank
- Selection and filtering records
- Feasibility reports
- Technical development and legal records
- Financial and costing models
- Verification and validation records

Roll Out the System

Once the system has been developed, it is ready to be put into action. The following approach may be taken:

- **Pick a date:** to commence the system and let everyone know
- **Information meeting:** have an information meeting for the innovation team and any other relevant staff. Conduct more detailed training if required
- **Pick a project:** One or two pilot projects to get started and test the system
- **Trouble shoot:** Iron out the bugs in the system and revise as necessary
The Decision Gate is the tool to be used by the innovation team to ensure the innovation is managed and effective. In essence it is a point in the management and development process where the innovation team ask a simple question ‘Should we progress with this project?’ Like all management decisions, the quality of the decision is based on the quality of the information available.

If the information is poor, the decision is also likely to be poor. Therefore, the more information available and the better the quality of the information the more likely the team is to get it right. This is particularly difficult in the early stages of the process when selecting the idea to be developed for example, since information is often lacking especially financial information. When selecting which stages to apply gates, ensure that it is possible to have available adequate information. It is not totally necessary to have a decision gate between each and every stage especially if there is no major financial, legal and market risk. Ideally a decision gate should:

- Have value in terms of the overall process
- Protect the company from wasting resources, time, etc.
- Have sufficient information available to make an informed decision
- Have a Gate Keeper who is responsible for its operation
- Have clearly defined authority for sign off and decision making
- Have clearly defined criteria for GO / NO GO decisions

The criteria may be expressed in terms of KPI’s or answers to questions such as:

- Is this the right project?
- Is the execution of the project being handled in a quality fashion?
- Is the path forward a quality one?

Gates have a common format with three elements:

- Inputs: a prescribed list of deliverables that the Food Innovator must present to the gate
- Criteria: A set of requirements or questions that the project will be judged
- Outputs: A decision: GO/KILL/HOLD/RECYCLE action or path forward
There may also be two parts to the decision. The innovation team may wish to consider the project and its progress in terms of:

- **First Decision:** Is the project a good one?
- **Second Decision:** What is its priority?

This approach facilitates the effective allocation of resources particularly where there is a large volume of ideas in the bank. The Food Innovators Toolkit contains standard Decision Gates for the innovation process as follows:

![Decision Gate A - Idea](image)

### 2.3 Food Innovation Management Tools

As part of this whitepaper, Safefood 360 has provided a number of Food Innovation Management Tools which have been developed to meet the needs of an innovator in the food industry. These tools provide templates tailored for food businesses and cover all steps from idea concept to final development. Throughout this whitepaper, the user is alerted to the existence of relevant tools in this system which may be used in the development project.

The food company should modify and adapt the system to meet their specific needs. Tools are available for download on the Safefood 360 website.
2.4 Implementation

This section will present a specific model of stage gate designed to meet the needs of a food innovation development project. It is based on a product development since other innovation projects will have similar stages. It is based on Cooper’s Stage Gate approach. Each stage of the process will be presented with an explanation of what is involved, how it should be managed and a sample of the documentation / records that may be used. The following presents the model for project development in the food sector.

![Stage Gate Model](image)

2.5 Idea Generation

During this step, ideas, opportunities and market gaps are identified based on consumer and trade research. A new idea or product concept can be sourced from virtually anywhere.

<table>
<thead>
<tr>
<th>Sources of Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Employees</td>
</tr>
<tr>
<td>Consumers Research</td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Competitors</td>
</tr>
<tr>
<td>Trade/Market Research</td>
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<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
2.6 Idea Bank

All ideas that are exposed to the business from whatever source should be placed in a bank for screening at a later stage. The most important aspect of this step is effective generation of ideas without regard to their quality or value – all ideas should be banked. In your Food Innovation Management Tools, there is a sample of an Idea Bank as follows:

Figure: Idea Bank (Innovators Toolkit)

2.7 Idea Screening

Idea screening is the first step in the review process. Here the objective is to weed out the losers and select only those ideas with the best chance of success in the market. Once the potential winners have been selected the team will move on to the next stage – preliminary investigation or feasibility. We have already covered the techniques and procedures normally employed in Idea Screening in the first whitepaper. In the Food Innovation Management Tool, there is a template for conducting idea screening.

Figure: Idea Screening & Scoring Model (Innovators Toolkit)
2.8 Preliminary Investigation (Feasibility Study)

This step establishes if a new product or concept is viable, i.e. can it be produced, is it likely to succeed and produce profits in the market place. These questions are addressed by carrying out desk research using marketing, technical and financial checklists. Whilst not a comprehensive business analysis, some of the key issues examined include an evaluation of the size of the business opportunity (which can be based on an estimate of a number of stores that will list the product and the average rate of sales by store). Likely marketing costs associated with the product launch should also be taken into consideration as well as the ability of the company to technically produce the product. A report should be drafted covering the following:

- Marketing research report
- Technical feasibility
- Financial projections and costing

Some companies may decide to conduct a more detailed analysis of the business case for this product at the feasibility stage. A sample template of a feasibility report is included in the Innovation Management Toolkit.

Figure: Idea Screening & Scoring Model (Innovators Toolkit)

2.9 Feasibility Review (Concept)

The feasibility report findings generated in the previous step are assessed in the feasibility review. If the team agree that a potential market opportunity is identified, the project proceeds to the next step. During this step, the tentative findings from the feasibility study are confirmed. This usually requires producing test kitchen scale samples, which are used to establish if the target consumer is interested and if the trade is willing to list the 'finished' product.

