

# Capturing Visions and Goals to Inform Communication Design

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## ABSTRACT

Current requirements analysis methodologies for web applications fail to capture important elements of the requirements picture. On the one hand, there is the need for modelling the assumptions of a stakeholder which dictate her “weltanschauung” on the design (we call these “visions”). From properly eliciting stakeholder visions, important goals and requirements for the design may arise. On the other hand, we also need to better understand the emotional, psychological, social or individual elements which can trigger a person to use an interactive application (we call these “user motivations”). User motivations – properly combined with stakeholder visions – are key to derive a sound set of user requirements. This paper extends existing achievements in goal-based requirements analysis for communication-intensive web applications by introducing the concepts of vision and user motivation. These new elements provide web analysts and designers with a methodological support to interpret and carry out requirements analysis in complex situations. A case study excerpted from a real web design project is used to show possible uses of the concepts discussed.

## Categories and Subject Descriptors

H.4.3 [Information Systems Applications]: Communications Applications – *Internet*; H.5.4 [Information Interfaces and Presentation]: Hypertext/Hypermedia – *user issues*.

## General Terms

Design, Documentation

## Keywords

Requirements analysis, web and hypermedia design, visions, goals, stakeholder.

## 1. INTRODUCTION

In web application development projects, one of the recurrent elicitation questions we make to main stakeholders is: “What do

you want to achieve by having a new website?”, or “What benefits do you expect to gain from this site?”.

Among the wide range of possible types of answers, some stakeholders do not seem to understand the question and thus start describing how they would like their website to be (very easy to use, pleasant interface, and so on...). Among the stakeholders who try to reflect in-depth on the question, some of them recount the actual purpose for their website, not necessarily in terms of their goals but in terms of what the users can do with it. At this point, analysts should make the stakeholder reflect on how a satisfactory user experience may bring benefits to his/her institution or organization.

How can a stakeholder tackle these issues? What are his/her answers based upon? What drives the stakeholder to answer in a way or the other? The goals and expectations of the stakeholder implicitly rely on a set of assumptions. These assumptions are based on the domain knowledge of the stakeholder, whose business and communication strategy (with or without a website) guides him/her in the maze of challenges posed by that specific domain. Thanks to her experience in the domain, the actions and beliefs of a stakeholder are based on a vision, which is the driving factor for the competitive advantage of the stakeholder in that domain and for him/her survival. This vision is a certain way of conceiving the market, the competitors, the mission of the institution/organization, and also the communication strategy through an interactive application such a website.

Passing from the viewpoint of the main stakeholders (who will own the application) to the one of the end users, we have to wonder what the user might want to do on the website. In other words, we need to document possible scenarios in which users make use of that application in a certain way to accomplish some tasks (e.g. to buy a book, to find a telephone number, to understand the company’s offer, and so on). These user goals are described and detailed, in terms of actions the user will be able to accomplish through the site. In this context, we need to investigate what might generate those goals, what is the underlying motivation, the intentional and social context that might trigger in the user the action of coming and visiting that specific website to accomplish a given goal.

It is clear that these crucial elements that we just sketched (stakeholder’s visions and their goals on one side and user motivation and user goals on the other) have to interact and be properly combined in order to deliver successful application designs. If stakeholders do not consider the motivations of their

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SIGDOC’05, September 21–23, 2005, Coventry, United Kingdom.  
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users, the business and communication goals of the site (which are highly dependent on how the user will behave) may not ever succeed. How to represent and take into account these aspects during requirements analysis for interactive (web) applications? Trying to answer to these questions, this paper extends existing achievements in goal-based requirements analysis for web applications (in particularly the AWARE model) by introducing the concepts of vision and user motivation. Through a case study of a cultural-heritage website, these new elements are used in combination and contextualized into a known set of conceptual tools, such as stakeholder, goal, user profile, domain knowledge, and scenario, so to provide web analysts and designers with a methodological suite to interpret and carry out requirements analysis in complex situations.

