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PI – Definition, Principles, Methodology and Application

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Abstract. PI – Definition, Principle, Methodology and Application " clearly tells about the contents of paper, which defines meaningful product identity for corporate with concrete project which followed theoretical and practical preparation on PI building. PI project is composed mainly of three phases: informing, modelling and Transformation. Informing phase collects and analyses inputs, Modelling phase builds a pattern using keywords system reflecting a defined CI, while Transformation phase translates the working model into entities applicable to product features, which lead to a set of guidelines. Conclusion: we can build our product identity model on three levels: atmospheric, categorical and characterizing; And PI guidelines can benefit both in-house designers and project leader to orientate confidently and acquire efficiently their wished results representing definite corporate culture.

Keywords. PI (Product Identity), Identity model of 3 levels, Semiotics, PI Project

Introduction

Product Identity or PI was the object of my professional life for many years. During my project and managing work around the year 2000 at Huawei Technologies I promoted and pushed for a PI project there. By 2002 I had received support from the Bureau of Foreign Expertise of Shenzhen City and started an independent project called "Study and Application of Identity System for Technical Products". The resulting knowledge was applied to the Project "PI Planning and Design for HUAWEI Network Product Lines", which began in January 2005

1. Definition

PI is an abbreviation, and it may have different meanings. Let us first verify what is meant here. "P" may stand for several words, which all make sense. Only one is meant here, it is product. "I" stands here for Identity, meaning 1. state of being identical, absolute sameness, exact likeness. 2. who somebody is, what something is. [1] Then, there is Product Identity.The above explanation is to clarify our subject. I shall add that our subject is confined within the domain of products, about their identification, and identity; the products should be confined within the category of man-made products, not including architecture, but otherwise including all industrially produced objects.

Here is my observation of product context and its cultural relations inside a corporation.

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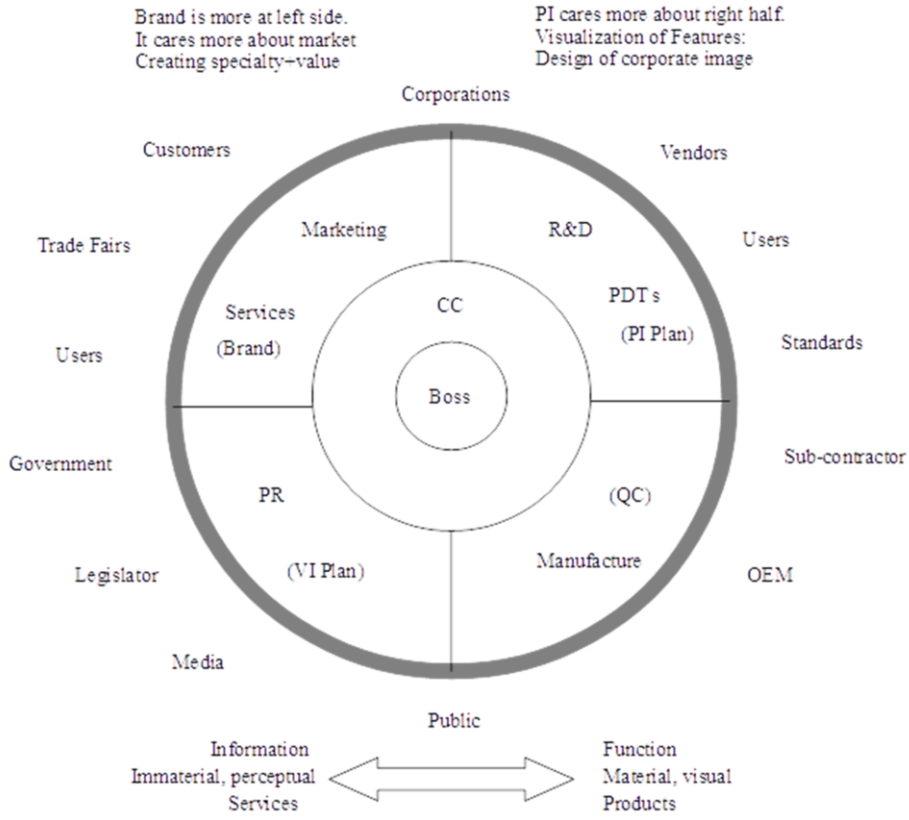

Figure 1. CC and Product Environment / PI in a Production System.

