

NEW PRODUCT DEVELOPMENT MODELS APPLIED IN DIFFERENT INDUSTRIES IN NORTH WEST SPAIN

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Organización de Empresas

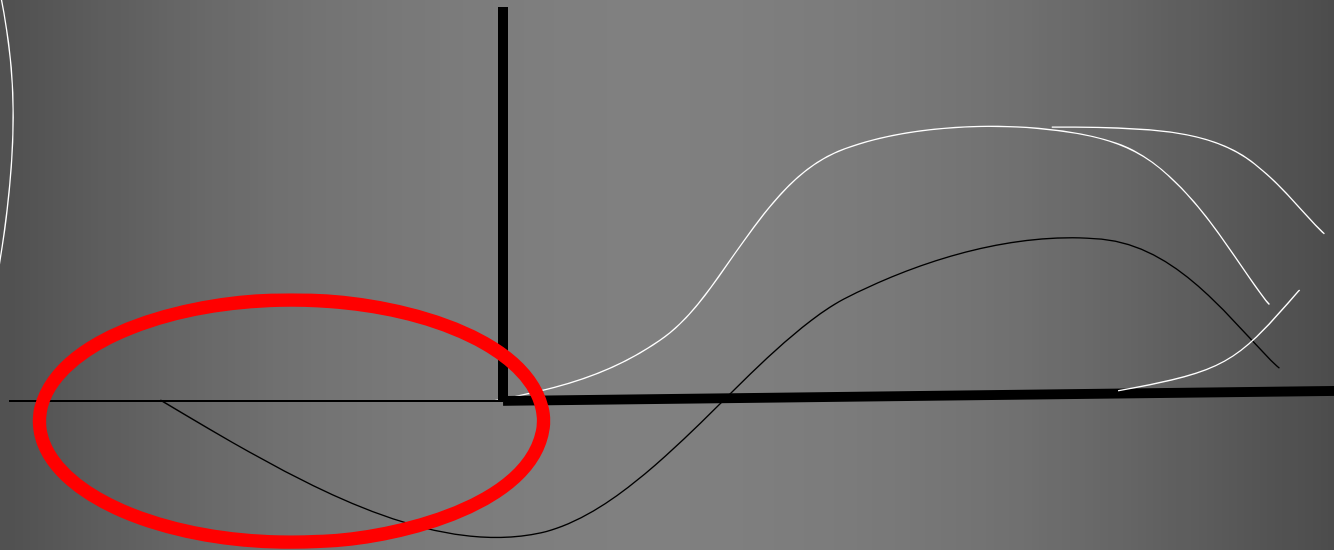
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Presentation outline