The paper is organized as follows. Section 2 recalls the basics of the AWARE model for requirements analysis of communication-intensive interactive application, highlighting the room for methodological improvement which is addressed by the proposal of the paper. Section 3 introduces the element of stakeholder's vision and user motivation exemplifying them through a case study. Section 4 reports and discusses excerpts from requirements analysis documentation produced thanks to a simple graphical notation. Section 5 wraps up the proposal in its key elements and section 6 provides an input for future research.

## 2. RELATED WORK

The main contribution of this paper represents a substantial enhancement of the AWARE (Analysis of Web Application Requirements) method [1].

AWARE is a goal-oriented requirements analysis method particularly suitable for the development of web and communication-intensive interactive applications. It may be used by analysts and designers to deliver web applications, which strive a healthy balance between the achievement of the communication objectives of the stakeholders and the delivery of a satisfactory user experience. AWARE enables to define the different user profiles of the site, taking into account their characteristics, as well as their goals, tasks and expectations with respect to the site-to-be. Clients and main stakeholders involved in the analysis process are also properly considered, as the impact of their goals on the design of the user experience is specified. To manage the transition between high-level user users' and main stakeholders' goals to website requirements, AWARE adopts a goal refinement techniques, typical of goal-oriented requirements engineering frameworks such as i\* [2] and KAOS [3].

Unlike these methods, AWARE introduces a hypermedia taxonomy to document and organize the requirements set according to the different design aspects of the web application and to facilitate the transition to web conceptual design. So far, AWARE provides a set of concept (stakeholder, goal, scenario, requirement, and requirements dimension) whose meaning is specified according to the specific needs of web and hypermedia projects. Moreover, the method offers a simple notation to support analysis and documentation of goal-oriented requirements for web development. Among the benefits of AWARE, we should note the following: (i) it facilitates analysts in mastering the big picture of the requirements analysis for web projects, enhancing the communication and negotiation with the stakeholders; (ii) analysts have the opportunity

to reflect on the goals of the different stakeholders (and not only the users), which an aspect often neglected by solely user-centric techniques, such as task analysis [7].

According to the recent project experience gained in web application development, the major limits of the method include the following: (a) AWARE notation is rigidly based on goal graphs and refinement trees, which are not the only way of reasoning about requirements; more flexible and brainstorming-oriented notion tools are needed the support creative generation of requirements for websites; (b) the generic goals of the project are not distinguished from the business/communication vision of the stakeholder in his/her domain; (c) user goals are considered completely detached from the goals of the main stakeholders and none of the AWARE conceptual tools make these two worlds interact during analysis; (d) The elements introduced in this paper are intended to be a first step to overcome these limitations of AWARE.

## 3. SETTING THE ELEMENTS THROUGH A CASE STUDY

The case study concerns the development of the web site for the "Munch und Berlin" exhibition [5] at the Berlin State Museum in Germany ("Staatliche Museen zu Berlin"). The exhibition hosted Munch's prints and drawings and took place from April the 12th to July the 13th 2004. The website for the exhibition has been developed as part of the HELP project (partially funded by the European Commission) and included an innovative aspect: the development of design solutions enabling overcoming most of the accessibility problems experienced by visually impaired users using the web (going far beyond current standard of accessibility). For this aspect we remind the reader to other related publications [6].

The requirements analysis activity has been performed partially during the project and partially after the publication of the website. During the design process, the analysis has taken into account the curator of the exhibition as main stakeholder, eliciting its visions about the application and the strategic goals of the site.

Some of the findings resulting from this work draw on common concepts shared by various techniques in HCI, usability engineering and product design. In particular, the notions of stakeholder (business) visions and user goals (although expressed in different ways) are accepted by many user-centered design approaches as the basis to inform the design of the user experience. In this work, we try to bridge the gap between these common concepts and more structured methods common to the requirements engineering and web design community.

### 3.1 Stakeholder's visions

During the meetings with the museum curator (one of the main stakeholders) the following goals for the Munch und Berlin website emerged:

1. design a website which might work also as a fixed information kiosk in the museum;
2. make the website usable by visually-impaired users;
3. promote knowledge and awareness about a temporary exhibition being hosted at the Museum (Munch's prints and drawings).

