Strategic Design Research Journal, 2(1):24-36 janeiro-junho 2009

Sharing skills in design driven innovation processes[1]

Compartilhamento de competências nos processos de inovação orientada pelo design

Flaviano Celaschi
flaviano.celaschi@polimi.it
Politecnico di Milano. Via Durando 38/a, 20158, Milan, Italy.

Angela De Marco
angela.demarco@polito.it
Politecnico di Torino. Castello del Valentino, viale Mattioli, 39, 10125, Turin, Italy.

Eduardo Staszowski
staszowe@newschool.edu
School of Design Strategies. Parsons The New School for Design. 66, Fifth Avenue, 10011, New York, NY, USA.

Roberto Galisai
roberto.galisai@polimi.it
POLI. Design. Via Durando 38/a, 20158, Milan, Italy.

Giorgio Casoni
giorgio.casoni@polimi.it
Polo di Mantova. Politecnico di Milano, via Scarsellini, 13, 46100, Mantova, Italy.

Abstract

The traditional culture of many companies puts design in an advanced phase of the innovation process, acting vertically and in parallel with the other business functions. In Italy this is the standard process for many companies where management consists of engineers or professional figures with a "technology-based" educational background. However in recent decades, leading enterprises in many sectors have begun to develop design at an early phase, adopting a well-established "strategic design" process which requires building a platform of integrated competencies throughout the process of product innovation. In this paper we will examine cases in which design is intended as a mediating and infra-structuring mean, used to involve and structure the innovation process to a degree that does not directly influence the product/service, but is entirely dedicated to the way (process, environment, instruments etc.) by which the desired result is achieved.

Key words: infra-structural design, design mediation, strategic design.

Resumo

A cultura tradicional de muitas companhias coloca o design em uma fase avançada no processo de inovação atuando verticalmente e paralelamente com outras funções de negócios. Na Itália este é um processo padrão para muitas companhias onde o gerenciamento consiste em engenheiros ou figuras profissionais com um *background* educacional de "tecnologia base". Entretanto, nas últimas décadas, empreendimentos líderes em muitos setores têm começado a desenvolver design em uma fase inicial, adotando o bem estabelecido "design estratégico", processo que requer a construção de uma plataforma de competências integradas além do processo de inovação do produto. Neste artigo, vamos examinar casos nos quais o design é concebido como mediação e infraestrutura, usado para desenvolver e estruturar o processo de inovação para um grau que não influencia diretamente o produto/serviço, mas é inteiramente dedicado a forma (processo, ambiente, instrumentos, etc) no qual o resultado desejado é alcançado.

Palavras-chave: design infraestrutural, design mediador, design estratégico.

[1] Angela De Marco was responsible for the Cean case study, Roberto Galisai investigated and documented all the other case studies cited, Eduardo Staszowski and Giorgio Casoni were responsible for the third section.

Design driven organizations

The traditional culture of many companies puts design in an advanced phase of the innovation process:

- elaboration of the business idea;
- identification of resources and launch of development process;
- definition of functional output;
- involvement of designer in defining aesthetic and/or formal characteristics;
- involvement of communication in bringing the product onto the market.

In Italy this is the standard process for many companies where management consists of engineers or professional figures with a "technology-based" educational background. However in recent decades, leading enterprises in many sectors, even those driven by technological innovation, have begun to involve design at an early phase. This involves adopting a well-established "strategic design" process which requires building a platform of integrated competencies early in the process of product innovation in what is called "concurrent engineering".

In this paper we will examine cases in which design does not trigger the business idea at an early phase, acting vertically and in parallel with the other business functions, but it is used to involve and structure the innovation process to a degree that does not directly influence the product/service, but is entirely dedicated to the way (process, environment, instruments etc.) by which the desired result is achieved.

Within the complex discipline of design methods, we are therefore interested in practices and instruments which we define as belonging to "mediating design" and/or "infra-structuring design", that is the design culture applied to the area of innovation as a conscious and powerful development solution, especially in productive contexts characterized by mature markets and a high degree of complexity in which the result depends on numerous factors (technology, distribution, consistency with brand value etc.).

To build in design

Organizations that possess a design-oriented structure are able to react more rapidly and effectively to continuous change, reducing the cost of introducing innovation with the processes of creation, production, distribution and management.

The observed cases succeed in obtaining brilliant results in terms of sales or achievement of their objectives of continuous innovation, even though they do not involve design in the product or service directly.

By "structuring design" we mean, therefore, a set of organizational and instrumental applications that are both dependent on a design culture aimed at continuous innovation, and that act upon the organization and upon its process definition, rather than on the projects or products that it develops.

The factors that directly affect organization are:

- the culture of reference and the skills of management, especially at the top echelons (design sensitivity and methods);
- the working environment and its openness to innovative activities with a high creative content (informal areas);
- the active presence of knowledge elaboration centers oriented to detecting new trends (trend labs);
- the presence of organized occasions for sharing internal practices with those used in other organizations or sectors (match events);
- systematic use of virtual and real platforms for participation by consumers or external suppliers in the processes of creation and innovation of product and services (partnership systems);
- the presence within the organization of professional figures particularly dedicated to creating continuous occasions for adding product value (design process operators).

Our research is based both on analyzing organizations (companies, territories, universities and research centres etc.) that have successfully and persistently applied instruments of this type, and on the consulting work which we have undertaken directly with organizations, helping them to innovate from a starting point of building awareness through to the realization of complex organizations dedicated to the design's infrastructure.

Infrastructuring design: a comparative analysis of the Anglo-Saxon and Italian models

The *infrastructuring* design concept can be interpreted differently if we look at how design has been used by companies in different contexts. In this chapter, with the support of some examples, we will try to explain how it is understood, specifically in Italy and in comparison with the Anglo-Saxon design culture.

One of the many possible differences that can be identified to explain the Anglo-Saxon approach to design, in comparison to the Italian one, is its ability of the first to separate more clearly the process of ideation of a product system[2] from its production. This contrasts with the Italian production system and industrial organization, which is much more dependent on the socio-technical dynamics present in its territory, a way of operating that has been described as an Italian territorial form of capitalism which is directly connected with the Italian industrial district model (Bonomi, 2006).

Therefore, if we understand that the "infrastructuring" design approach is explained as the ability to use design

[2] *Product system* is understood as "a system of products and services that fulfils one function, which satisfies consumers' needs" (Mont, 2000, p. 3).

as a necessary framework and driver to structure the innovation process in an organization, we must consider the territory, at least in the Italian case, as an inherent part of this infrastructure, or the underlying foundation that supports an innovation chain from its beginning.