1. Introduction
2. Literature Review
3. Proposed Model
4. Design and development model
5. Conclusions

Introduction

Product Life Cycle Model



Literature Review

Departmental Models

Activity based models

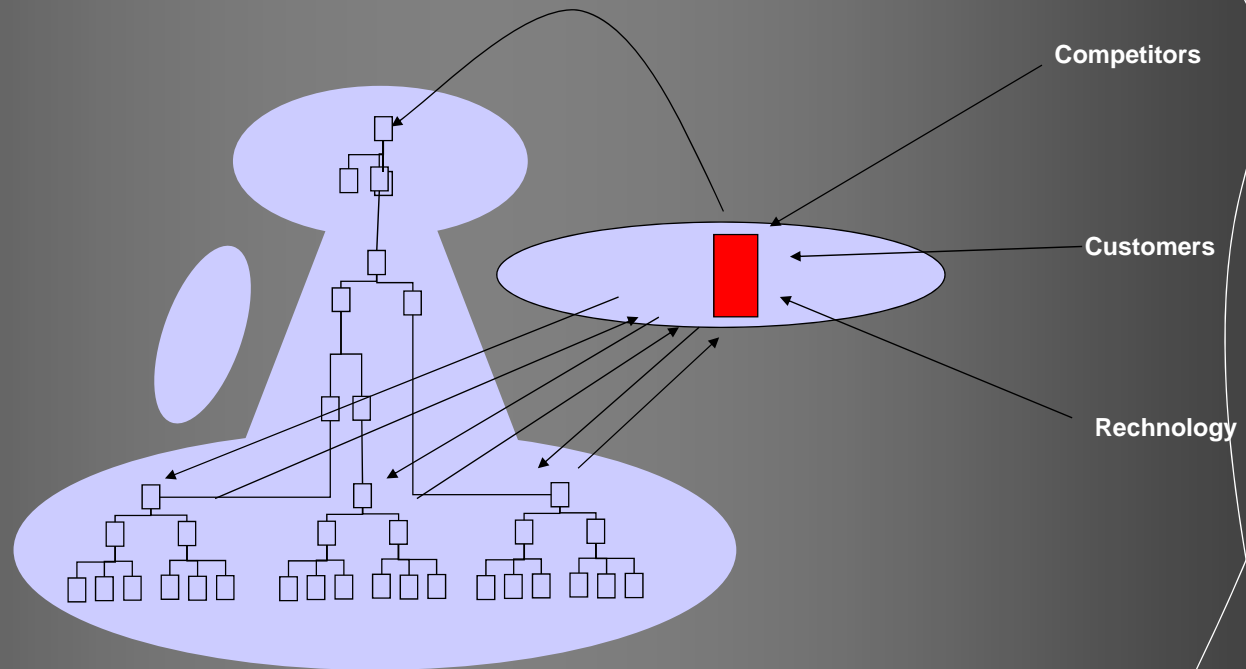
Decision Models

Conversion Models

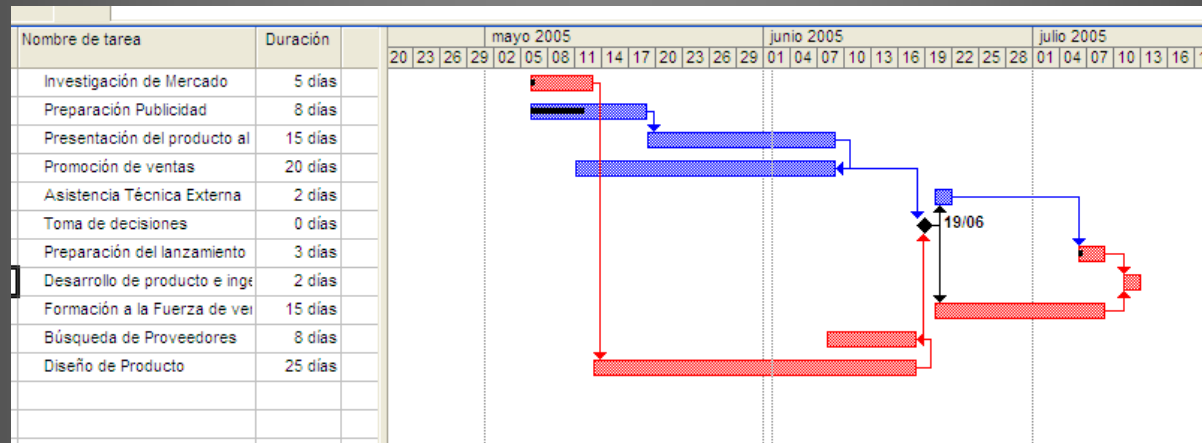
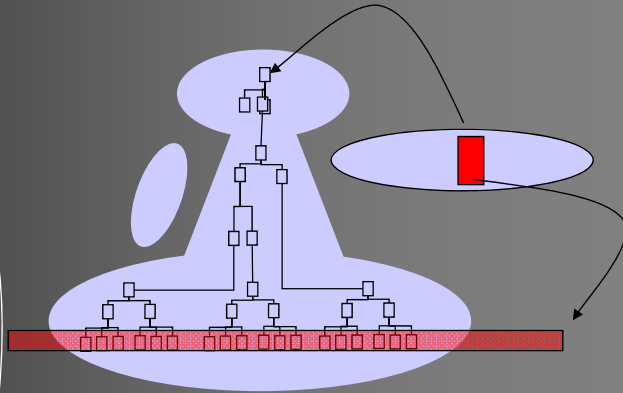
Respond Models.

