MANAGEMENT OF THE DESIGN PROCESS IN DEVELOPING NEW CERAMIC PRODUCTS

Manuel Lecuona López

Design Management and Research Group.
Universidad Politécnica de Valencia.

The years remaining before entering the XXIst century will be marked by changes as singular as they are unexpected. Those able to foresee these, with a ready answer that well serves their interests, are destined to triumph. Those unable to foresee the approaching changes, and who cannot respond creatively to them, will fall behind. In the 90s, the entrepreneur will rise or fall according to his ability to read the signs of the future, which have already started glimmering in many branches of human endeavour and society in general[1].

THE PRESENT AS PART OF THE PAST

The industrial fabric of developing countries is characterised by not paying enough attention to the core of enterprise: namely the product. As the product is for most companies a given fact with few possibilities to change it, the entrepreneur tends to devote his attention and resources to other aspects of industry, especially production. Industry is more concerned with how to make things rather than what to make. This is also understandable, considering the type of industrial development involved, as the semi-finished products that are usually manufactured have little scope for change. On the other hand, great changes are also unnecessary when supply is low, and customers undemanding.

However, the producer of any type of industrial product also knows that the buyer seeks solutions to specific needs, and does not care very much about how the product is made industrially, as long as the cost is reasonable. Moreover, many producers inside and outside developing countries are currently offering products that satisfy similar needs under similar conditions.

There is however in the industrial landscape of developing countries a series of relatively new factors: more small and medium-sized enterprises (SMEs) are making final

[1]. LLANOS COMPANY, MANUEL. *"Triunfar en los noventa, anticiparse al cambio"*, LAS PROVINCIAS, 25 July 1993, Valencia.

products; there are more demanding consumers; and greater competition. In this context, the importance of the product and company policy acquires new dimensions. There is furthermore a series of factors that go from the development of a consistent product range to the creation of a brand with an image of its own. Product innovation plays a key role in company development, and is of greater importance than process innovation in SMEs.

In this context, Industrial Design becomes an important business activity. Design understood as it really is: the process of formalising a product taking into account its functional requirements, as well as its use, production and communication requirements. Design is to be understood as product planning in which the key player, the designer, needs to coordinate the needs arising in the different sections of the company, such as production, marketing, transport, storage and even financial aspects[2].

This role of design in industry was understood by the more competitive companies in the countries which have been in the van of innovation for several decades, giving rise to phenomena such as Danish Design, Italian Design, Spanish Design, the Project Culture, etc., validating the profile of the Technical Designer and his consecration by the application of his name to all the created products, i.e. a trade name of renown.

THE SLOGAN OF CURRENT REALITY IN ITS CONTINUOUS DIZZY TRANSFORMATION IS: GUESS THE CHANGE, CREATE A RESPONSE

While we are currently going through a booming period of technological transformation, other changes are also very close though less evident, or are still growing in the shadow.

Survival and prosperity in the 90s can be summed up in the words: guess the change, create a response. The response not only requires carving out a niche for oneself, but also constant improvement in products and services which promise to provide the customer with new added values, somehow different from those to which we were accustomed till now.

Another requirement for effective response is the speed of reaction and application. This means adding determination and will to convert the changes that we have been able to foresee into acts, and requires being able to programme these and put them into practice, with the means at hand, benefiting from the receptivity of the market. Certain key ideas can help to sound out this near future, entering deeply into the responses, using methods which, especially in certain advanced societies, have been successfully tried. These ideas can be summed up under several headings: NEW LIFE STYLES (How will the habits and lifestyles of current and future consumers develop?); ADDED VALUE (not by technology but by personal service, based on fast, reliable information with regard to the values indicated by customers); POPULATION GROUPS AND MARKET NICHES (correctly identifying a market niche requires a thorough knowledge of society, tastes and trends, and often means knowing how to interpret the needs to which these new social groups are going to react); QUALITY (certain companies have found a solid market by enhancing quality, a commodity that needs to be carefully managed in times of crisis); ECONOMY AND DISCOUNT (the consumer market contains more and more individuals that reach a minimum level, which allows them to start consuming);

[2]. ARBONIES, ÁNGEL L. **Nuevos enfoques en la innovación de productos para la empresa industrial**. Published by: Asociación para el progreso de la dirección, Madrid, 1993.