The first goal aims at offering to the user a multi-channel interaction, i.e. a similar interactive experience on different channels. On the website (at home) and on the info kiosk (in the museum) different content and services will be offered to the user, but the same look & feel should be kept. The second goal has to do with a growing concern: accessibility. Visually-impaired users can surf the web through special software, called “screen readers”. To enable visually-impaired users to use satisfactorily a website, designers should optimize their site design to be read by screen readers in an effective way [6]. The third goal represents the overall mission of the website, which is the reason why the application has been designed. If we carefully consider these goals, they seem quite general and almost stakeholder-independent: they are objectives which may be easily shared and agreed upon by many museums curators.

Going deeper in the requirements analysis (after some design iterations), and trying to understand how to shape the presentation of Munch’s collection on the website, we discovered that the curator was putting particular emphasis on the historical and social surrounding of Munch’s life. He was strongly committed to make the audience understand the historical period in which Munch lived and worked to his drawing. The curator insisted to provide accurate content on Munch’s different stages of life (Childhood and youth in Norway, the beginning of his artistic career, the Berlin period, Success and crisis, and so on) and on the corresponding historical events happening in those years (ca. 1890) in Europe (beginning of Imperialism, political movements in Norway, etc.). We realized that the amount of content about these themes was becoming considerable, and actually enriched a simple presentation of Munch’s drawings and prints.

Why did the curator insist so strongly in having these content elements? Where do these indications about the content to be designed and communicated to the user come from?

We ascribe the origins of these requirements material to what we call a stakeholder’s *vision*. It is clear that curator’s vision of art brought him to *historically* contextualize Munch and his works. This vision represents a main stream in art history which has been for some time quite popular in Europe. The curator’s vision may be defined as follows: works of art need to be framed within their historical background to be properly understood and appreciated.

A vision is a strategic insight of a stakeholder in the domain, and it may be or not be stakeholder-specific, meaning that different stakeholders in the same domain may share goals but may have different visions. A vision typically assumes mature domain knowledge of a stakeholder and represents the reification of a business/communication strategy that a stakeholder pursues in its domain.

Note that a vision is different from a domain description. A domain description would tell to analysts how a museum usually works, and what are the principles ruling museum communication towards its public. A vision is instead a specific way of living in that domain, i.e. the assumption underlying a given *modus operandi*. The distinctive features of the communication strategy of a given museum compose a vision; the peculiarities of the mission of a given institution dictate the vision for that institution to operate in the domain. Often stakeholders express their needs (even if not explicitly) to analysts and designers on the basis of their vision, assuming that analysts already have enough domain knowledge to

understand and appreciate the vision. It is a sign of professionalism to debate and ask questions about the vision of a given institution or organization (e.g. a museum in our case). It would be instead disappointing for the stakeholders to hear basic questions about the domain (e.g. how museums work and who the key stakeholders in museum communication are).

### 3.2 Deriving Goals from Stakeholder’s Vision

In practice, (as in the case of Munch und Berlin website) it often happens that a vision is part of the assumption of a stakeholder and it is not put forth explicitly from the outset. Stakeholders usually firstly focus on detailed requirements, on which analysts should investigate to make the underlying vision surface. Therefore, eliciting visions is not straightforward, especially for novice analysts. If analysts may rely on their project experience in the same domain, visions may be more easily identified. If not, visions should be patiently elicited by letting stakeholders talk about their institutional missions, their history and their current distinctive strategy for accomplishing their strategic objectives (questioning about past experience, past projects or initiatives, etc.). Once understood, a vision may bring to formulate a set of corresponding goals for the application to be designed. A possible line of inquiry for make goals surface from a vision is the following: How does the application embody this vision?

Considering the curator’s vision (“works of art need to be framed within their historical background to be properly understood and appreciated”), a number of new goals (a1, a2 and a3) for the website emerged, which were not considered before:

- a1. Encourage understanding of Munch’s works by leading themes, bound to the historical and social context of that period.
- a2. Create awareness on the artistic movements which influenced Munch’s style.
- a3. Create awareness on the social and political background characterizing the periods in which Munch worked at his prints.

