Designing for the satisfaction of high-level needs

Introducing the Ideation Need Mapping (INM) methodology

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Abstract

Purpose – The purpose of this paper is to introduce a methodology that can support the process of understanding and designing for the satisfaction of high-level needs in practice. The satisfaction of high-level needs has seldom been in focus when it comes to customer satisfaction surveys or the process of new product or service development. However, needs do occur on various levels, and the satisfaction of high-level needs actually appears to have the greatest potential for the creation of loyalty among customers and customer satisfaction. The satisfaction of high-level needs has furthermore been pointed out as a strategy for the creation of attractive quality.
Design/methodology/approach – The paper is based on literature studies and the application of the Ideation Need Mapping (INM) methodology in a specific case.
Findings – The paper presents the INM methodology that could be used for guiding product and service innovation in practice. More specifically, the methodology supports the process of understanding and designing for the satisfaction of high-level needs.
Originality/value – This paper aims to contribute to envisioning and demonstrating how the understanding of, and design for, satisfaction of high-level needs can be done in practice.
Keywords Product development, Customer value, Quality management, Customer focus, High-level needs, Ideation need mapping
Paper type Research paper

1. Introduction – the potential of meeting high-level needs

Developing a deep understanding of customer needs is consequently stressed as a critical part of product or service development in general (Henard and Szymanski, 2001; von Hippel and Katz, 2002; Rejeb *et al.*, 2011; Bohlmann *et al.*, 2013). However, when it comes to practice, von Hippel (2005) concludes that understanding customers' needs has often proven to be a costly and inexact process. The current praxis appears to be in need of further development as conventional market research techniques, such as surveys or focus groups, is criticized as inadequate when it comes to identifying need information (von Hippel and Katz, 2002). One reason is that needs could be of very different nature. More specifically, needs do occur on various levels, as illustrated in the need hierarchy introduced by Maslow (1943, 1954, 1999), where some needs are more apparent and connected to physiological needs, such as hunger and avoidance of pain, while other needs seem to occur on a higher level and relate to an often unexpressed striving for goals such as self-actualization, belonging and self-esteem.

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When it comes to bringing understanding of these various levels of needs into practice, the current methodologies and tools for customer surveys are generally limited to the low-level needs (Woodruff, 1997). The same seemingly goes for the specific tools and methodologies advocated within quality management such as quality function deployment (QFD) and failure mode and effect analysis. Within the field of marketing, where high-level needs appear to be discussed a great deal today, two related methodologies with the ambition and potential to actually touch upon high-level needs can be found, in terms of the means-end hierarchy (Oliver, 2010) and the attribute-value-mapping (Goldenberg *et al.*, 2009). However, both suffer from being a support for finding out if there might be any connections between an existing product/service and the satisfaction of high-level needs rather than being a support for designing and innovating new products and services with the satisfaction of high-level needs as an ambition.

This becomes problematic for several reasons. The satisfaction of high-level needs, rather than lower level needs, actually appears to have the greatest potential for the creation of high loyalty among customers (Söderlund, 2001). Furthermore, a deep understanding of customer needs, and especially high-level needs, has the potential of being a strong driver of innovation during product development and design. Finally, Lilja and Wiklund (2007) highlighted the satisfaction of high-level needs as a strategy for the successful creation of attractive quality, in terms of strong positive customer affect and emotions such as delight.

From a service or product development perspective, understanding needs is not enough. The tricky part is to figure out how to most effectively meet, or even exceed them by various service and product attributes. This paper aims to introduce a methodology that can support the actual designing of attributes for the satisfaction of high-level needs in practice. The methodology is called "Ideation Need Mapping" (INM).

2. The concept of high-level needs
When aiming to meet high-level needs, you need to start by understanding the concept in more detail. A literature review was carried out, to find different descriptions and definitions of high-level needs and methodologies dealing with needs in product development. The literature review included books found in university libraries and research papers found in the scopus database.

As stated by Gebauer *et al.* (2011), customer needs seem to evolve into a complex system involving a high level of integration of single customer requirements. According to Hoyer and Macinnis (2008) needs can be categorized according to whether they are social and non-social, functional, symbolic or hedonic in nature. Oliver (2010) points out that there are inconsistence results found in both the job and consumer satisfaction literatures on need satisfaction. This has prompted writers to attempt to reconcile the various need theories proposed in the literature with the somewhat inconsistent findings (Oliver, 2010). As a result, a further exploration of the diverse meanings of needs is therefore of interest, in order to be able to support the satisfaction of high-level needs during new product and service innovation.