Based on this assertion, the notion of "infrastructuring" design can be interpreted differently in the two contexts. In the Anglo-Saxon model, a company is more able to absorb, converge and manage its design capabilities within its own organization, whose functional structure is capable of codifying the many different processes involved in the development of a product-system. Conversely, in the Italian model, the design capabilities seem more diffused and interdependent on the knowledge (explicit and tacit) spread among the different players that interact in a given territory or in a specific industrial district.

Nevertheless, the relationship of a company with a specific territory is also perceivable in the Anglo-Saxon model and especially when it is a multinational company or *globally integrated enterprises*[3], this relationship is amplified by its overwhelming presence in multiple territories and markets. In this case, we can also notice an attempt on the part of these companies to establish themselves in different parts of the globe by founding a series of "research and development" labs or design centers immersed in local markets to look for emerging customer trends, to track and incorporate knowledge from different places in their design solutions and to transfer them to the many and different markets where they operate.

For global companies, establishing design centers or sending design teams around the world represent at the same time a learning operation and the upgrading their own design capabilities by interacting with diverse design cultures and communities of practice (Wenger, 1998). It is also a way to show off their corporate flags in places such as Milan, London, Shanghai or San Francisco, where creativity and innovation are renowned. This is also a very common practice among the big Asian players of the electronics industry with a strong Anglo-Saxon imprint, such as Sony and its Global Design Centers created to implement a policy of "Global Localization", or Samsung, a company which bothered to created a Chief Design Officer position, a clear shift of authority to designers. In 2003, Samsung declared: "Our approach is to listen to consumers and anticipate their needs. Which is why we created the Global Design Network. It links our corporate design center in Seoul with global design centers in San Francisco, Los Angeles, London, Tokyo and Shanghai" (Jakuc, 2003, p. 17).

Another example is the design practice in the Philips Group, considered a pioneer in Western European industry for converging design activities and strategy in their operations. It achieved such a distinguished position in the group that it turned into an independent consultancy called Philips Design with 12 offices distributed in the United States, Europe and Asia providing design services to all business divisions of Philips and to a selected group of clients (showing that opening its design operations to external clients could also benefit Philips by exposing its designers to cross-sector experiences).

Likewise Nokia in order to maintain its leadership in the fast developing mobile communications industry, regularly sends multidisciplinary teams (designers, psychologists, usability experts, sociologists, and ethnographers) around the world to conduct field research and user-centered studies to understand human behavior and help Nokia's design division to develop new products and services to cater to both emerging and mature markets.

In general, we are observing an ever-growing role of *infrastructuring* design in the success of these companies, as explained in the beginning of this paper. Recently, the Design Council in the UK conducted an in-depth study of the design processes used in eleven global brands including Sony, Whirlpool, Lego, Starbucks, Xerox and Virgin Atlantic Airways. This study revealed not only similarities in the design processes (generally structured into four main distinct phases: Discover, Define, Develop and Deliver) and how designers work and interact with other areas and professionals of a company, but also a "public commitment to the use of design to improve their brand strength and product and service offerings" (The Design Council, 2007, p. 3).

In the Italian case, this inseparability between design and production, which has long been seen as a virtue, has in recent years produced some damaging rebound effects with the necessity of transferring part or all of production to plants located in countries with lower labor costs, interrupting this virtuous cycle based on a previously symbiotic relationship.

Recently, we have observed some exemplary cases of Italian companies that were able to redefine this complex relationship within their own territory and at the same time to integrate the local values with the global sphere using design as a mediator.

To better understand the role of the designer in the Italian environment, one must contextualize this figure within the evolutionary processes of the European capitalist models, of which there isn't any one ideal or 'one best way' to which the growth and recognition of the designer's role can be referred.

The Italian scenario is characterized by an original form of *territorial capitalism* which in recent decades has supported the productive dynamics of the made in Italy (clothing, furnishings, automation and agrofood). This model has favoured the birth of productive specialization systems otherwise known as *industrial districts*. More recently, the model of territorial capitalism has also made possible the rise of a creative class spread throughout the territory, which contradicts the idea proposed by urban economist Richard Florida (2002) that creativity is

[3] The "globally integrated enterprise" is a term coined in 2006 by Sam Palmisano, CEO of IBM, to describe the evolution of a multinational company to become a 'global' company which can locate and integrate functions anywhere in the world.

the exclusive monopoly of metropolitan areas. The Italian situation is characterized by forms of creativity strongly linked to local territories; thus the 3T model (Talent, Technology and Tolerance) of economic development, if applied to Italy, requires a fourth T for Territory.

If we analyze the provincial distribution of designers on the basis of data from ISTAT-2001, we find three main clusters. The first cluster of designers is found in metropolitan nuclei (Milan, Turin, Rome, Florence and Genoa); the second in the geographical axis connecting Milan with Como; the third includes industrial districts which are predominantly in the North-Central area (for example the Florence-Pisa axis, the Bologna-Reggio-Emilia axis and the Venice-Treviso axis) (Bonomi, 2006).

In all of these production scenarios the designer operates in an original way, supporting not merely a *supply chain*, with a clear beginning and end to each process, but a sometimes complex circuit that tends to form a self-organized network in which the company does not necessarily occupy the central position.

In the network form of organization, the designer shares in creating added value in goods and services, which are tightly linked to the culture and history of the local territory. In this production system, implicit design-based skills and practices (*tacit design*) become as important as *explicit design,* the latter being a codified system of activities and skills belonging to the design discipline. The component of *tacitness* associated with design is idiosyncratically linked to the particular local territory, and represents a form of different potential for industry. In fact, only subjects participating in a specific territorial context are able to make use of this type of know-how. It is precisely the difficulty of transferring the tacit expertise associated with design-driven innovation processes, as well as the territorial rootedness of this expertise, that give it such economic significance.

In the Italian design experience, it is the social structure and identity of specific locations that define the stock of resources – culture, values and skills – needed to catalyze the reactions between product conception, planning, manufacture and sale. In other words it is the local territory, and not just the traditional urban milieu, that serve as the infrastructure supporting design and the point of interchange between local and global contexts. It is in the local territory, and in the interweaving between urban areas and local territories, that design comes into play as a conduit for the creative energies, desires, and values capable of responding to consumers' growing interest in the enhancement of the immaterial aspects of a product (Rullani, 2004).

The local sphere is often the point of origin for new forms of design-based innovation. One form is based on the tacit expertise linked to a local territory's traditions and to unchanging values and identities firmly rooted at the community level. Here the role of design is to recontextualize the aesthetic contents of Italian tradition (Micelli and Finotto, 2005). A good example is the Nonino brand of *grappa*. This traditional Italian peasant aquavit, generally considered inferior to other alcoholic drinks, succeeded in conquering an exclusive market niche at international level thanks to a very effective campaign to communicate the product's authenticity, a packaging redesign, and promotion of a literary prize (*Premio Internazionale Nonino per la Letteratura*).