Process Control Models

Departmental Models



Activity Based Models

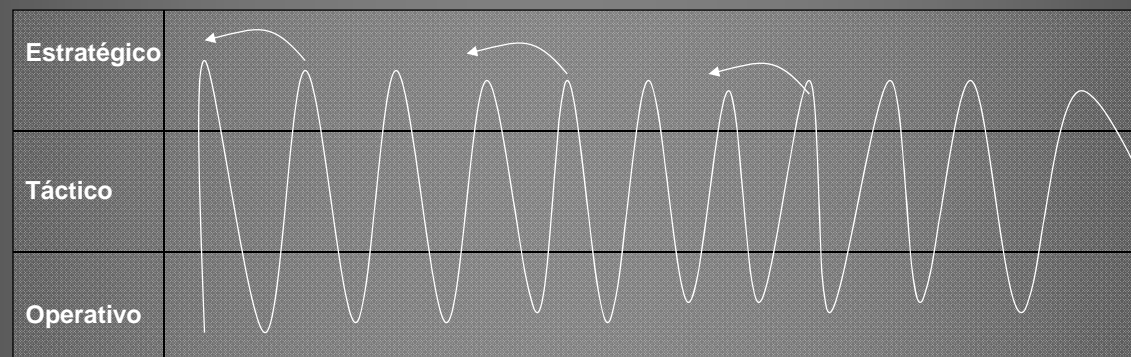


Decision Models

They are based on the specification of the decisions to be taken during the design process.

Rubinstein and Etlie identify the different decision areas

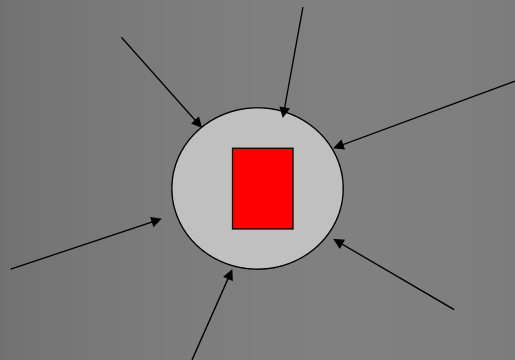
Geyer identifies the decisions and time programming, stating as well the different hierarchical levels of decision implied in all the procedure.



Conversion Models

They follow more flexibility since they do not specify the phases or tasks included during the process.

They state that if innovation must occur, then it is useless to plan anything.



Respond Models

They are based in the creation of a good atmosphere and environment so that new ideas can easily arise from any person within the organization.

The are more focused in the first phases of the innovation process, and they search for more creativity.

Burgelman (1983) states two different actions in the organization:

- **Induced Behavior** (Intended by the organization)
- **Autonomous Behavior** (Occasionally by any worker in the organization)

The organization must respond to both kind of stimulus creating and providing the corresponding organizational structures, as well as the appropriate environment.

Process Control Models

They are based on the establishment of control filters within the whole procedure, so that success is guaranteed.

They are based on the recommendations following the ISO 9001 Quality Management Systems

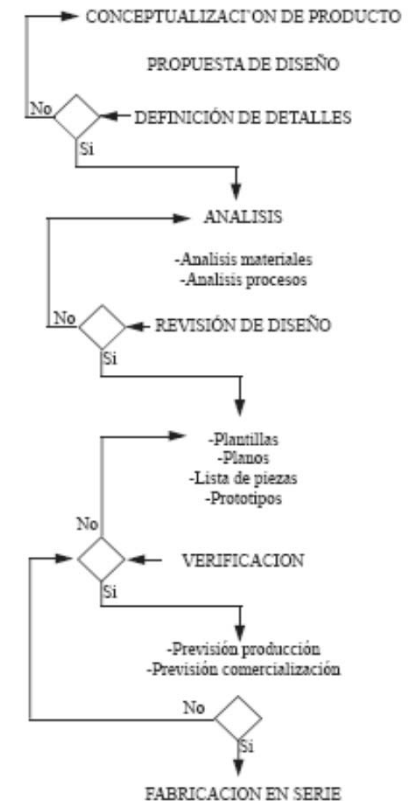
These models include both the moments as well as the techniques to be applied at every step of the procedure. They also state all the documents that must be updated at every time in the organization, so that errors are minimized.

These are the most common models in the organizations.