TECHNOLOGICAL INNOVATION (keeping up to date in technological innovation allows anticipating new market trends, modifying the offer if necessary, adjusting it to the surest trends); and INFORMATION (information can simplify and facilitate management and sales)[3] .

In the most industrialised nations, since the 60s every company active in the industrial sector has had its explicit or implicit competitive strategy, developing this by planning or in a spontaneous way in terms of the sum of the activities of the company's departments.

Design, discovered in this period to be an important factor in the company's offer, and therefore a variable to be considered in competition, has not been integrated well in company management. Design used to be, and still is for developing countries, something to be added on without an overall analysis of its impact or possibilities. When companies work out a competitive strategy, the emphasis is placed on market variables, industrial aspects, human resources and perhaps on financial resources, but design has rarely been integrated in this process, because people have not known how to do this, and because there were no reliable reference models.

Designing a competitive strategy basically involves developing a broad formula on how the company can compete, what its objectives are to be, and which policies are needed in the long term[4].

On a very general level, formulating a competitive strategy involves identifying four key factors for success, which will answer questions such as these: In which market sector does the company lie? What is happening in this environment at the moment? What should the company be doing to achieve its objectives? The resulting key factors are thus as follows (Figure 1).

1. Internal limits, consisting of strong and weak points relating to the competition (funds, technological position, brand identification, applied basic research, development of new designs, etc.).

2. External limits, determined by the industrial sector that the company is immersed in and its environment.

3. The opportunities and threats of the industrial sector define the competitive environment, with its concomitant risks and potential rewards.

Social expectations reflect the impact on the company of factors such as government policy, social interests, new habits and social trends of all kinds.

In the face of these new needs, the Technical Designer does not have the right profile to answer such an abstract question, which require working with a totally different mental model in many different dimensions. Although design is multidimensional and obeys no linear logic in its initial stages, the Technical Designer is not to be conceived as a validating agent who brings forth a new organisation inside the company, namely that of Design Management

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[3]. LLANOS COMPANY, MANUEL. *"Triunfar en los noventa, anticiparse al cambio"*, LAS PROVINCIAS, 25 July 1993, Madrid.
[4]. NUEMO, PEDRO. *Design y Estrategia empresarial, Manuales del Instituto de la Pequeña y Mediana Industria*, Madrid, 1989.

Figure 1. *Key factors in defining a strategy.*

Currently the profile and characteristics of the designer in the most industrialised nations are changing, as are the different reference values on social, political, aesthetic, moral, levels etc.

The fall of the Berlin wall and end to the Cold War, i.e. the division of the world into two blocks, have been the most direct cause of the reigning crisis in political ideologies world-wide, the sharp rise in nationalism, end of liberal capitalism and deterioration in the balance of world economy, questioning of the welfare state, the contradiction between consumption and natural resources, between environmental impact and ecology, and ultimately the rise of a certain conservatism after the lighthearted approach of the 80s. These circumstances entail sufficient profound transformations to cause the designer and design to rethink their function and action.

DESIGN PROFILES IN THE FACE OF NEW NEEDS: DESIGN MANAGEMENT

The complexity of production and its absolute involvement in the confusion of the marketplace require experts in conceiving industrial and communication products for a mass culture. This means experts in design communication and ideology, and therefore managers of the production of ideas and material signs. Thus, recent decades have seen the rise of new functions in corporate strategic planning of design in the most highly developed industrialised countries. These new functions have shown the need to implement features relating to design, such as management, coordination, conceptualisation, analysis and research, all in relation to the overall design process or certain concrete stages, that is, a collective management and design specialty in the company.

While considering the above, the task of Design Management is not limited to suitably leading and controlling specific projects, but rather operates as a source that fosters a design mentality in the whole company organisation. The ultimate aim is to promote a corporate culture with new habits and ways of relating externally and internally.

This new activity differs clearly from that of the Technical Designer, since he is

involved in very specific, limited functions inside the overall design process: designing concrete products, in keeping with the policy and criteria set by the Design Adviser, coordinated by the Project Director (Figure 2).