Italian design is born and bred in a close relationship with the cultural and socioeconomic structure of particular local territories. These are complex relationships, not limited to mere product design, but extending throughout the entire production process and incorporating the communication element as well. The designer today acquires ever greater visibility, evolving from "solitary genius" to manager of a process of integration and enhancement of various kinds of expertise.

Infrastructural design in field research: direct experiences

As university researchers, we acquire knowledge through a combination of providing practical advice to organizations (field research) and the study and development of theoretical concepts and work protocols "in vitro" (desk research). These activities involve the analysis of "best practices" throughout the world, as well as correspondence with the whole network of researchers who collaborate with us in various universities and research institutes around the globe[4].

Case study 1: São Leopoldo City , Rio Grande do Sul, Brazil

The municipal administration of São Leopoldo city was one of the first clients for applied research by the Design Center of *Escola de Design Unisinos*, a project that originated in an accord between Unisinos and POLI. Design, a consortium of the Politecnico di Milano.

The administration's aim was to draw up a strategic plan for territorial development, starting from field research to identify and enhance the identity of the local territory.

The objective of the research was to study the theme of territorial design and map out a pilot project to define:

(i) identity of the local territory;

(ii) strong points in relation to its potential development *in loco;*

(iii) guidelines for concrete actions to transform the territory with the aim of:

- identifying and integrating existing interventions to optimize the efforts necessary for development,
- defining and drafting a strategic development plan for the territory,
- realizing some concrete examples (pilot projects) of transformation of a local territory and of its image.

São Leopoldo today is a city in transformation. The project's objective was to try to understand this new reality, redefine the city starting from its potentialities, and finally define and plan the enhancement of the city's identity.

[4] A case unto itself, within the rich panorama of our experiences over the last five years, is the Brazilian scenario of business enterprises, research centres, universities, or territorial administrative bodies (local prefectures).

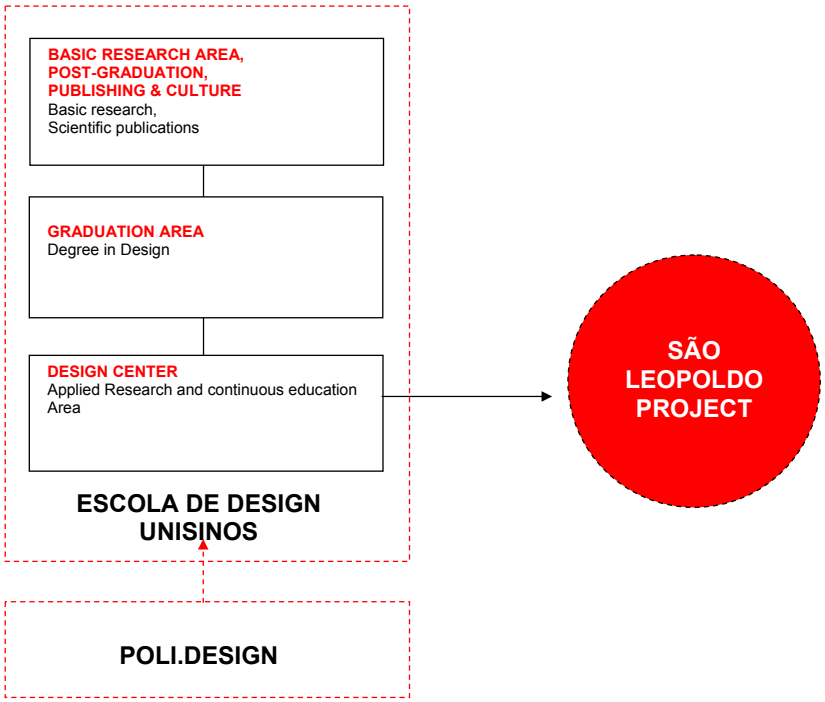

Figure 1. The relation between the three integrated areas of Escola de Design Unisinos and the client, the municipal administration of São Leopoldo.

The first phase of the project "Promoting São Leopoldo" required identifying useful concepts and values for positioning the municipal administration. A comprehensive metadesign research was drawn up, leading to a project workshop in which an effort was made to identify possible innovative scenarios for the city.

Following reelaboration and organization of the materials produced, the results were presented and publicized for the local community. The scheme below illustrates the first phase.

The project's second phase started from the need to give concrete form to the knowledge acquired in the first phase. With the identification of possible paths towards innovation, the need arose to define a structure capable of drawing conclusions from the process begun in the first phase of the project, but above all capable of giving continuity to the process of analysis and synthesis.

A proposal was put forward to create an Urban Center that would act as a sort of coordination nucleus for the city's growth through design and territorial marketing promoted by designers, administrators and local specialists.

The scheme below illustrates the project's first phase, which was divided into 2 main stages with a total duration of 17 weeks.

The second phase of the project provided for the constitution of the Urban Center of São Leopoldo, and was divided into 3 main stages:

Phase 1: Construction of the Urban Center
Duration 12 months
Transfer of expertise in territorial design and marketing through assistance provided by the Design Center of Escola de Design Unisinos.

Phase 2: Intensive assistance in project development
Duration 12 months
Assistance provided by the Design Center of Escola de Design Unisinos to the projects conceived, promoted and developed by the Urban Center of São Leopoldo.

Phase 3: Soft support to project development
Duration 6 months
As the Urban Center becomes more autonomous, the Design Center of Escola de Design Unisinos provides a 'soft' support to the projects conceived, promoted and developed by the Urban Center of São Leopoldo.

Case study 2: Madesa Moveis Ltda., Bom Princípio, Rio Grande do Sul, Brazil

The client is a medium-size furniture manufacturer founded in 1977. It is currently managed by the second generation and is preparing to gradually introduce the third generation. It exports to 44 countries and works principally for segment C of the market.