High-level needs in psychology
The concept of high-level needs originates from psychology and motivational research and the well-known need hierarchy that was introduced by Maslow (1943, 1954, 1999).

Needs are here arranged in a hierarchy where higher order needs cannot be activated unless lower order needs are fulfilled.

According to Maslow (1943, 1954, 1999) the physiological needs, seen at the lowest level, represent the most essential and basic ones, such as to have enough food, water or air to survive. Safety needs are then placed on the second level. These represent needs to be safe from physical and psychological harm. On the third-level love needs are placed. These refer to needs for affection and belonging. Esteem needs are placed on the second highest level and represents needs for appreciation and confidence. These contain needs for reputation, prestige and recognition from others. The highest level of needs is related to self-actualization. Maslow's need hierarchy has been criticized in many ways during the years, for example for being hard to use and apply in practice (Alderfer, 1969). It has also been discussed whether all individuals have the same hierarchy of needs, and if all levels are relevant to everyone. Moreover, Maslow's need hierarchy has been criticized for its unclear distinction between needs, desires and values (Oliver, 2010).

As a refinement Alderfer (1969) presents the E.R.G. theory. It is based on a threefold conceptualization including existence, relatedness and growth needs. Furthermore, while Maslow's need hierarchy suggests that one need level should be met before the next level could be of importance, the E.R.G. theory does not assume lower-level satisfaction as a prerequisite for the emergence of higher-order needs.

Oliver (2010) also presents a refinement for practice by dividing the needs into three main categories (or satisfier categories). These are named bivalent satisfiers, monovalent dissatisfiers and monovalent satisfiers. According to Oliver (2010) what the product has will then operate at a lower-level and what the consumer gets will operate on a higher-level. The highest level is represented by the monovalent satisfiers that Oliver defines as "psychological extras". According to Oliver (2010) these are primarily used for advertising purposes, rather than in product development, and do not appear in complaint communications.

High-level needs in marketing
Söderlund (2001) states that needs can be categorized in low, middle and high levels. The low level is then represented by product attributes. Needs on the middle level refers to consequences of these product attributes and the needs on the high level are the underlying objectives that the customers want to achieve. The high-level needs could with this definition include, for example, luck, friendship or a meaningful life (Söderlund, 2001).

Furthermore, Antonides and van Raaij (1998) define a need as the lack of something necessary for survival or well-being. With this definition, high-level needs could be defined as needs that are related specifically to well-being, while low-level needs are related to survival.

3. Searching among existing methodologies
In order to work more systemically and successfully with high-level needs during product and service innovation there is a need for hands-on support in terms of effective and efficient tools and methodologies. However, most of the existing tools within the field of product and service innovation do not address high-level needs at all, and only a couple appears to address the connection between high-level needs and product or service attributes in specific.

One example of an existing methodology is the QFD that frequently is presented as a methodology to handle customer needs in product development (e.g. Chan and Wu, 2002). QFD, and its first matrix "House of quality", supports the relating of product attributes to customer requirements. However, it does not support the notion that customer requirements can be seen as being driven by a hierarchy of needs with the consequence that it typically becomes limited to customer needs on the middle and low levels when applied in practice.

Within the field of marketing, where high-level needs appear to be frequently discussed today, two related methodologies with the ambition and potential to actually touch upon high-level needs can be found, in terms of the means-end hierarchy (Oliver, 2010) and the attribute-value-mapping (Goldenberg *et al.*, 2009). However, both suffer from being a support for finding out if there might be any connections between an existing product/service and the satisfaction of high-level needs rather than being a support for designing and innovating new products and services with the satisfaction of high-level needs as an ambition. These characteristics are natural as marketers apply these methodologies in search of an improved understanding of an existing offer, and with the aim to find the most appropriate "value" or "need satisfaction" for communication in marketing campaigns.