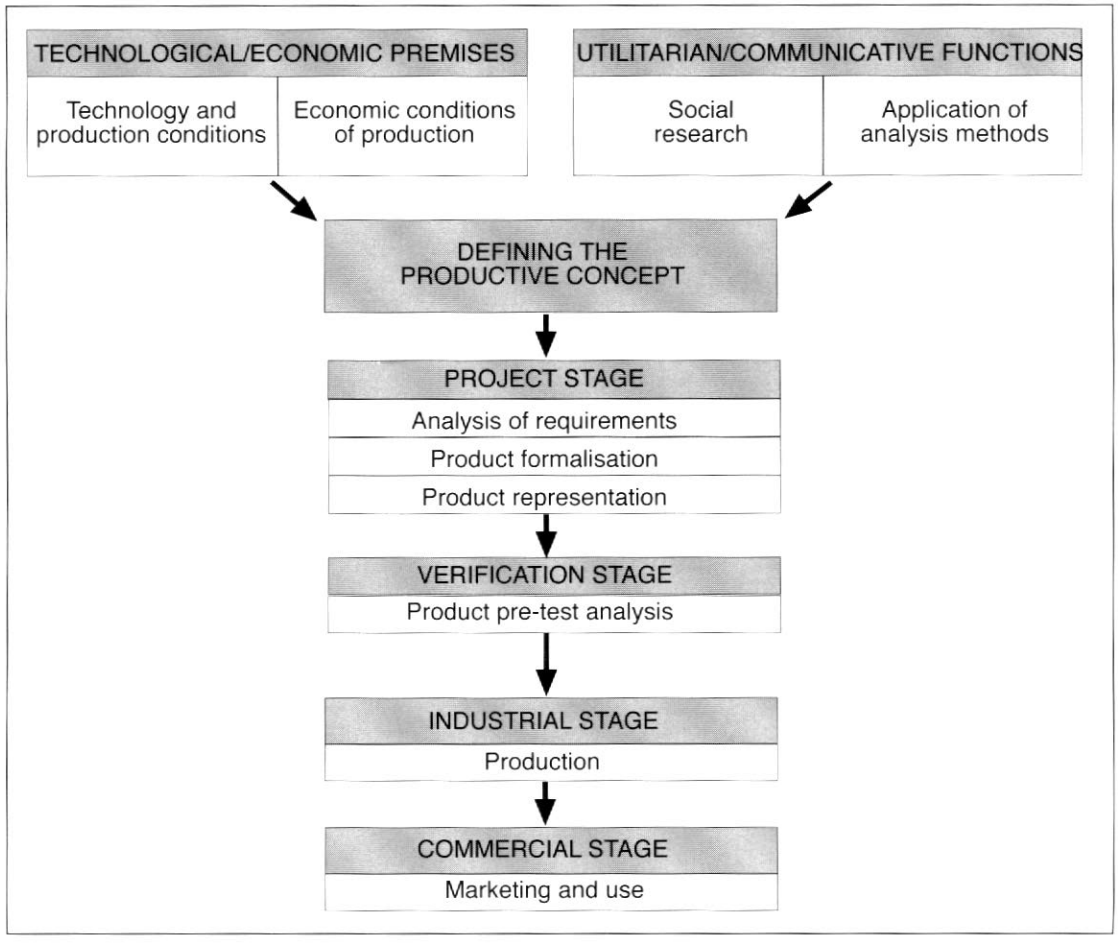

Figure 2. *Product conception and design process.*

The ability to manage design activities in a company does not represent a technical specialty, but another aspect of company management, like R+D management, technological innovation or strategy planning. The differential elements of Design Management can only be found by an analytical methodology, specific information, and basically a specific profile. Design Management is thus a kind of activity like others in the field of company management, and particularly resembles the management of intangibles[5].

It should however be taken into account that Design Management clearly differs from other types of traditional company management activities. It suffices to observe the comparative table set out in Figure 3 regarding the training background and profile of the activities involved, as carried out by a traditional manager and a Design Manager.

On observing the implicit differences in the table, it can be stated the most

[5]. PIBERNAT, ORIOL / CHAVES, NORBERTO. *La Design Management, Manuals published by the Instituto de la Pequeña y Mediana Industria*, Madrid, 1989.

frequent difficulties arising on initially incorporating design management in the company are usually rather of a practical than a theoretical nature, more due to ballast and inertia in corporate management than hypothetical differences in structure[6].