The company is located in the mountains near Porto Alegre in the state of Rio Grande do Sul, the main APL (industrial district) for furniture manufacturing in Brazil with a considerable production network. The Bento district developed according to the traditional logic that gave rise to manufacturing concentrations, in this case the initial presence of craftsmen of Italian origin. Industrial production began in the 1950s and grew progressively to its present dimensions. Today there are 370 companies in the Bento district with about 10,000 employees, accounting for 8% of domestic furniture production and 40% of the production in Rio Grande do Sul. Most of the companies sell domesti-

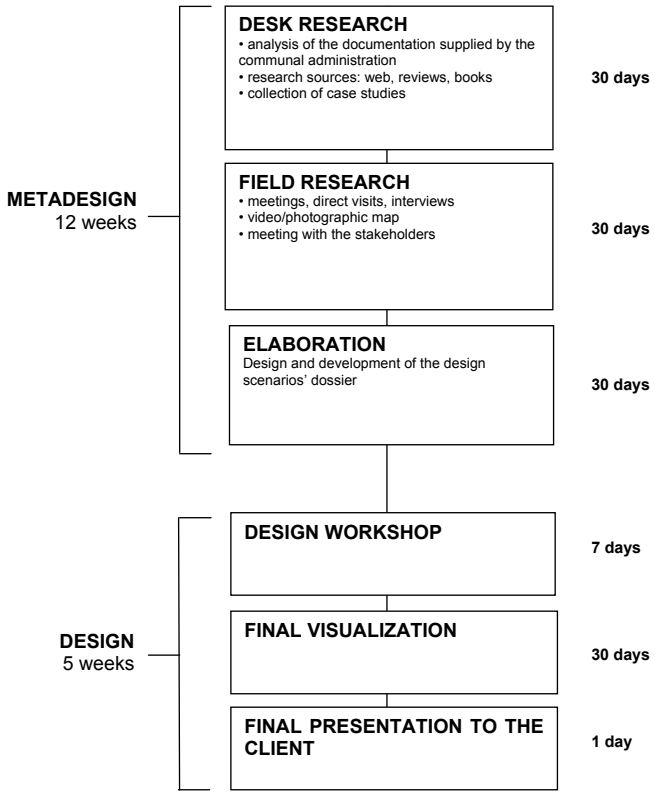

Figure 2. Sub-phases and work processes of Phase 1 of the 'Promoting São Leopoldo' project.

cally, while 35 – including our client – export a significant proportion of their output, mainly to Mercosul countries, the United States and Canada.

The company uses modern and well-organized production lines with most machinery coming from Italy and Germany; however production is "labour intensive", with a low degree of automation. The company possesses the technology for working wood matrix and solid wood panels, with French-polishing and spray painting; there is also a small upholstering section.

Consulting activities were conducted by the POLI. Design working group (Deserti, Fantoni, Sala) through the Design Center of Escola de Design Unisinos of Porto Alegre, according to the same model used for the "Promoting São Leopoldo" project with the municipal administration of São Leopoldo, in Rio Grande do Sul.

The company's production capacity and the need to increase turnover call for serious consideration of innovation strategies that favour continuous improvement; the time seems right to confront the company's problems but also its opportunities guided by the design culture (DESIGN).

The company is aware that developing the design culture will involve not only the form of the product, but above all the approach to present and future markets.

Madesa wishes to develop a new production area, creating a new brand and new lines of furniture manufactured according to a comprehensive plan, and eventually defining the layout of single-brand sales outlets, brand and product communication, and distribution.

The initial tactical objectives of the project are the development of new product-systems and introduction of new production processes (new technologies, types of workmanship, and organizational models). The strategic objective is to form within the company an increasingly autonomous capacity for research and development, monitoring the market and guiding production, distribution and communication choices according to an original process model to be developed as part of the work.

For these reasons the project, which originated from the company's request for a product system, became progressively more oriented towards construction of a development process model, quickly arriving at creation of an internal design center where various competencies could be concentrated and which in the future would become the company's "brain" for integrating skills and elaborating development strategies. The design centre, already at work in a new headquarters only eight months after the project got underway, was structured – including the physical layout – as a nucleus for interfunctional integration in place of the traditional functional model. In other words, it is not only a research and development centre, but also a strategic planning centre. It encompasses various functions, conforming to a formula of cooperative work at all levels of strategic planning and the development process.

The project undertook to define and articulate:

- development of new product lines;
- naming the new brand;
- identification of the new brand;
- price positioning;
- distribution strategy and format of sales outlets;
- communication strategy and articulation of communication instruments.

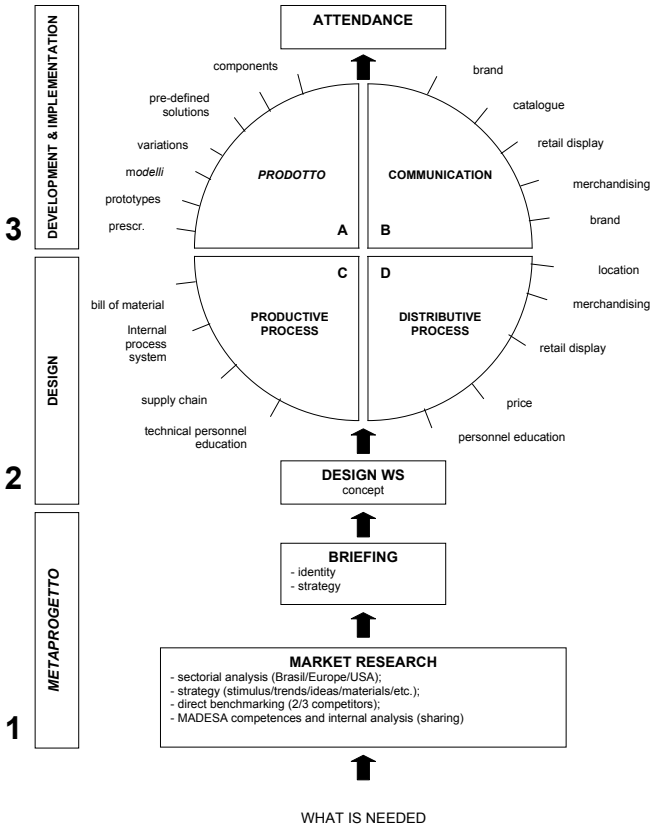

Figure 3. The product-system plan for Madesa.

The project was divided into activities distributed over four parallel directions and interacting among themselves, coming together as the project progressed: product, communication, production process and distribution process.

The project developed over a period of 14 months, as shown in Table 1.