When taking a closer look, the basic procedure in both these methodologies is to start with the existing attributes in the product or service and then ask "What does this have to offer the customer?" in order to try to elaborate the understanding of the needs that the product or service actually meets. This is illustrated in the attribute-value map starting from the bottom as seen in Figure 1.

Another example is the means-end chain (e.g. Edvardsson *et al.*, 2000; Oliver, 2010). Both these methodologies provide strong support for identifying how existing
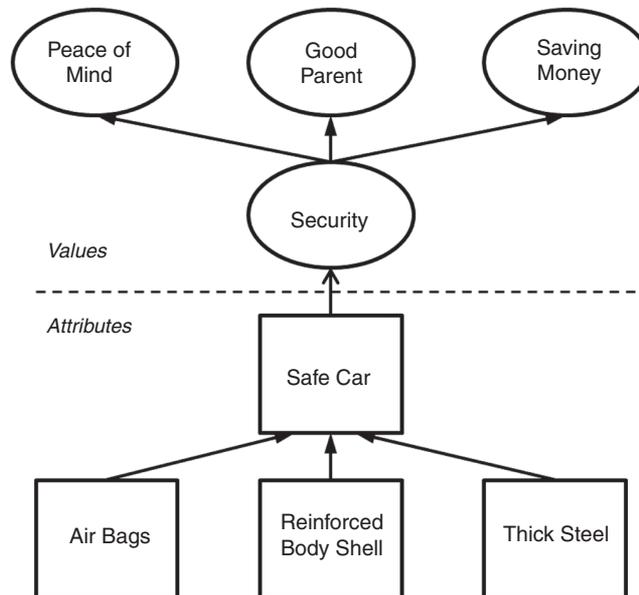

Figure 1.
Example of the attribute-value map for a car

Source: Modified from Goldenberg *et al.* (2009)

attributes connect with higher levels of customer needs or values. However, when it comes to supporting the innovating or designing of new products and services, that is to move from the right to the left in the means-end chain, or to move from the top towards the bottom in the attribute-vale map, the support is much weaker.

Goldenberg *et al.* (2009) mention the ability to move in that direction when it comes to the methodology of attribute-value-mapping. However, the only hands-on support provided is then the asking of the question "how?" which for a designer immediately brings up the attendant question of "how what?". If we are to move from a need or a value to find the right attributes, what are the actual high-level needs or values that could be of interest to start from? Where do we start?

There is hence a need for developing and improving the existing methodologies in order to improve the support for the design of high-level need satisfaction in practice. More specifically a designer needs better support for moving downwards in the hierarchy. A designer needs more specific, and explicit, "design questions" to facilitate such a movement in practice.

4. Finding design questions for hands-on support

As said, Goldenberg *et al.* (2009) provide some support for moving downwards in the attribute-value-mapping by the asking of the design question "how?" which for a designer immediately rises the attendant question of "how what?". If we are to move from a need or a value to find the right attributes, what are the actual high-level needs or values that could be of interest to start from? Where do we start? How what?

In attempting to provide an answer to that question, in terms of more elaborated design questions specifically related to high-level needs, we have been screening literature for the various descriptions of high-level needs and "translated" those descriptions into hands-on support in terms of proposed design questions. Questions that enlarge the question of "How?" with aspects that corresponds to the descriptions of high-level needs found in literature, as seen in Table I (a) and (b). The concept of high-level needs originates from Maslow (1943) and the original definition, descriptions and proposed design questions towards them are summarized in Table I (a). Some later refinements and alternative descriptions of needs processed on a higher level are further summarized in Table I (b), showing a proposal of some alternative or complementary design questions. Note that Table I (b) not is intended to be a complete list of all existing related concepts.

The suggested design questions can then be used as hands-on support in the process of innovating and designing new products and services as seen in the section below, describing and exemplifying the methodology of INM.

5. Introducing INM

INM is a methodology aimed to provide hands-on support during the innovation and design of new services and products. It provides means and support for going from the common ambition of "customer focus" towards systematic innovation and design with the customers' needs truly in focus. This ambition is shared with some existing tools and methodologies applied within quality management such as QFD. However, INM provides means and support beyond the existing praxis by not only considering and meeting the most obvious, lower-level needs of the customers, but the less obvious higher-level needs that have often been shown to be the strongest drivers of customer motivation and satisfaction. As seen in Figure 2, three main levels of needs are included in the INM methodology.