ACTIVIDADES DEL PROCESO DE DISEÑO

RECOPIACIÓN DE INFORMACIÓN

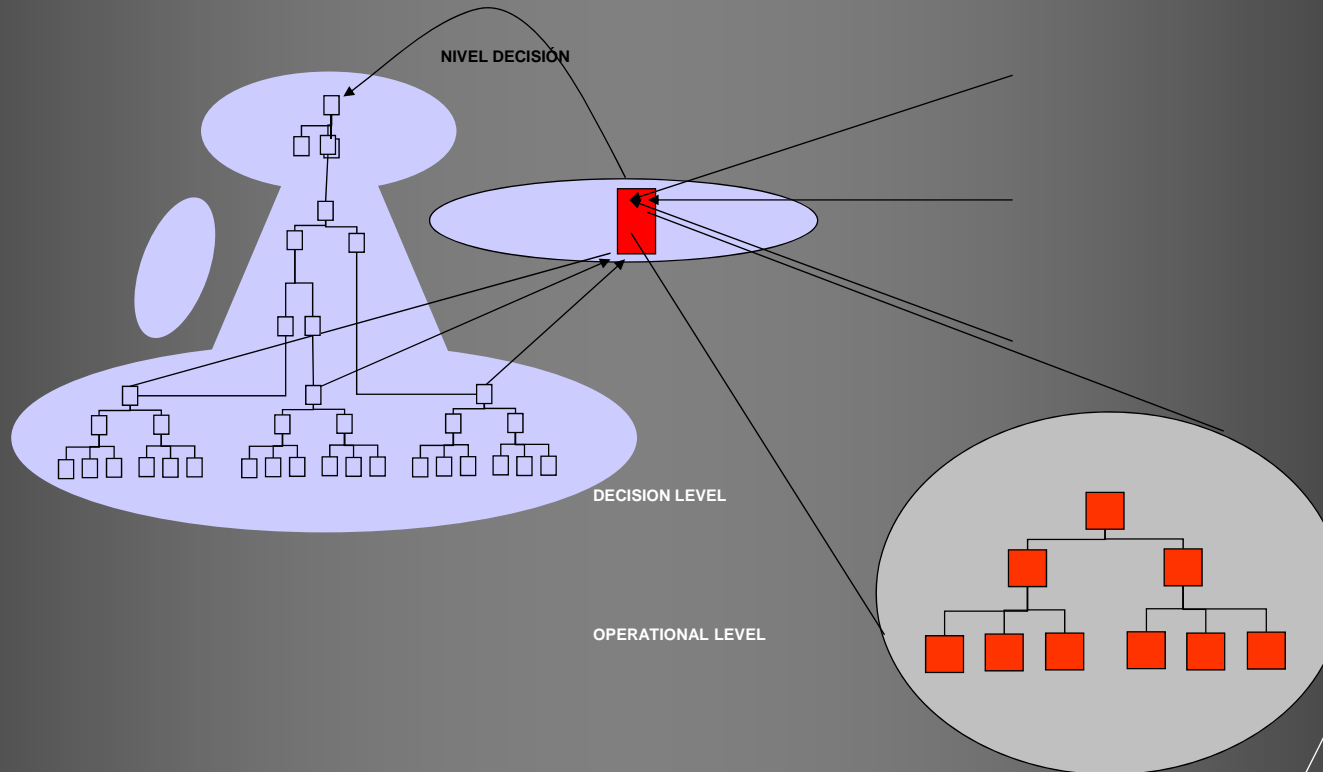
- Plantear y clasificar datos
- Identificar los medios
- Búsqueda y selección de datos
- Análisis de información
- Aplicación de la información



Proposed Model

- Establishment of a sole area for product design and development
- Establishment of two different decision levels in that area: Decision level and operational level
- Project based work
- Interdisciplinary project in constant collaboration with the other areas within the organization.
- Model divided into different phases not necessarily sequential

Proposed Model



Ideas Generation

New ideas are searched for new product development

Internal Stimulus: Own personnel of the company

External Stimulus: By means of the different agents of the organization

It is necessary to systematize this process, so that new ideas search is not casual or occasional in the company.

It is convenient that the organization increase the effort to search for new ideas

All personnel must participate in this process.



Evaluation and validation of these new ideas

There must be an evaluation and validation committee in the organization

If the investments to be made by the company are high, then the decision should be taken by the highest decision level in the organization: Representatives of all areas should participate: Production, Marketing, Sales, etc.

Otherwise, these decisions must be delegated to a different area, so that the procedure is more agile. This area could be the Design and Development Area.



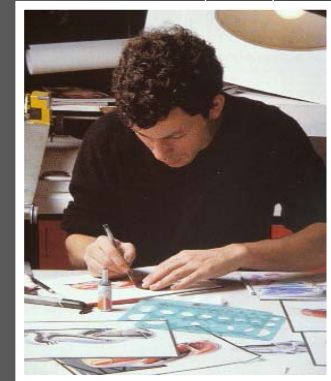
Product Conceptualization

The new product concept must be defined.

Either literally the new product concept is defined, in some cases compared to other similar products from competitors.

Its functions, the objective market, the price level, its advantages, and so on are established now. It is possible to anticipate the materials, shape, colors, etc.

It is usually represented by drawings.