The Madesa group recently inaugurated the first sales outlet of the new "Brinna" brand in São Paulo, and before the end of 2008 single-brand stores will also open

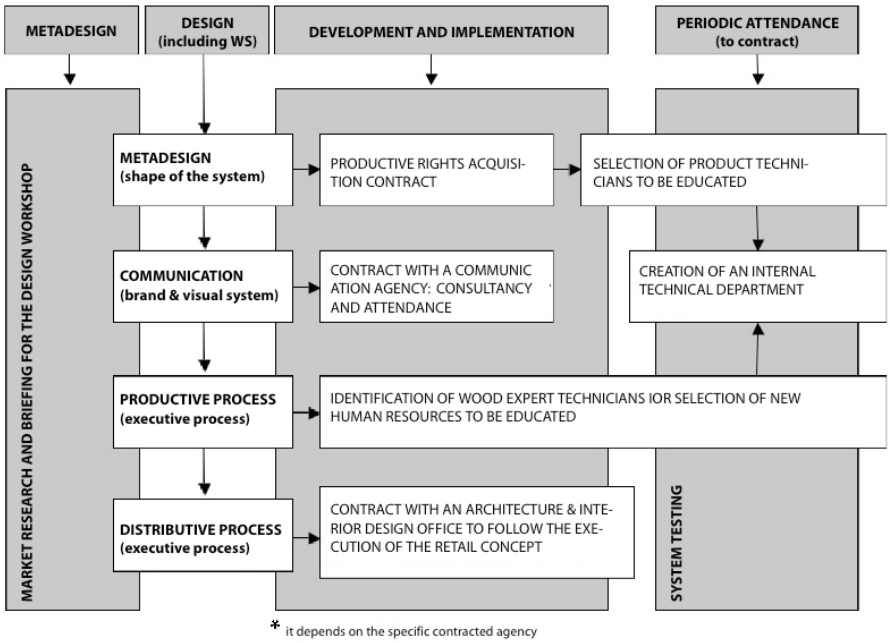

Figure 4. Development process of the Madesa project.

Table 1. Project development period.

METADESIGN	DESIGN	DESIGN DEVELOPMENT	ATTENDANCE
3 MONTHS	3 MONTHS	8 MONTHS	4 MONTHS

in Rio de Janeiro and Porto Alegre. The forecast for 2009 is to reinforce single-brand distribution and consolidate franchising.

Case study 3: Coza, Caxias do Sul city, Rio Grande do Sul, Brazil

"The innovation process always involves three categories of actors who are indispensable in the contemporary production system. The producer risks his capital and organizes the production factors, governing the business idea he or she intends to pursue. The consumer is the point of reference or outlet towards whom the process must sooner or later be aimed, and who should be allowed to participate as early as possible in the innovation process. Usually the innovation process is generated neither by the producer, nor by the consumer. There are many figures who operate within the territory of relations between production and final market, and who are termed process mediators" (Celaschi and Deserti, 2007, p. 31).

The established relationship with Coza is one of mediation, promoted by Escola de Design Unisinos through the Design Atelier in the first year of the first-level degree course in Design. The Coza company produces household utensils and plastic articles, destined mainly for market segments A and B.

The collaboration between Coza and Escola was divided into three phases:

(i) Within the Design Course, the company participated in the teaching activities of the design atelier, sharing project briefs and the company's limits and constraints, with the objective of identifying new solutions and products in the company's areas of interest.

(ii) Then the collaboration involved the Design Center of the Escola, which undertook to organize an event to present the projects developed by the atelier's students, compile a publication, and organize a display of all of COZA's products on Escola premises. During the same period, two of the directors and owners of the company enrolled in specialization courses promoted by the Escola (Master in Strategic Design).

(iii) Continuing the collaboration between company and university, the didactic activity developed together will be resumed, redirected and improved through consulting activities promoted by the Design Center of the Escola together with its researchers and consultants.

The project theme agreed upon with the company and launched during the teaching phase was "Domestic Order & Disorder", analyzed from an anthropocentric standpoint and through the contributions of all the disciplines related to design culture (for examples, sociology, anthropology, economics, perception of form, and psychology).

The concepts of Order and Disorder were broken down and analyzed in their connotation of the cleaning, preservation, gathering, organization and preparation of the objects and spaces in the home; the usage relationships and behaviours of the users living together in the home were also studied.

This six students-designers groups identified six areas of opportunity, from which different concepts of the system-product were invented.

In all cases the concept of domesticity became more flexible, disengaging itself from the domestic walls and embracing the whole city.

The scheme below shows the phases of the didactic project for Coza.

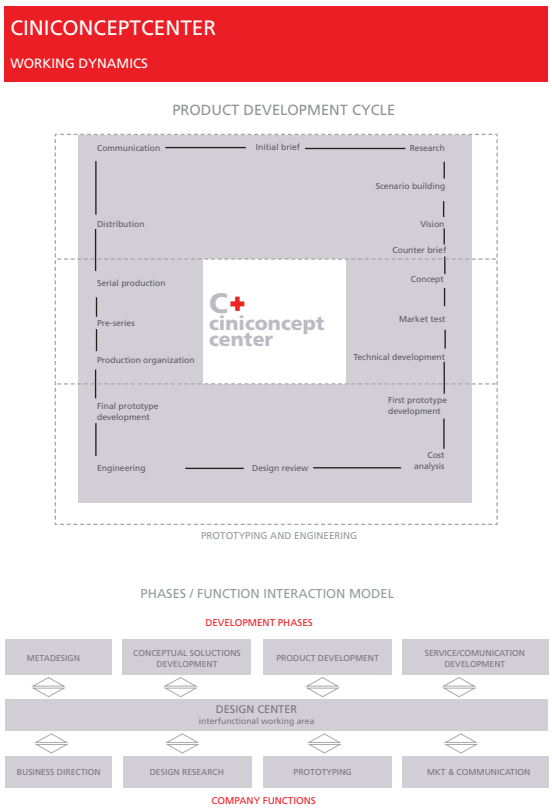

Figure 5. Functions of Madesa's internal Design Center, with production cycle and model of phase/function interaction.

PHASE A: Metadesign research (1 month)
Analysis of the company, products and services offered, positioning production and distribution systems, and communication. Comparison with competing companies, study of consumers, their behaviours and domestic habits. Beginning of transversal and multidisciplinary research (blue sky).

PHASE B: Metadesign synthesis (2 weeks)
Synthesis and reelaboration of materials gathered or produced in the preceding research phase, construction and identification of project scenarios.

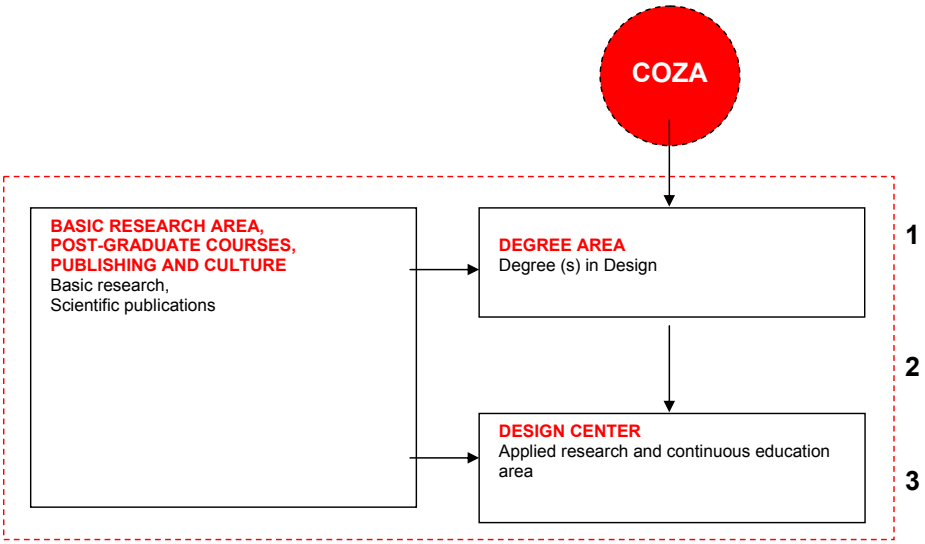

Figure 6. Relationship between Coza and Escola de Design Unisinos.