Source Definition of needs that are processed on the high level, as understood by the authors	Further description Description providing a deeper understanding	Proposed translation or interpretation into Design questions Design questions that could guide the hands-on design
(a) *Maslow (1943)* Self-actualization	"[…] the desire to become more and more what one is, to become everything that one is capable of becoming" p. 382	*HOW* can we meet the user's need for self-fulfillment? *HOW* can we support the user's desire to: 　Become more and more what one is? 　Become everything that one is capable of becoming?
Esteem	"[…] the desire for strength, for achievement, for adequacy, for confidence in the face of the world, and for independence and freedom" p. 381. "[…] the desire for reputation and prestige, recognition, attention, importance or appreciation" p. 382	*HOW* can we meet the user's need for esteem? *HOW* can we meet the user's desire for: 　Strength? 　Achievement? 　Adequacy? 　Confidence in the face of the world? 　Independence and freedom? 　Reputation? 　Prestige? 　Recognition? 　Attention? 　Importance? 　Appreciation?
Love	"[…] now the person will feel keenly, as never before, the absence of friends, or a sweetheart, or a wife, or children" p. 381	*HOW* can we meet the user's need for love? *HOW* can we meet the user's felt absence of: 　Friends? 　A partner? 　Children?
(b) *Alderfer (1969)* Relatedness needs	"[…] include all the needs which involve relationships with significant other people" p. 146	*HOW* can we meet the user's need for relatedness? *HOW* can we meet the user's need for relationships with significant other people?
Growth needs	"[…] include all the needs which involve a person making creative or productive effects on himself and the environment" p. 146	*HOW* can we meet the user's need for growth? *HOW* can we meet the user's need to have creative or productive effects on: 　Himself? 　The environment?

Table I.
Definitions and descriptions of high-level needs and proposal of corresponding design questions

(continued)

| Source Definition of needs that are processed on the high level, as understood by the authors	Further description Description providing a deeper understanding	Proposed translation or interpretation into Design questions Design questions that could guide the hands-on design
Rokeach (1973) Value	"[…] an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" p. 54	*HOW* can we help the user to live in accordance with his/her set of values? *HOW* can we help the user to reach the specific mode of conduct or end-state of existence that the user finds personally or socially preferable?
Oliver (2010) Monovalent satisfiers	"[…] higher-level needs provide a different type of satisfaction, one with motivating properties" p. 155 "[…] in consumer behaviour, motivation might be redefined as enthusiasm" p. 155	*HOW* can we provide motivating properties to the user? *HOW* can we make the user more enthusiastic? Could we make the customer more enthusiastic?

Table I.
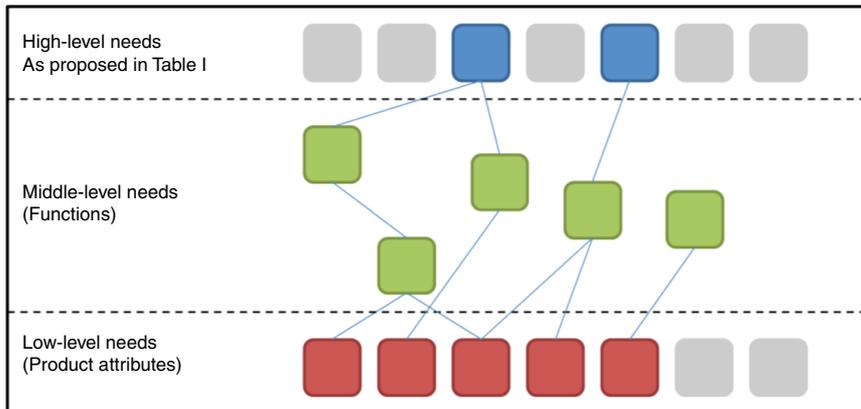
Figure 2.
Principal graphical
layout of Ideation
Need-Mapping (INM)

In the bottom low-level needs or "product attributes" are placed. These are functional or non-functional properties of the product or service and correspond to "attributes" in the attribute-value-mapping methodology (Goldenberg *et al.*, 2009). Above them, you find the middle-level needs that typically refer to the direct and obvious functionality delivered by the specific attribute of interest. At the top, you then find the needs of specific interest to the INM methodology, the high-level needs. Ideally, some attributes and functionalities of the service or product succeed in relating also to this highest

level, in terms of relating to needs that when fulfilled provides the user with a higher meaning and a different, strong type of satisfaction with motivating properties.