Goals deriving from a vision are crucial to address because they usually embody the “must” for the website in the perspective of a given stakeholder. Visions help in selecting goals (they should be consistent with the underlying vision), in refining them (subgoals should always be kept aligned with the vision), in passing from goals to requirements (are there in compliance with the vision?) and in interpreting requirements (resorting to the vision to understand them). Note that some goals imply a vision (see a1, a2 and a3), others don’t (see initial project goals 1, 2 and 3 at the beginning of the section).

If analysts fail to capture or understand the peculiar and unique vision of the stakeholder, it will be hard for them to properly intervene during elicitation and analysis, to discover the reasons behind stakeholder’s goals, and to creatively shape corresponding communication solutions for the design.

To understand the difference between goals and vision, an example taken from a totally different domain may help. Let us think to modern e-commerce websites such as electronic

bookshops. They all may have exactly the same goals both on the stakeholder side (convince people to buy books on their online store) and on the user side (buy a book, browse recently published books, find book suggestions and customer reviews, and so on). However, if we only consider the goal level, all online bookshops would be all the same. So, where is the difference? The difference relies in the vision of their stakeholders, who see in a distinctive and competitive way the market, the Internet, their online communication, and the customer's needs, and correspond differently to this vision by deploying a "unique" web application.

### 3.3 User Motivations

Communication-intensive websites [1] should be targeted to specific users, who may be driven by different factors to visit the application. User motivations are general reasons that bring a particular user type to make use of the application. These motivations are to be taken into account in the design to find solutions that are meaningful, relevant and satisfactory for the user we are addressing to. User motivations are defined within the scope of the goals of the stakeholders, meaning that stakeholders (with their goals and visions) decide to support a limited set of user motivations for the accomplishment of their institutional objectives. In our case, user motivations have been elicited with the museum curator by envisioning some user scenarios or "success stories" for the website. Here we describe 3 salient concrete scenarios that emerged:

S1. *A German man, 40 years old, wants to visit the exhibition next week. He has a good education about visual arts, but he is not very experienced with Munch's artworks. This potential visitor accesses the site to be prepared about what he will see at the exhibition. He browses around looking for information that allows him understanding the exhibition itself and practical info.*

S2. *An Italian, 35-years old woman has a passion for visual arts, but she doesn't know Munch's works very well. She will never go at the exhibition but she is curious about the information in the site. She would like to study Munch more in depth and see what's important and interesting in this collection.*

S3. *A visual-impaired user access the site to enjoy Munch's artworks. He looks for interesting paintings and for information that could help him understand the beauty of the artworks. The user wants not only be able to physically access the content but also to have a nice and not frustrating experience on the site (as it is the case for most websites, which are not optimized for visually-impaired people).*

These "stories about use" are scenarios, each one highlighting a specific user motivation. Namely, we have elicited three corresponding main motivations behind these scenarios:

M1. Be prepared for visiting the exhibition: the user wants to arrive at the Museum knowing what he/she will see and being able to understand the artworks exhibited.

M2. Study Munch and his art: the user wants to enrich his/her knowledge about Munch and about his paintings and prints.

M3. Appreciate the artworks in the exhibition: the user wants to be able to enjoy and appreciate Munch's art through the website.

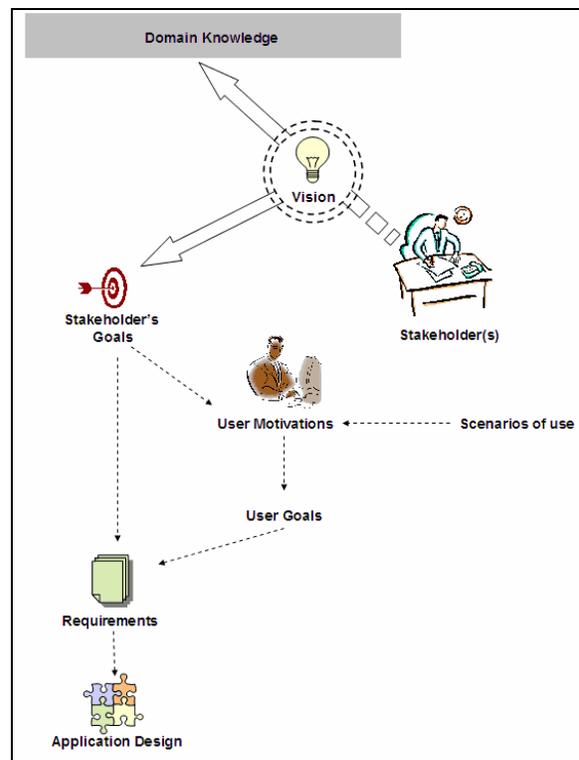
### 3.4 Deriving Goals from User Motivations