PHASE C: Elaboration of concepts (6 weeks)
The phase of pure elaboration of the project, from identification of concepts to more detailed elaboration.

PHASE D: Project definition (1 month)
The phase of final development and definition of all parts of the project.

PHASE E: Elaboration of prototypes in the factory
Selection of the 2 best projects produced in the atelier for engineering development and creation of prototypes.

Today the products are in the final stages of prototyping. They will be presented in August during an important São Paulo trade fair, as the fruit of the positive relationship between business and university, which will also be represented graphically by the presence of both logos (Coza and Escola di Design Unisinos) on the products.

Two of the best students from the selected groups began a work placement at Coza in March. In August the Escola de Design Unisinos and Coza will organize an event to celebrate the collaboration and the results achieved, in view of the launch of future shared projects (still being defined).

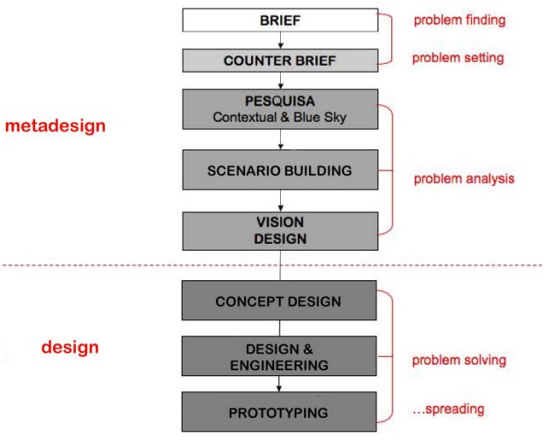

Figure 7. Phases of the didactic project for Coza.

Case study 4: Gardesa SpA, Cortemaggiore, Italy

Italy is another area rich in experiences that in the last 5 years have contributed to the theme of infrastructural design. The systemic nature of Italian design, described in the previous section, induces small and medium-size companies (PMI) in particular to use outsourcing for their design needs. This tradition does not help businesses to internalize the design culture; in fact it gives rise to a vicious cycle in which businesses usually take for granted that strategic functions like design can simply be purchased, with no effort to understand their particular characteristics.

Gardesa SpA of Piacenza (Italy), a leading European producer of safety doors, was recently acquired by the Scandinavian multinational ASSA. From 2002 to 2006 an important collaboration project was carried out to develop a new design division within the company.

The company wanted to build advanced products that would take design into consideration, above and beyond the usual technical and mechanical safety features that it had developed in its 25 years of operation.

During initial contacts with the company, it was necessary to illustrate for Gardesa's management the difference between outsourcing a design project to be built in parallel with other existing products, and creating a product-system culture internal to the company. This culture could become an engine for continuous innovation, both for the company's traditional products, and for new production lines incorporating design values, an area which was new to Gardesa.

The objective which we helped the company to set was that of transforming design from an occasional activity (purchased externally) to a systemic and continuous

process aimed at innovation and rooted in the company's organization, starting with top management; however certain design phases such as conceptualization and market exploration would continue to be outsourced.

Business organizations of this type often confuse the final product design with the whole design process. This limits the organizational possibilities to two alternatives: produce internally or purchase externally (make or buy), whereas introducing the design culture within a company means, in our practical experience, breaking the design process down into phases and deciding which can be performed within the company and which cannot possibly be done internally to the desired quality standards.

Case study 5: Cean SpA, Trofarello (Torino), Italy

The Cean case appears to be fairly representative of a complete infrastructuring process, planned over a 24-month period.

The case is more complex than Gardesa, because Cean is a commercial enterprise that specializes in building and equipping "turnkey" sales outlets of every kind, particularly supermarkets.

It does not have internal departments for equipment design or product manufacture, but assembles products already existing on the market.

Thus at first glance it might appear that the company has no need for its own internal design culture. However the CEO is aware that the design culture will make a real market difference to the future of his company, and is trying to understand how it can be included.

A 24-month consulting project is being launched between the DIPRADI department of Politecnico di Torino and Cean SpA, with the objective of "infrastructuring design" within the company and developing the instruments, training staff, and activating methods to make design a strategic business factor.

The schemes below illustrate the components and phases of the process, which will conclude in 2010.

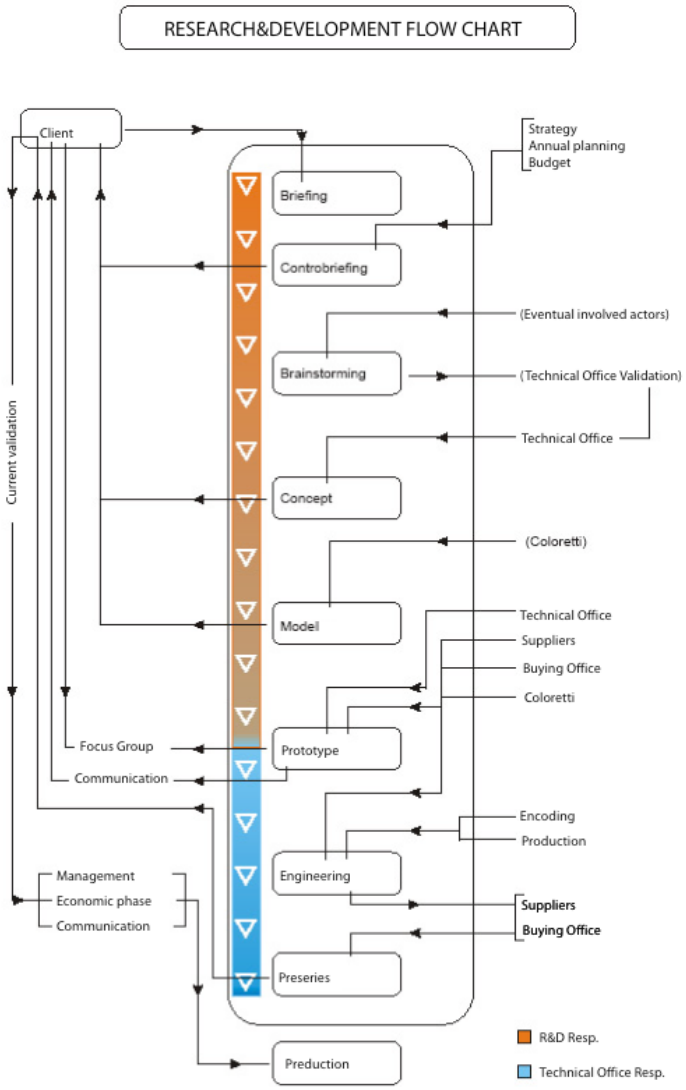

Figure 8. General protocol for innovation development elaborated by Gardesa SpA after application of the infrastructuring design instruments implemented for the company.