PI means the image of all products of a corporation; CI means the image a corporation builds purposely towards the public; and CC means the corporate culture, the common ideology of a corporation.

We can see from the above diagram Fig.1 that the production happens on the right half of the sphere, including R&D, and the Production Department. Among big companies, there are many where there is no identity-related design requirement, despite their IPD methods. Many a company are buying a lot of expensive foreign expertise, only to result in unidentified styles and product contradiction. The reason for this is simple: they have no clear definition of their own culture and no sense of a consistent design orientation for product teams to follow.

Since 1998 I have been aware of the problem and have been learning how to establish product characters in the process of design. The aim is to find a way to establish product identity as well as a pilot assistant in the design process. Leading a design team in Huawei, I studied the experiences of Philips, Samsung, and Sony, among others. The only thing very close to our objective was from LG: its CIPD, corporate identity through product design, for which we could only find a vague report. The conclusion was, we need to create our own tools and go along our own way. Now our task is clear: PI means building identity of a product group with corporate culture through design.

2. Principles

My objective was to effectively carry out a PI project within a major manufacturer. The expected results should include a process, the PI project, that will create the wanted product identity through planning, and that may be repeated successfully for different companies. By doing so we can finalize a set of product guidelines, helping designers do their work. There we need a method which will turn the metaphysics and concepts into material, forming a product media and thus communicating with the recipient. This set of rules will also help designers to orientate and find their product language quickly. In order to reach this goal, I developed my first concept to carry out the work.

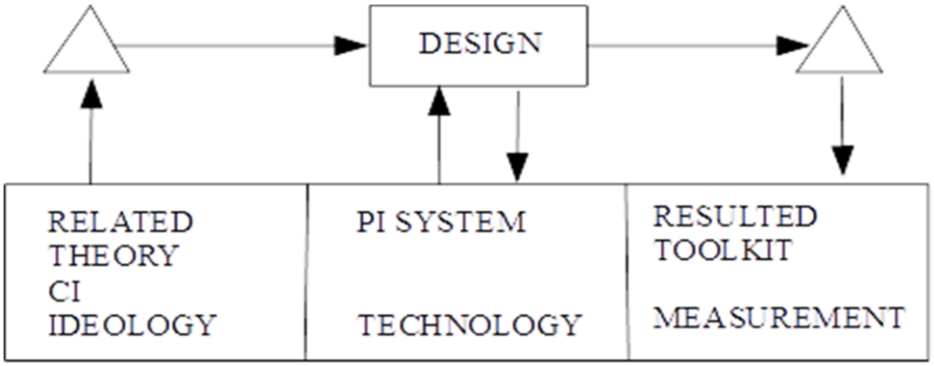

Figure 2. Concept of the PI project – how the PI system works with design.

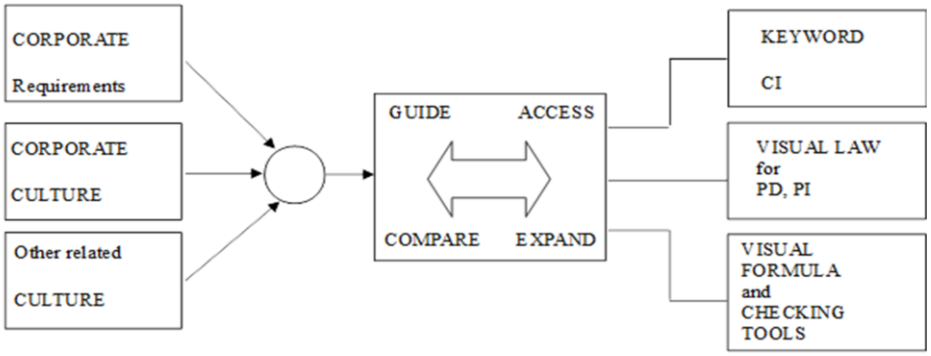

Figure 3. Concept of PI project – What the PI project will produce.