CONCEPTS	TRADITIONAL MANAGER	DESIGN MANAGER
Bases of knowledge	Cumulative experience	Ongoing updating
Analysis model	Retrospective	Prospective
Analysis of technical and economic factors	Internal methologies	External methodologies
Decision-taking model	Hierarchical	Collective-horizontal
Perception of basic problems	Internal	Internal/external knowledge of the environment
Origin of stimuli	Competition	Achieving objectives
Problem approach system	Specialised individual	Interdisiplinary collective
Type of essential values	Tangible	Intangible
Position relative to creativity	Overvaluation or prejudice	Creativity/technique evaluation

Figure 3. *Comparison of product development manager profiles.*

The specialised teamwork involved in company Design Management has led to the development of two specialist profiles, which in daily reality appear in enterprise in many ways: they either arise separately with perfectly defined tasks, or as a kind of mix in which some of these activities become superimposed, blurring the two profiles. Their characteristics are as follows[7]:

1. DESIGN ADVISER. He is a specialist in the theory and methodology of Design focused on applied industrial research. His basic functions are methodology, analysis/advice and research. These involve planning sets of methods and programmes suited to the designing process; analysing the feasibility of the products or product systems in the market; analysing the aesthetic/symbolic features of the products; developing methods for fostering ideas at the different levels of the Design Process, from conceptualising to formalising the ideas.

2. PROJECT DIRECTOR. He is characterised by his specific knowledge relating to the design of objects, images and product systems. He is moreover characterised by his command of economic and industrial disciplines, as well as human and social relations. As the title suggests, his various professional functions involve: company Design projects; coordinating the various functions of the members of his department within the general framework of the design process; defining and controlling the implementation, continuity, and consistency of the company's corporate image; coordinating and integrating the work of the those in charge of production, finance, sales, advertising and marketing in terms of maintaining the general company image and embodying it in each specific line of products. In sum, setting out the general guidelines of product development

[6]. OAKLEY, MARCK. Managing Product Design, London, 1984.
[7]. JORDI. Document from the Graduation thesis in Design at the University of Barcelona, Barcelona, 1992.

to be undertaken by the Technical Designer, thus becoming ultimately the person in charge of combining company interests with the needs of users and consumers.

These new profiles require a different training background. Thus the compulsory training required together with optional subject matter, according to the possible specialisation in terms of the relevance of a specific industrial branch or sub-sector, or their significance in a given geographic and economic context, is as follows:

- Theory and History of Design, as an approach to the study and investigation of: historical bases of Design; contributions to a general theory of Design and Communication; and evolution and development of Design and Communication pedagogy.

- Design and Analysis Methods provide acquaintance with: methods of Design problem analysis; theoretical models for the analysis of Design products as communicative objects; methods for the analysis of different Design product functions as communicative functions.

- Social research systems applied to design yield a command of: theoretical models for the empirical investigation of Design as a psychological, social and communication phenomenon; empirical research methods on social needs; and study of empirical research methods on the communicative effects (psychological and social) of Design products.

- Production and business administration techniques analyse: industrial and electronic production systems of objects and images; product distribution systems; audiovisual communication systems; business administration systems.

- By developing Management Project experience is gained in: organising and coordinating Product Design teams; analysis ands synthesis of the various factors affecting the Design process.

DESIGN MANAGEMENT TASKS

The type of specialisation required in Design as set out above (Design Adviser and Project Director), can be better defined on the basis of a detailed description of the specific tasks arising in the development and implementation of design in company strategy. These tasks, which have certain features in common with all fields of company design management (product, communication, and corporate image), are divided into three large themes or stages: Design programming; Hiring design services; and Directing, managing and controlling projects.

It can be observed in each diagram of the three stages mentioned (Figure 4), taking into account the characteristics of the contents and predisposition of the person to carry them out, that that the first stage is the exclusive competence of the Design Adviser, while the second stage can be the competence of the Design Adviser or the Project Director, while the last stage is exclusively the field of the Project Director.