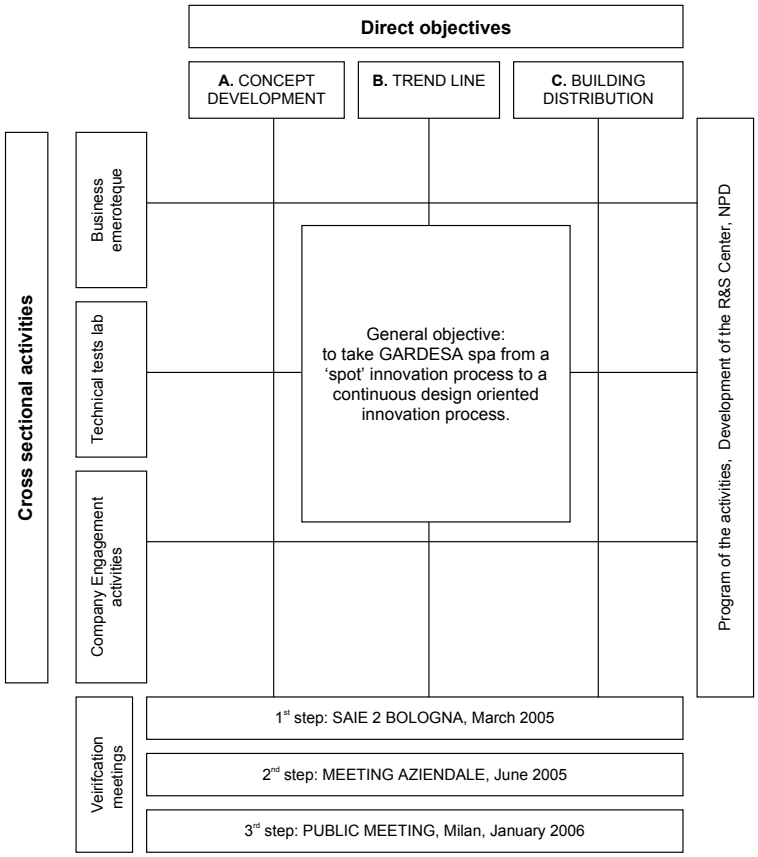

Figure 9. Infrastructural design activities planned for Gardesa SpA.

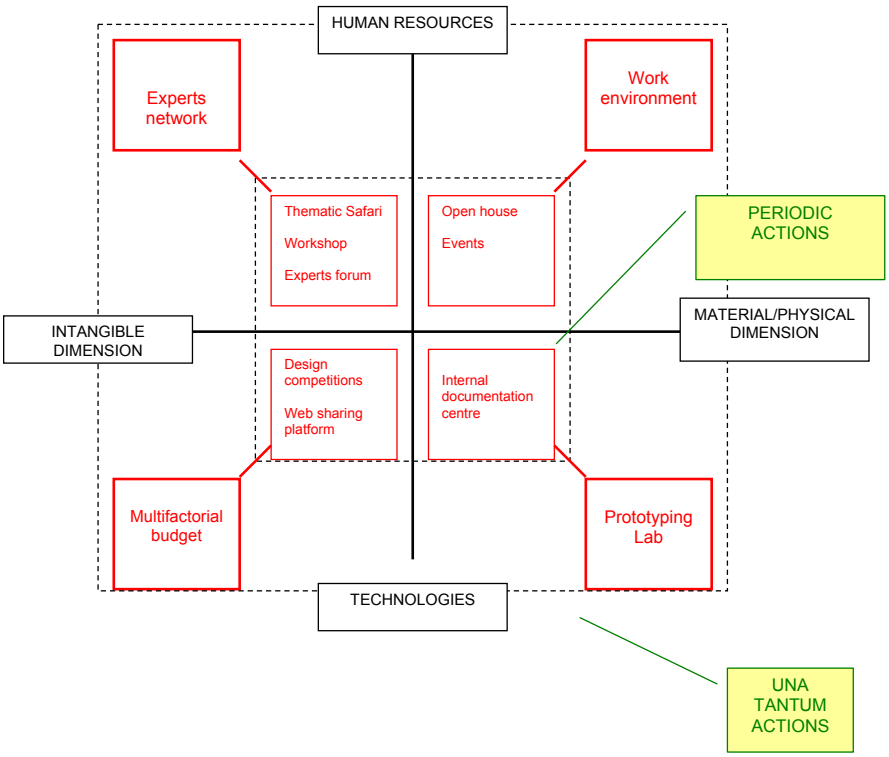

Figure 10. Infrastructuring activities positioned on the basis of occasionality or periodicity, and concrete or organizational nature.

Conclusions

The set of practices and actions illustrated in the cases described are oriented towards a common objective that we define as "infrastructuring" or "infrastructural" design, in other words a process aimed at transforming occasional design, introduced from outside the company, into a body of know-how and a coordinated and interactive work protocol that involves the entire company, or at least the managerial and strategic part of the organization.

"Infra-structural" design is a combination of:

- equipped physical spaces, such as a sectorial documentation center, a prototype laboratory, a showroom in which the client has an active role, etc.;
- work instruments, such as information dossiers on new trends, house organs, etc.;
- organized practices, such as design workshops, competitions for new ideas, research safaris, permanent refresher seminars, networks of experts, etc.

None of these instruments taken singly are useful to the enterprise. They must form part of a guided itinerary of coordination and implementation that develops within the organization, step by step, the awareness of the competitive advantage of strategic design.