6. Two ways of using INM in practice

When applying INM you use a principal graphical layout or "map" similar to attribute-value-mapping (Goldenberg *et al.*, 2009), see Figure 2. That means, you put the attributes at the bottom and then map various values or the satisfaction of various needs in the top. However, with INM you become able to develop the map both higher; in terms of elaborating more accurately on the high-level needs satisfied, as well as being able to develop the map more downwards; in terms of ideating alternative attributes more accurately, with the guidance of the INM design questions, seen in Table I (a) and (b). These two basic ways of using INM are described and exemplified further below.

Bottom-up: understanding the needs we satisfy today

When moving bottom-up in the INM you basically use it in the same way as attribute-value-mapping is commonly used today. You start from the existing attributes of a service or product and then try to develop the map in order to increase the understanding of the relationship between those attributes and other attributes as well as the value created for the customer. What INM contributes with during such a usage is an increased ability to find connections to high-level needs. By asking the design questions found in Table I (a) and (b), the designer or marketer becomes more likely to identify all the possible connections to high-level needs in the existing offer. To give an example, with the guidance of the INM and its design questions the designer or marketer can more easily understand that a waterproof pocket in a ski-jacket not only fulfils functional needs in terms of keeping the mobile phone dry and functioning, it actually also relates to a critical high-level need in terms of the need for esteem and freedom. By asking the question "So what?" repeatedly the INM map successively expands upwards as seen in Figure 3.

Starting with identifying and mapping the most apparent function or need satisfied by a water-proof pocket in the ski-jacket in terms of "I can keep my mobile phone dry and functioning". By then asking "So what?" again, the designer is forced to go deeper, or higher, into the actual needs satisfied, possibly identifying and mapping
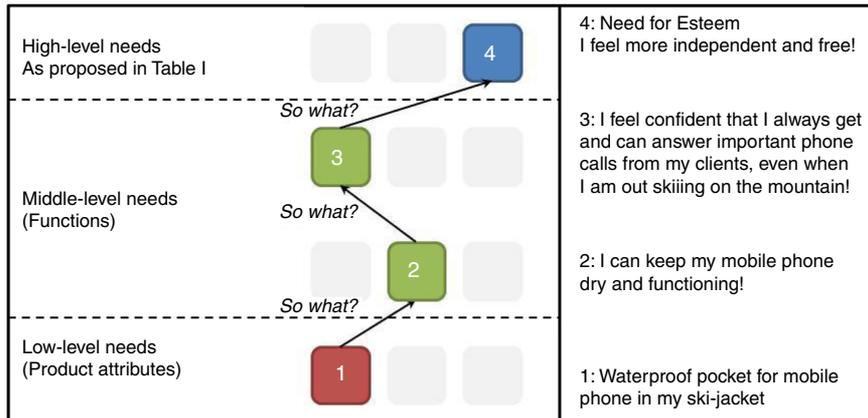

Figure 3.
Bottom-up example of INM mapping the kind of needs met by a waterproof pocket for mobile phones in a ski-jacket

them out. For example, that when I, as a user, know my mobile phone is dry and functioning, "I feel confident that I always receive and can answer important phone calls from my clients, even when I am out skiing on the mountain". Eventually, by asking "So what?" repeatedly, and with the guidance of the INM design questions seen in Table I (a) and (b), the designer will hopefully be able to reach the very top of the map, in terms of relating to a high-level need, in the figure seen as the need for esteem. In sum, the INM mapping procedure has identified that a waterproof pocket is more than just another pointless detail on the ski-jacket, it can actually strongly connect with and contribute to the customers' high-level need for esteem, for the need to feel independent and free. This connection can be of high value for the design of the most efficient marketing campaign or customer-focused decision making during the development process.