A. DESIGN PROGRAMMING

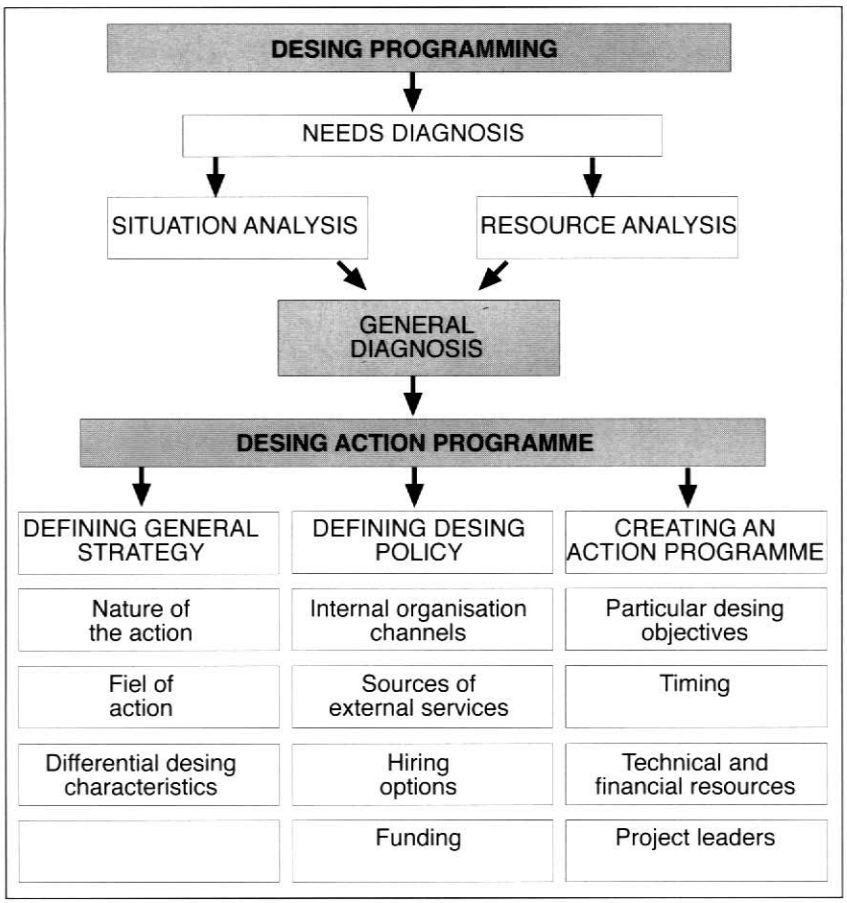

Figure 4. Design and task programming.

A.1. DIAGNOSIS

Diagnosis serves to detect problems relating to design and the needs of the company in respect of it resources. In general lines, and without going into the detail of a diagnosis prepared by specialists with extensive technical information, this audit includes:

- A situation analysis that allows identifying the optima regarding the type of design corresponding to the sector and the company, and the extent of its impact. Drawing up an actual background and situation analysis of the company with regard to optima. Situation analysis of the competition, with regard to optima and in relation to the company itself.

- A resource analysis: analyses regarding staff, organisation, and management of the company itself, the actual technical resources in the field of design and management, determining the estimated financial margins and ultimately the available outside resources.

- General diagnosis that allows the company to know itself and its internal situation regarding design, with an assessment of available resources to correct

detected shortcomings. For example, answers will be obtained to questions such as: Is design what the company needs? What kind of design is needed? Is it an incidental or a regular need? Is a partial or regular intervention required? To what extent are internal resources available? Etc.

A.2. DESIGN ACTION PROGRAMME

After detecting the shortcomings or problems in design and the needs or company resources to overcome these, it is necessary to conduct concrete actions that allow obtaining concrete solutions. This requires tackling the definition of a general strategy, followed by the definition of a policy and finally the preparation of an action programme.

- The general strategy requires defining the nature of the design action, i.e., defining the relevance to be assigned to design, its relationship to other company activities (design as an essential activity or supplementary service, incidental intervention or permanent activity, internal activity or subcontracted activity, etc.). Moreover, it will be necessary to define the field or fields of action in design, to determine the pertinent applications (product design, communication, corporate image, etc.). Finally, detection is required of the differentiating design characteristics, by defining the distinct features relative to the company's own style, the targeted public, and the optimum location with regard to the competition (focus on technological aspects, or on aesthetic features, or vanguard proposals, etc.).