Since user motivations describe the reasons why a user should use the application, it is possible to derive a proper set of user goals from this knowledge. In particular, from motivation M1 we understand that a potential visitor may have the following goals:

UG1: See what is worth visiting in the exhibition, the best artworks exhibited and the "must-see" paintings;

UG2: gather basic information about the set of works exhibited in its whole and its artistic importance;

UG3: know the basics about Munch and his historical context;



**Figure 1. Analysis elements to consider for meeting user needs and stakeholder's goals.**

From the motivation M2, the following goals may be specified for a "curious" non-visitor:

UG4: finding historical information about Munch, his life, the encounters, his influences, etc.;

UG5: finding detailed information about Munch's work and art, his style and the kind of artworks he did;

UG6: finding information about the techniques used in the paintings;

From the motivation M3, we can detail the following goals for a visually-impaired user:

UG7: efficiently accessing the exhibition’s topics, understanding the site structure and the browsing capabilities on each page;

UG8: understanding Munch’s paintings in the exhibition and what they represent;

UG9: finding information about Munch, his life, and his style.

Whereas a motivation describes the extra-application intentional background for the user to approach the website, a goal specifically refers to what the user will achieve by making use the website and may be detailed in tasks [7], thus pointing to coarse grain description of content and functionality.

As shown in Figure 1, the elaboration of scenarios can help isolate user motivations, which are in turn useful to point out specific user goals that the application should support. This analysis is framed within the overall scope set by the goals of the stakeholders (based upon his/her vision) and prepares the input for the documentation of specific requirements for the application to be designed.

#### 4. DOCUMENTATION TOOLS

The analysis work should be carried out as much as possible in close contact with the project stakeholders (through iterative elicitation and validation) and with designers (to shape requirements for design specification).

Simple matrixes may facilitate the activities of elicitation and analysis and its documentation. A matrix like the one shown in Figure 2 maps the main stakeholders of the project (two related to the museum and one representing the funding institution) to the goals of the project itself (both general and vision-driven goals). Each cross point of the matrix forces analysts to investigate about the question: “*Is this goal relevant for this stakeholder?*” or “*Are there goals not represented here which may be relevant to a stakeholder?*”. During elicitation, this matrix helps analysts communicate to stakeholders a clear picture of the different goals and their relative importance for the stakeholders. The degrees of relevance considered are: “very relevant” (marked in black), “why not” (grey) and “not relevant at all” (dash).

Stakeholder Goals	Curator	Mus. Director	EU commission
design site & kiosk	-	-	-
make site accessible	-	-	-
raise awareness on prints	-	-	-
provide leading themes	-	-	-
raise awareness on art.movement	-	-	-
raise awareness on polit. background	-	-	-

Figure 2. Stakeholder-goal matrix.

Besides a tool for documenting the provisional results of the analysis, such a matrix is powerful to provoke reflection on goals which are shared among stakeholders (are they more important?), about goals which are relevant only for one stakeholder (e.g. the curator) and therefore about the specific commitment and success factors of the project according to each stakeholder. Analysts and designers have to ensure that each stakeholder is satisfied about

the completion of his goals and convinced about the fact that the goal has been accomplished in the best possible way. The matrix supports brainstorming around these questions and offers an intuitive way to communicate among analysts and with stakeholders.

As we focus on the needs of the users, we can reflect upon the target audience of the site in terms of user profiles (a curious visitor, a tourist, and a visually-impaired individual, such as the one described in the scenarios presented in 3.3). From the scenario analysis, user motivations may be mapped onto these profiles, providing room for reflecting on the following questions: “*What might bring such a user to visit the website?*”; “*Which user motivations do we want to address for this project?*”; “*Are there additional user profiles we need to address?*” (Figure 3). If project resources allow it, extensive user research (e.g through survey or interviews) may help to validate and enrich this material.