This diagram shows how the PI project works. The frame in the middle is a grey box which processes the inputs like corporate requirements and culture, and expands them to produce three things: a) a CI keyword model, b) a visual design guide, and c) visual regulations and tools for assessment. These three things serve individually at the beginning, middle and end phases of product design as a design tool kit. They also reflect the ideology, technology and checking function of a PI system.

In other words, the above two charts explain how the PI system enables design to create within the guidelines of corporate culture, together with the IPD management practice.

Here I need to mention that product-related visual communication existed long ago in product design, [2] but it was mainly restricted to functional expressions, creating functional product features related to their categories.

What we are doing is about the corporate culture and its expression via products. Here we treat the products as media or quiet symbols reflecting the culture of their mother corporation.

Based on human experience, perception is a process to learn about an object amidst a certain environment. Cognitive observation and psychological experiences tell me that there are three phases to go through, namely: 1. environmental atmosphere, 2. categorical recognition, 3. feature emergence. I explain as follows:

- Atmosphere: it is the first phase when we see a thing of which we do not yet have an impression in our mind. We see it from a distance, receiving information like darkness/brightness, colour range, rough contour; when amidst bright surroundings we see colour first, otherwise the contour or contrast is first. Regardless of whether it is bright or not, movement will catch our eyes immediately.

- Category: when an observer has gotten a first impression, he will look for a visual type that fits a category in his memory. This process can be short or long, depending on person and object. As for design objects it depends on how close the design is from its typical prototype in the category.

- Characters: this is where products excel or exaggerate in their visual language. These are the innovation points of visual designs and are difficult to master. Many designs lose sight of their objective in an attempt to be striking or exceptional. Here we absolutely need the characters of our client, not of designers.

According to perceptional theory [3] we know the short term memory of a human being is weak. (We can keep in mind about only 5 pieces of information after 30 seconds!) That is perhaps why our memory of atmosphere is longer: since this information came to us first and occupied the memory quickly. And for the human sensitivity to colour and movement, we should thank our ancestors for their abilities to react to natural signals and to avoid acute dangers.

After comparison of perceptional psychology and semiotic theory [4][5]I have determined the following relationships:

- Icons have visual directness and can be used to denote characters and visual excellence.

- Index signs can better organize objects into categories and build order.

- Symbols can represent atmosphere and letters are able to describe all situations.

Back to the identity of industrially made products, we verify their semiotic tasks as follows:

A. to represent a comprehensive image of corporate culture and ideology, conforming to given descriptions;

B. to express the visual language telling about product function and system purposes correctly and clearly;

C. to display visually added features of the product lines related to the given product strategy properly.

At last, we have the principle of our PI project. Our task is to import information about corporate culture and product identity into a processor, where PI intelligence leads a process to calculate and work out a set of rules. This set of rules is a series of guidelines, including direction, definitions, and visual references.

3. Methodology

The major challenge of this project is that there are no existing methods to follow. After I did preparatory studies and created the diagrams, my goals became clearer. They are:

a) to understand the corporate culture, and find its definitions

To do this we need our client, sometimes higher level officials in the company to be involved. Without support from all levels, the PI project can never begin. Not all bosses and managers will support it, although they might all agree to the importance of R&D. My recipe for success is to persist in proposing, and improve my proposals.

b) to operate sign transformation, keeping the definition complete and true

Semiotic theory is difficult to explain and apply. For PI purposes, our model of three levels is very helpful: 1 - atmosphere, 2 - category, 3 - characters.

In the perceptional process we move from image to meanings, but in design the process is reversed.

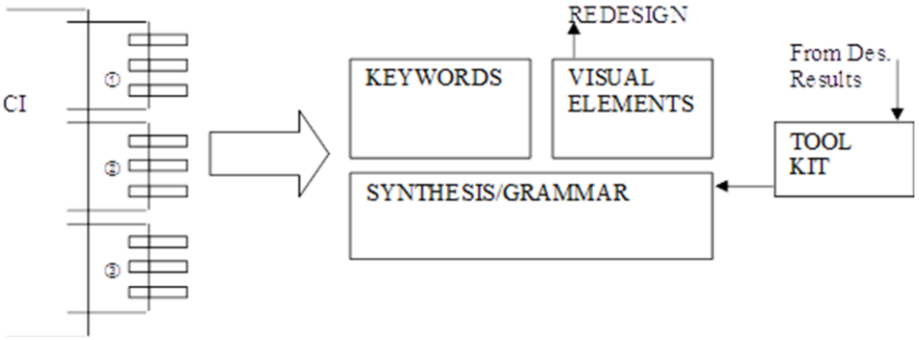

Figure 4. Developing technology for PI project – how does the grey box work.