- The definition of policies that allows putting into practice the adopted strategy will need to embrace various aspects: the creation of an internal operating system that channels the design management activities or concrete design (single department, interdepartmental committee, project directors, etc.): working out the criteria for detecting, selecting and hiring outside design services; determining the appropriate design budgets to be able to carry out a set strategy.

- Preparation of a programme that allows starting up and coordinating the internal organisational channels and external design sources identified beforehand. The programme will basically act along four lines: preparing specific design objectives, that is type of products to be developed, communication or corporate image projects, etc.; formulating a schedule of terms and stages; assigning to each particular project the relative design budget and technical means required; determining who will be in charge of the project and each specific area involved.

B. HIRING DESIGN SERVICES. (FIGURE 5)

Once in a position to tackle the necessary design projects, drawing up an intervention programme entails having design teams to execute it. In the case of SMEs, the availability of an own design department is not a current reality, and involves detecting the most suitable outside services. This need usually arises in terms of the difficulty to locate these, but there are normally two options: going to generally available information sources or setting up an own information source.

There are at present many organisations that provide access to a certain degree of

information, either through professional organisations (ICOGRADA, ICSID, BEDA, different designers' Associations, etc.), promotional organisations of a public or semi-private nature such as design centres, technological institutes, chambers of commerce, etc., in which various levels of systematised documentation can be found. One can also go to design training centres at state or public colleges, where productive forces to be exploited can somehow be encountered. These are often systematised by organisations that try and bring these centres into contact with the industrial fabric. Finally, there are other types of environments in which a certain type and quality of information can be found, which can solve this need, such as trade journals, certain events, professional or industrial meetings that allow contacting and becoming acquainted with suppliers of the desired services at a given moment.

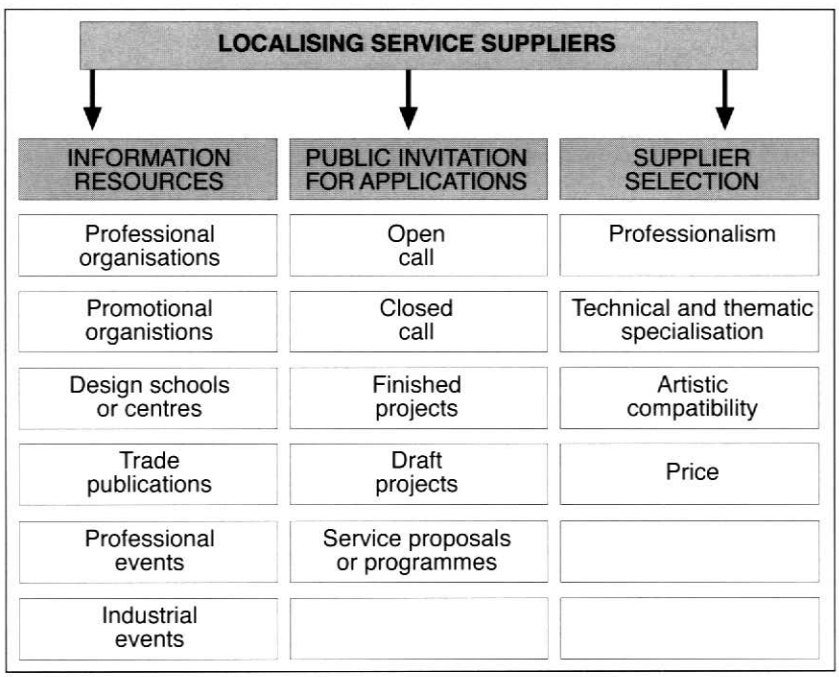

Figure 5. Hiring design services.

On the other hand, taking into account the possibility and need to create an own information base by the company, applications of various kinds can also be publicly invited (open or limited call for public applications, submission of finished projects or draft projects, programmes and services).

C. SELECTION OF A SUITABLE SUPPLIER

The absence of selection criteria raises a very serious problem, and considerable uncertainty for the company in its decision taking. The use of generally applicable criteria to any design field or level of service performance is very imprecise. However, it is important to take into account at least three basic parameters, which in spite of their generality, serve to guide the selection task. These criteria are: professionalism or specific suitability for a given work context, which offers a guarantee of efficiency; thematic and technical specialisation or the capacity to resolve problems based on professional experience in each specific field; stylistic compatibility, since design professionals usually tend to have stylistic preferences, or have a better command of one language rather than another; and price, since this is another factor be considered in hiring design services and

cannot be excluded or be a determining factor.