User Motivations	curious	tourist	visually-impaired
Prepare to the visit	-	-	-
Study Munch	-	-	-
Enjoy artworks via web	-	-	-

Figure 3. User profiles and their motivations.

Note that, among the possible (infinite) user motivations, analysts should focus on the motivations relevant for the project, or, in other words, on the ones which the stakeholders want to support. In the example, a visually-impaired may be motivated to visit the site for enjoying via web Munch’s works (maybe after having heard about this unique and novel opportunity); a tourist wishing to visit the exhibition may be motivated to use the site for gathering the necessary cultural elements to understand the exhibition. Finally, the website is also addressed to curious web surfer whose motivation for visiting the site may be related to research or study. Here, as in the previous example, we use the same black-grey-dash relevance scale.

If we only consider separately the stakeholder goals and the user motivations, it is difficult to shape a coherent set of requirements (and corresponding design solutions) which may ensure the satisfaction of both users and main stakeholders. In fact, as showed in [1], the completion of stakeholder goals highly depends on the satisfaction of the user goals. For example, stakeholders have to think about how they can “raise awareness on artistic movements” taking into account that the user motivation for visiting the site is “prepare to the visit”. So, the key question is: “*how can I raise awareness on the artistic movements if the user motivation is to be prepared for visiting the exhibition?*”. In this case, the knowledge about artistic movements may be helpful for the user to better contextualize Munch’s works, and thus to gain insights about the artistic and cultural background of the masterpieces he will be visiting. In this way, the user can use the site to become a “more prepared” visitor of the exhibition. This consideration can be synthesized in the application requirement: “*enable user to gather elements to interpret Munch’s style*”.

As shown in Figure 4, one or more requirements for the website may be defined at each intersection between a stakeholder goal and a user motivation. The common characteristic of these requirements (although expressed at different levels of

abstraction) is that they enable stakeholders to achieve their goals hooking these objectives to concrete user motivations.

Stakeholder Goals	User Motivations		
	Prepare to the visit	Study Munch	Enjoy artworks via web
design site & kiosk	promote kiosk services on the site	-	-
make site accessible	-	provide 100% text equivalent content	enable VII understand the topics and techniques
raise awareness on Munch's prints	educate to appreciate the value of Munch's prints wrt his paintings	promote the unicity of the exhibition	provide high-resolution and large pictures of the prints and drawings
provide leading themes	enable to create personalized thematic	organize prints by theme	-
raise awareness on art.movement	enable gather elements to interpret munch's style	understand who influences Munch's style	-
raise awareness on polit. background	enable gather elements to interpret munch's themes	understand political events which influenced Munch's life	-

Figure 4. Intersecting stakeholder goals with user motivations.

It is important to notice that this is the only viable way for stakeholder goals to be successful: stakeholder goals need to find a suitable way not to disappoint the user in his/her motivation and contextually have to bring him/her to make an experience relevant to a stakeholder.

This effort during analysis greatly help analysts and stakeholders to stay focused on the both side of the picture (main stakeholder goals and user goals) trying to make them interact for the project's success. In fact, intersecting the goals of the stakeholders with the user motivations is an extremely fruitful way to brainstorm about requirements in a way that may facilitate the satisfaction of all actors involved.

To support elicitation and analysis in this direction, a key question to reflect upon at each cross point is: "How can a stakeholder leverage on this user motivation to accomplish this goal?". Reformulated in plainer way for the stakeholder of our project, the concrete questions would namely become (see Figure 4):

- If you want to "emphasize the leading themes of Munch's works" and the user motivation for coming to your site is "prepare to visit the exhibition", what would you provide on your website? Why?
- If you want to "make the site accessible to visually-impaired user" and the user motivation is to "study Munch", what characteristics would your website have? Why?
- If you want to "raise awareness on Munch's prints" and the user comes to your site to "enjoy Munch's artworks" what would you offer? Why?

A set of requirements may be elaborated at each intersection through a collaborative brainstorming upon these types of questions.

As shown in Figure 5, the final result is a set of requirements organized by design dimensions [1].