Top-down: innovating for higher customer value
When instead moving top-down, the INM provides a unique support for the innovation of new attributes that could create high and relevant value for the customer in the future. Typically, the designer then starts within an existing product category or service category, be it, for example outdoor backpacks or hostels. You then "attack" the product or service category at focus with one or several of the INM design questions, seen in Table I (a) and (b), in search for new ways to connect to and satisfy high-level needs. To give an example, with guidance of the INM and its design questions the designer or marketer can innovate and ideate new attributes for a backpack more easily. For instance by attacking the backpack with the INM design question "How can we meet the user's desire for achievement?" as seen in Figure 4. This design question is very likely to inspire and lead the ideation towards new product attributes such as an inbuilt GPS and load scale that provide data concerning achievement in terms of instant information about the energy consumed by the hiker. Another idea that could come up is to provide unique electronic "tags" for each
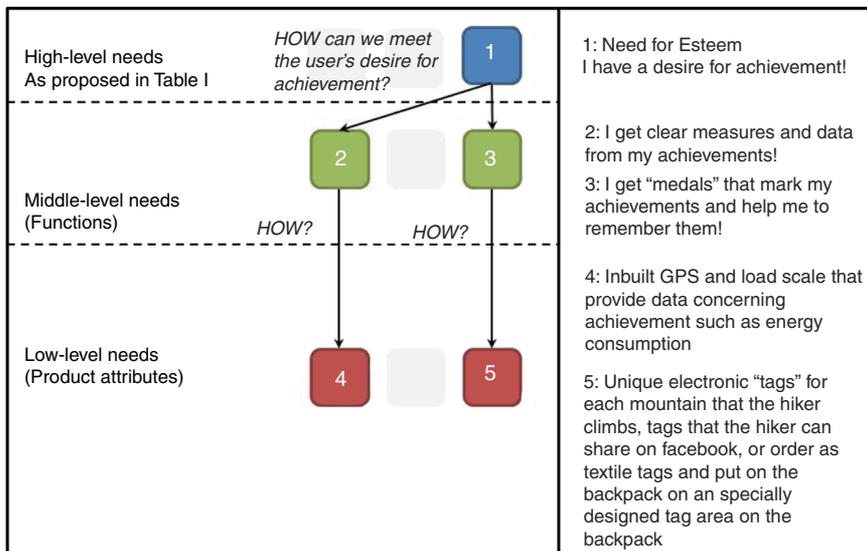

Figure 4.
Top down example of INM mapping ideas for new attributes concerning a backpack starting from the INM design question "How can we meet the user's desire for achievement?"

mountain that the hiker climbs, tags that the hiker then easily can share with friends on Facebook, or even order as textile tags and put on the backpack on a specially designed tag area on the backpack.

7. Discussion and conclusions

The importance of meeting, or even exceeding, customer needs is a major factor in product development. Research has consistently shown that products and services must accurately respond to user needs if they are to succeed in the marketplace (von Hippel and Katz, 2002). This is now widely accepted in the context of service and product innovation and development. However, the fact that needs are of various kinds and occur on various levels, is not widely acknowledged or incorporated in current practice. We believe this is an area with great potential for development and improvement, particularly in the area of methodologies to support design for the satisfaction of high-level needs.

What really marks this potential is that high-level needs rather than lower level needs, appear to have the greatest potential for the creation of strong loyalty among customers (Söderlund, 2001). Another reason is that Lilja and Wiklund (2007) highlighted the satisfaction of high-level needs as a strategy for the successful creation of attractive quality, in terms of strong positive customer affect and emotions such as delight. In sum, products and services that are able to relate strongly to the customer's high-level needs would seem to be the winners of tomorrow.

By introducing the INM methodology we hope to contribute with a first step in this direction, towards a hands-on support for designing for the satisfaction of high-level needs in practice.

We believe that the INM incorporates the strengths of current best practice by the principal graphical layout or "map" from attribute-value-mapping (Goldenberg *et al.*, 2009). Furthermore, we believe that INM adds an important additional value and development to this practice by the INM design questions. What the design questions add to current practice is the ability to move more accurately downwards during mapping, to move top-down. Such a movement corresponds to the critical activities of innovation and ideation.

The design questions also give guidance for further understanding of customers and users during the design process raising attendant questions such as what are the actual dreams of our users? What are the personal values of our users? Who are the significant other people for our user?

Further research will be focused on testing, validating and improving the INM methodology by practical application in new service and product development projects.

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