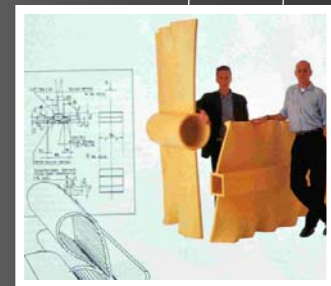


Concept Validation

Once the concept has been developed, then it must be validated by someone in the organization.

To do so, it is usually tested in the market.

This test is usually done by means of customer, or distributor panels, although in the organizations we have been analyzing it is more usual to test the new concept with the sales force of the company, taking into account that they are in constant contact with the market. In some cases, the distributors also participate in this process.



Project Planning

Once the concept has been validated, it is necessary to plan all the activities to be done by the organization.

Therefore the Design and Development Manager should establish the planning to be distributed to all participants.

A project team should be designated to follow all activities, so that every participant would be required at the corresponding time.

This planning must include both timings and costs of every activity.

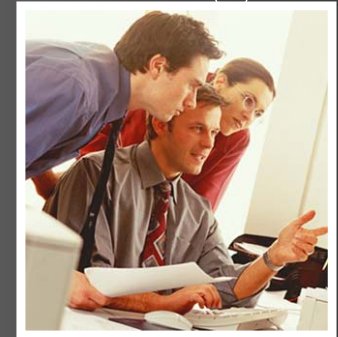


Initial Data Review

From now and on, new participants are included in the project, so it is convenient to review all initial data among everybody.

- Potential customers
- Demand size
- Possible segmentation of this demand
- Average income for a standard customer
- Required functions of the product and value added of these functions
- Market prices
- Technologies applied
- Substitute products
- Raw materials to be used, and external components to be acquired
- External definition of the product: shapes, colors, materials, etc
- Product regulations

It is strongly recommended to create a Design Brief to be shared among all participants



Concept Design

From now on, the wide variety of different product possibilities is open. The most implemented techniques are:

Functional Analysis

Use Analysis

Ergonomics

Value Analysis

Etc.

The result can be shown by means of drawings, renders, virtual models, scale models, where the product can be globally perceived



Simulation and tests

Sometimes it is necessary to implement technical tests, simulations and marketing tests on the previous results. These are:

Ergonomics tests

Usability test

Tests on materials

Product tests on resistance, and other issues.

Etc.

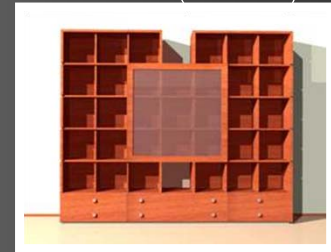
The aim is to guarantee that the global design is correct, both from the marketing point of view, and from the technical perspective.



Architecture design

Right after validating the previous tests, the team work on the design of the structure of the product.

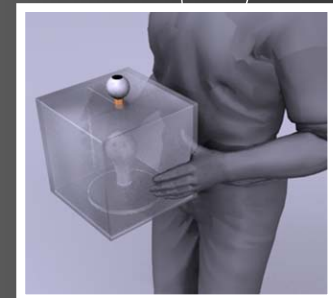
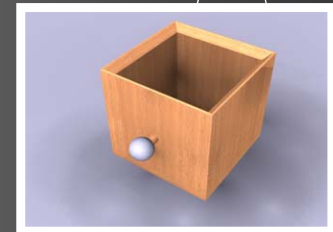
This structure is the back bone of the product, and it is where all the components will be installed. Sometimes this structure corresponds to the exterior of the product, so that both activities are developed in parallel.



Details Design

Right after designing the whole back bone and exterior of the product, then specific attention is paid to the small details of the product. In this case these elements must be independently designed.

These are constructing systems, small components, buttons, complex shapes, etc.



Prototype Development

Right after designing and developing the whole product it is necessary in most cases the development of a prototype.

This prototype can be used to implement the last changes to the product definition, as well as to get the final documentation related to the product, including the construction maps, and tech specs, according to materials, procedures, etc.

In most cases these prototypes are used to illustrate the final product so they are photographed and included in the catalogue of the company.



Product Certification

Sometimes the product must be certified to be commercialized. Therefore the prototype is used to pass the corresponding exams, either quality exams, or compulsory regulation exams.



Last phases

Final Review

Industrialization

Commercial Presentation

Conclusions

In the companies we have been analyzing we outstand:

- Lack of methodologies applied during the product design activities
- High number of control filters to guarantee the success of the product
- Lack of planning and control of the process
- Non explicit processes: Interdisciplinary and collaborative processes, although non explicit
- It would be necessary to improve both planning and design methodologies so that innovation is not something occasional in the company but something the company is committed with.

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