Requirements	
<b>Content</b>	promote kiosk services on the website provide elements to appreciate the value of Munch's prints wrt painting enable gather elements to interpret munch's style enable gather elements to interpret munch's themes provide 100% text equivalent content promote the unicity of the exhibition provide elements to understand who influences Munch's style understand political events which influenced Munch's life enable VII understand the topics and techniques provide high-resolution and large pictures of the prints and drawings provide historical context provide information about the different techniques used provide information about the various artistic movements
<b>Structure</b>	highlight must see provide collection overview
<b>Navigation</b>	enable to create personalized path by theme relate prints to the technique relate prints to artistic movement

Figure 5. Excerpt of the requirements set for the website.

Of course, these requirements represent an organized input for the design activity, but do not specify all the needed functionality and detailed content pieces the website should contain.



Figure 6. A "print introduction" of the website Munch und Berlin (www.munchundberlin.org).

In our project, given the level of expertise of the designers, the granularity of requirements presented in Figure 5 was enough for designers to start the work and for the content managers to ask the content to content providers (museum staff).

During the project, a conceptual design of the website was specified on the basis of these requirements [7]. An excerpt of the published website is showed in Figure 6. Starting from the introductory explanation of a print (in this case "Moonlight. Night in St. Cloud"), note the emphasis on the corresponding "period of life" ("See also" upper-left contextual menu) in which the print was made. In turn, from the period of life, the user is suggested to navigate to the historical context in which Munch lived that period, thus meeting the vision of the curator.

## 5. SUMMARY

We have presented a significant methodological advancement in web requirements analysis, which has the potential of improving current practice in web application development. The concept of stakeholder's vision enables to separate the generic knowledge about a domain from the specific and distinctive strategy of a stakeholder, which reifies his/her way of making communication in the domain. Visions are important reference points during requirements analysis and design, since goals descend from a vision, which are probably what the stakeholders most care about. User motivations are crucial elements of the user requirements, since they allow wondering about the "triggers" for the user's visit to the website, and consequently enable to generate possible goals to satisfy. Through simple notation tools, user motivation, stakeholder goals and user profiles may be investigated and combined to facilitate the definition and communication of requirements. Important requirements may be defined by creatively brainstorming on how each stakeholder's goal should leverage on a given user motivation to be accomplished. In fact, if stakeholders do not consider the user motivations and goals, they will not have a proper "hook" to intervene in the user experience. The devised methodological elements has been extensively used in the Munch und Berlin project and exemplified throughout the paper by presenting excerpts from requirements analysis and application examples.

## 6. FUTURE WORK

Current evolution of AWARE still needs further experimentation to be validated on a large-scale basis. So far, we received positive feedback from those practitioners and scholars with whom we carried out projects both in the academic and industrial arena. We have introduced these novel concepts extensively in academic classes (at University of Lugano and Politecnico di Milano) focusing on requirements and design for web and multichannel applications. These courses (involving overall more than 300 students a year) are targeted not only to people with a technological background, but also to students who studied communication sciences, tourism, cultural heritage, and humanities in general. The proposed approach for informing communication design turned out to be easier to learn, and required less effort to be effectively applied (ca. 30% both for instructors and for students) than the previous version of AWARE. Future research will focus on consolidating the method by applying these concepts to projects in other domains.

On the basis of the elements discussed so far, some important methodological issues yet remain to be investigated and verified on the field, such as strategies and guidelines for eliciting visions, the management of conflicting visions, and the scalability of the documentation tools. Finally, the design of specific software tools or the integration of these concepts into existing software supporting brainstorming (e.g. Let's Focus - [www.lets-focus.com](http://www.lets-focus.com))

is also being considered to facilitate a more efficient documentation of the analysis material.

## ACKNOWLEDGEMENTS

The authors are grateful to Paolo Paolini for his insights and support in developing the basic ideas behind this work. We thank the HOC and TEC-Lab teams for their proactive support and collaboration to the "Munch und Berlin" project. In particular, we thank Nicoletta Di Blas, Silvia Ghezzi, Marco Speroni, Daniele Gobbetti, Fulvio Prisinzano and Marco Marini. We also thank the staff of the Staatliche Museen zu Berlin.

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