D. COMMISSIONING AND HIRING. (FIGURE 6)

Good management of the contractual agreement will be the result of clearly specifying the basic issues, eliminating ambiguities that might lead to confusion or mistaken interpretations. The following guidelines should at least be adopted: verbal and written contact with the designer or team; conversations between both parties to focus and adequately define the nature of the service; submission of a service offer by the designer or team and a model of the contract; explanation regarding the terms of the agreement; signing of the contract. That is to say, always formulating or documenting the demand, which will produce planning and development of the project and the stipulation of the professional fees.

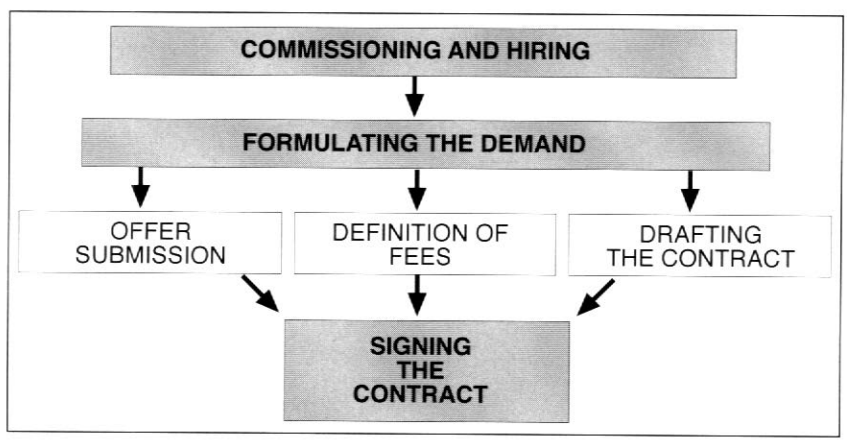

Figure 6. ***Commissioning and hiring design services.***

Of all the above activities, the one involved in formulating the demand is to be highlighted. This is essential and involves drawing up a report that sets out: general company objectives; specific objectives targeted in the concrete project; nature of the services to be hired; and characteristics, requirements and limitations of the project. The usefulness of this type of document lies in identifying the task and directing the designer clearly with regard to the project, providing a very suitable framework for evaluating the designer's proposals and subsequent design solutions. Finally, this exercise helps a programme to materialise, which the designer will be needing to carry out his work later on.

E. DIRECTING AND ADMINISTERING THE PROJECT.

Design Management does not end when a designer's services or those of the most suitable team are hired. Linking the design to corporate objectives requires constant monitoring of the project until the end. The success of a design experience depends on the company's internal capacity to manage the project as well as on the selection of the professionals to carry out the project.

Directing projects means controlling all those tasks that involve a command of matters such as: conceptual bases; quality levels; design styles and language for the project, etc. These are to be defined by the Project Director, who shall set the objectives

and establish the guidelines to be followed, so that all efforts converge towards the targeted aim.

On the other hand, it is also his task to achieve fluid communication between the design team and the company, especially between the members participating in the project. This requires efforts devoted to compiling, drawing up, and transmitting information that the design projects or programmes produce, to avoid unconnected actions or unilateral advances of some parts.

After the process indicated has reached this point, quality control and the evaluation of the results in each process stage require detailed, ongoing supervision so that the results will match the objectives.

F. PROJECT ADMINISTRATION

The administrative management includes tasks linked to the company's internal organisation and to the outsourcing operations. These are also of a markedly operative character, relating also to logistic support such as: planning of functions and coordination of work teams; programming project stages and milestones, and distributing and administering material and financial resources.

As we have been able to appreciate, the problem is not raised in terms of varying or reformulating the designer profile, but in the transformations that design will undergo in its singular effect on production and society on the threshold of the XXIst century. Perhaps the two profiles that have been described, though highlighted from a very general angle, involve one of the most promising initial stages. Although for the moment, and for all industrial environments generally, the characterisation of these profiles and the development and systematisation of Design Management are only emerging values, on the other hand they perfectly reflect the extent of the foresight that exists with regard to new situations and events. All in all, it is time for the first contacts.