The above diagram makes it clear. The grey box is composed of three modules: keyword module, visual element module are static, representing input and output of the design process, while the synthesis/grammar module is dynamic and a linking part.

This model is ideal, but it is not a design process, for design decisions can be irrational and are not made automatically by rules. The function of the modules is to give effective suggestions through pairing concept, element and situations.

c) c) to work out an executable plan to persuade future client to accept the project proposal. This is the most helpful thing in a proposal: to let the client know the process in detail. I have made many proposals, and this period lasted a few years before our first PI project finally was allowed to proceed.

3.1. Conceptual Project Procedure

Phase 1 – Ideals

- Researching: CC, CI, CP, related information
- Reflecting: Design requirements, Ideology expression

- Briefing: design policy, ideology recognition
- Follow-up: ideology analysis, semantic organization, re-expression, keywords

Phase 2 – Technology

- Resuming: conclusions, focus allocation
- Developing: semantic method, keyword structure, form-implication method
- Studying: product structure, product line definition, product composition, feature construction, product relationship map, semantic evaluation method

Phase 3 – Tools

- Developing: design pilot, keyword-imaging, 3-level semantic method
- Applying: typical design series, evaluating, modification, finalizing
- Presentation: final approval/end of project

4. Application

The research project "Study and Application of Identity System for Technical Products" was mainly aimed at the company Huawei Technologies, which was my closest partner and client. The relationship dates back to 1997 when I first visited its design department, and by 1998 I had started my work there leading a project.

The preparation of the PI project has been in progress for a long time. I began the idea when I was working on training the Huawei design team and learning international management experiences, together with the young in-house designers.

Inside the company, designers' consciousness to identity was rising. By mid-2000 there was a report by a designer on the product images of the existing products of Huawei with an analysis.

However, I spent over four years proposing, beginning in 2000.

The Huawei PI project was the project with the longest preparation time in my life. This also explains why we made it in two parts and not three phases as initially planned, as the phase one job was largely done before the project started.

Here is the project plan (simplified):

4.1. Part I PREPARATION – DEFINITION – JUDGEMENT

- Phase 1: Project research and information preparation (partly finished);
- Phase 2: Ideology, reality and identity modelling, in keyword/structure;
- Phase 3: Product system analysis/Industrial design re-orientation;

The output of part I was the description of Huawei culture, model of keyword-structure, etc. This part was done successfully by the end of 2005.

4.2. Part II PLANNING – CONCEPTION – APPLICATION

- Phase 4: PI method developing, Keyword model transformation;
- Phase 5: Conception design of typical products, using PI model, guidelines;
- Phase 6: Project output, assessment meeting, and approval.

This was mainly a transformation process where the model in words was turned into visual languages. This was a process full of assessment meetings and starting all over again. Guided by our model and methods our team developed several sets of product concepts.

The Huawei PI project, after almost 3 years hard work, was successfully handed over to the client by our team. The final output: typical concept design (as a 1:1 model), and PI Design Handbook / Guidelines (paper + digital).

The project was handed over to Huawei System Engineering in November 2007. The feedback of the PI results came to me much later. In fact, product design has since then been following the direction and criteria set by PI. The work design was greatly facilitated and time saved. The identity definition was shared by all product lines of the company without exception until 2014 when a new product line was introduced. Ultimately, the success of PI owed considerably to the timing of introduction. Huawei was already influential in technology and management during that period.

At the final presentation I concluded my keywords to Three Layers of Information in Design as follows,

- Layer 1: basic tone / orientating / perceptual
- Layer 2: category / semantic / rational
- Layer 3: characters / semiotic / dual (perceptual and rational)

Throughout our project, PI covers all three layers of information; but CI related guidelines only involve layer 1 and 3, the basic tone and characters. Category is given in our PI as network equipment and solved in a functional semantic way.

Acknowledgement

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