However, this should be considered carefully as many retail buyers may not facilitate a meeting or time to view a product concept which has not been tested in the market at some level. This step may indeed involve the production of small production lots to test in the market perhaps on a local basis in smaller independent retailers. You must understand how the retailers you are targeting operate. This will dictate the approach. A requirement for conducting this step is a test kitchen facility on site or access to facilities to produce your samples.
2.10 Business Case

This step is critical, as it requires a detailed assessment of the market, sales, production, technical, human resources and financial issues. Much of this work may already have been conducted in the development of your strategic plan. If not, it should be conducted at this stage. It is essential that consumer and trade research is conducted in detail to ensure the final product is fine tuned and modified in line with trade and consumer demands. The trade research may have already been conducted in the idea generation stage and may only require review and updating. The consumer research may need more detailed work. The options here may include focus groups to determine reactions to:

- Product concept
- Organoleptic properties (Taste, Smell, Color, Texture etc.)
- Packaging
- Branding
- Name
- Proposed Price, Pack Size

The details of the business case should be recorded. This may be done using a number of templates provided in your Innovators Toolkit.
Once the concept has been revised based on the findings of the consumer research, it is recommended that the concept be presented to the trade for comment and feedback. At this point, the trade may request additional modifications and consumer research. While the final concept is being approved by the trade/consumer and listings being secured, it is important that the company conducts a detailed financial and technical assessment to ensure the product can be produced safely and profitably. All information should be retained and prepared in a summary report.

2.11 Business Case Review

The business case findings should be reviewed by the team. This is a critical step in the NPD process and represents the last opportunity to end a project before it enters the product development stage, which will use up time and resources.

2.12 Development

During this step, the company should engage in full-scale development, including plant trials. It is important to up-date financial and business case analysis as the product goes through technical development. All likely costs should be taken into consideration including promotional spend, packaging and ingredients cost, trial and full-scale production costs.

Here the existence of a good product-costing model is essential. These may be developed in house or with support from an external consultant. The costing model must cover all inputs and be based on actual hard data. You need to confirm you can make this product at a profit which meets the business strategic
It may be the case that whilst a profit is obtainable, it may not be sufficient and rejected on that basis. At this step the customer may require samples for evaluation particularly if launching under their own label. The Innovation Management Toolkit has a large number of management tools for this step.

**Figure: NPD Pre-Specification**

![NPD Pre-Specification](image)

**Figure: NPD Legal Specification**

![NPD Legal Specification](image)
### Bench Trial Record

- **Product Code:**
- **Trial Number:**
- **Date of Trial:**
- **Batch Size:**
- **Conducted By:**

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient Name</td>
<td>%</td>
</tr>
<tr>
<td>kg</td>
<td>Unit</td>
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<tr>
<td>kg</td>
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</tr>
</tbody>
</table>

**General Trial Report Comments**

### Production Trial Record

- **Product Code:**
- **Trial Number:**
- **Date of Trial:**
- **Batch Size:**
- **Conducted By:**

<table>
<thead>
<tr>
<th>Recipe Used</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient Name</td>
<td>%</td>
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<td>Unit</td>
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<td>kg</td>
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</tr>
</tbody>
</table>

**General Trial Report Comments**
### 2.13 Post Development Review (GO / NO GO)

Before entering the Launch step the project must pass a post development review. This ensures the project is still an attractive one. A sample is contained in your Toolkit.

**Figure:** Stage Gate - Launch
### 2.14 Market Launch

The launch step introduces the new product to the market. First production runs are initiated and market entry occurs. The timing is crucial and all of the elements of the marketing mix must be in place:

<table>
<thead>
<tr>
<th>Table: Marketing Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
</tr>
<tr>
<td><strong>Price</strong></td>
</tr>
<tr>
<td><strong>Promotion</strong></td>
</tr>
<tr>
<td><strong>Place</strong></td>
</tr>
</tbody>
</table>

Prior to this stage the product and process must be technically validated. An informal or formal review immediately following the first production runs is carried out to ensure that the launch proceeded according to plan is carried out. Following launch, product, process and team performances are monitored for an agreed time period. During this stage key learning points are identified. After an agreed time frame, usually 6-12 months after launch, the NPD team review the overall performance of the project including product, process, financial performance, etc. Key questions are:

- Does more work need to be done?
- Are there new opportunities?
- What was done particularly well?
- What was done badly?
- What would we do differently next time?
- Can we improve the NPD system?

### 2.15 Conducting Reviews

This is an area where many companies fall short. The time and pressure demands of running a business often undermine the management activity of review. However, the management must ensure that time is given over to reviews and champion the review process. In SME’s the process does not need to be as formal as the model might suggest. For example, the NPD team in a small business may be the same as the management team and the reviews may be conducted together, e.g. quality review, production review and NPD review.

In general this is one of the most difficult culture changes for companies to undertake - time to review the business, but the rewards are significant. Employees thrive under this new approach and performance generally improves simply because their work is getting recognition in a formal forum. Keep the review meeting concise and to the point. Avoid talking shops and base discussions around objective data and not opinions. Do not tolerate the emergence of a blame culture.
Safefood 360° Food Safety Management Software

Product Benefits

• Easily record and manage all elements of your food safety system including HACCP and CCP monitoring, PRP’s, management systems and documents

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• Access and work with your system from any location at anytime

• Stay up to date and fully compliant with software that updates automatically in line with changes to global food standards

• Improve compliance and audit outcomes through the action driven features of the software

• Accelerate compliance with all of the international food safety standards including the BRC, SQF, IFS & FSSC 22000.

• Spend less time managing your food safety system and more on value adding activities

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• Real-time legal and alert updates to dashboard

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• 24/7 world class customer support

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