It must also be emphasized that the design process, as defined in the cases described and by the theories

	FORMULATION AND FORMATION	*VALORIZZAZIONE*	MULTIFACTORIAL BUDGET	INNOMARKET
METAPROGETTO	Scenario-starting hypothesis Selection of the stagers and starting of the strategic design division Metadesign research within the laboratory-course	Seminars for the presentation of the intermediate results Design workshop with E. Staszowski *Mostra finale* e Open House	Definition of the concept of M.B. at CEAN Definition of a diagnostic service based on the M. B. for CEAN's clients	Metadesign of the INNOMARKET **II ANNO**
EXPERTS NETWORK	Selection and creation of a list of the experts *Organizzation* of market-oriented monographic formation modules	Forum of experts Forum acts Brochure of the forum-experts network Program of the meetings on the website	Monographic contributions of CEAN's experts to the M.B. Monographic contributions of CEAN's experts to the diagnostic service based on the M. B. for CEAN's clients	
OBSERVATORY **I YEAR**	Set up of the observation method Creation of a source catalogue Formation of the stagers to the observation phase Start up of the Sectorial Documentation center	Periodic press report Creation of an open archive *Redazione dossier monografici e reportage dei safari*	Dossier of clients' case studies for the diagnostic service	Set up of the META-INNOMARKET, through the assembly of existing solutions
DESIGN	Analysis of the results of the conceptualization work made with the students WS on specific design projects with invited professionals	Creation of the catalogue of new generation solutions, devices and services.	Definition of a diagnostic format based on the M. B. for CEAN's clients	Definition of the ideal design for the l'INNOMARKET prototype
SVILUPPO PRODOTTI	Selection of the students concept to be transformed in prototypes and beta versions. Selection of the concepts by the invited professionals to be developed.	Catalogue of non standard 'self innovation' products and components realizable on demand	Measurement of the competitive advantage of every planned and realized solution based on the criteria of the B.M.	Realization of the executive design of the INNOMARKET

Figure 11. Infrastructural activities applied in the Cean case.

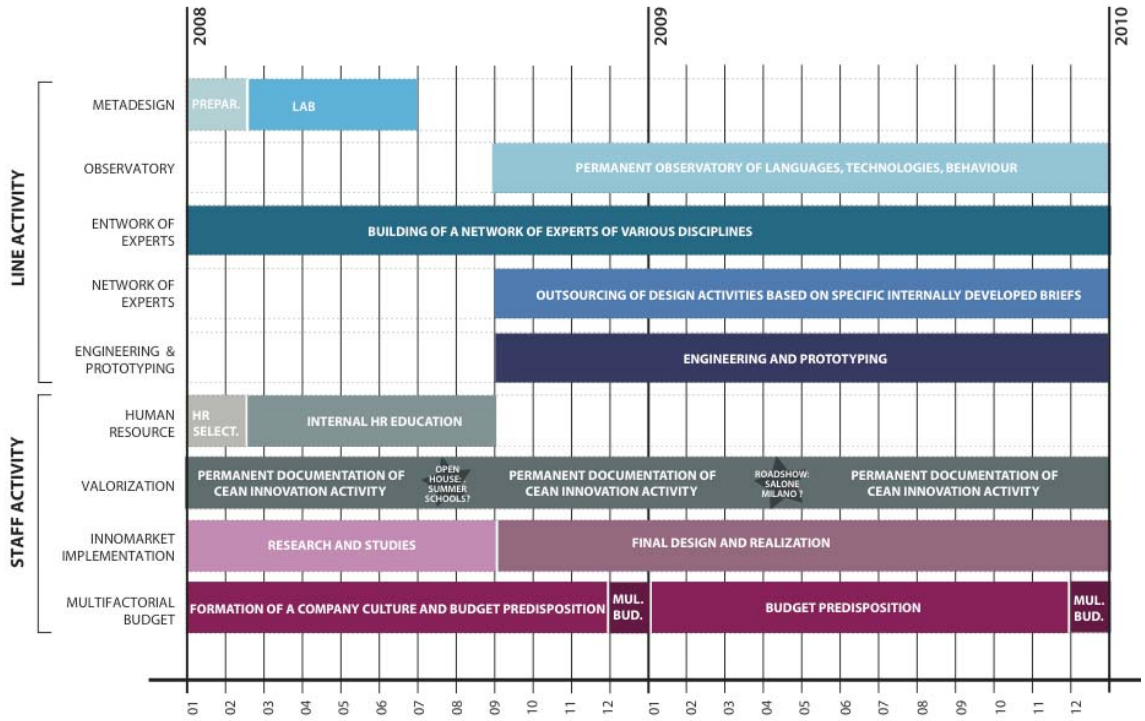

Figure 12. Gantt program of development of infrastructuring activities in the 24-month consulting period with Cean-Carrefour.

we support, is not only useful for or oriented toward obtaining design-oriented goods and services. It also appears to be necessary for the systematic revision of the processes shared by players in innovation who do not belong to the design system, but who can derive advantages from it. These benefits regard the innovative representation of the company's decision-making processes, the improvement of processes for involving innovation stakeholders, and the development of a kind of innovation that draws its inspiration from technology but is not a slave to it.

We believe that the future of innovation in many countries, especially those in southern Europe and Latin America, will have a design-driven rather than a technological matrix.

We call this awareness "design mediation", meaning the set of actions that use design skills not just to obtain products, but to improve innovation processes that are not necessarily driven by design.

References

BONOMI, A. 2006. *Lavorare comunicando nella ragnatela del valore. I giovani designer tra flussi e luoghi*. Bologna, Consorzio AASTER, p. 18-45.

CELASCHI, F.; DESERTI, A. 2007. *Design e innovazione*. Roma, Carocci, 148 p.

FLORIDA, R. 2002. *The Rise of the Creative Class.* New York, Basic Books, 434 p.

JAKUC, D. 2003. *Samsung Annual Report.* Seoul, Samsung Moonwha Printing Co., p. 17.

MICELLI, S.; FINOTTO, V. 2005. Il ruolo strategico del design nella competitività d'impresa. *In:* M. BETTIOL, S. MICELLI, *Design e creatività nel Made in Italy*. Milano, Bruno Mondadori, p. 3-131.

MONT, O. 2000. *Product-Service Systems. Swedish environmental protection agency.* Stockholm, AFR-Report 288.

PALMISANO, S. 2006. The globally integrated enterprise. *Foreign Affairs*, **85**(3):127-136.

RULLANI, E. 2004. *Economia della conoscenza. Creatività e valore nell'economia delle reti*. Roma, Carocci, 440 p.

WENGER, E. 1998. *Communities of Practice.* Cambridge, Cambridge University Press, 336 p.

THE DESIGN COUNCIL. 2007. *Eleven Lessons: Managing design in eleven global brands. Available at:* www.designcouncil.org.uk/elevenlessons, access on 22/06/2009, p. 3-18.

Submetido em: 15/04/2008
Aceito em: 27/07/2008