Muster für Museen

Patterns for Museums

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Zusammenfassung:
Infolge steigender Anforderungen von Kunden und Änderungen in der Nutzung, sehen sich Museen dieser Tage mit großen Herausforderungen konfrontiert. Einerseits müssen sie traditionelle Kunden bedienen, andererseits werden ihre Web-Präsenzen immer wichtiger, sogar essentiell, jedoch können aus Kostengründen nur selten beide Bereiche in vollem Umfang realisiert werden. Unser Hauptaugenmerk liegt auf der Layout Entwicklung, da dies ein wichtiger Bestandteil des gesamten Entwicklungsprozesses von Webseiten ist, der die Wahrnehmung und Akzeptanz der Anwendung durch die Nutzer beeinflussen kann. Um die Layout Entwicklung zu vereinfachen und zu flexibilisieren, beabsichtigen wir, Layout Komponenten und Konzepte zu ermitteln und extrahieren mit dem Ziel der Herausbildung von Mustern (patterns). Solche Muster helfen adaptive Applikationen zu realisieren, welche geeignet sind bezüglich der Fähigkeiten und Forderungen der Nutzer, dem Provider und der technischen Ausstattung. Dieses Dokument bewerkstelligt eine kleine Einführung in den Muster für Museen Ansatz.

Abstract:
Due to the increasing demands of the customers and changes in use, museums these days are faced with great challenges. On the one hand, they have to serve traditional customers, on the other hand, their web presences become more and more important, even essential, but both parts can be rarely realised completely for cost reasons. Our focus is on layout development because it is an important part of the whole development process of websites that is able to influence the perception and acceptance of the application by users. To ease the layout development and make it flexible, we intend to detect and extract layout components and concepts with the aim to build patterns. Such patterns help to realise adaptive applications that are appropriate to the abilities and demands of users, provider, and technical equipment. This paper gives a short introduction to the patterns for museums approach.

1   Introduction

Museums are faced with great challenges because they have to serve traditional customers as well as customers who prefer to utilise modern technologies. For cost reasons, it is often impossible to dedicate the same time to both parts. As a consequence, museums don't pay too much attention to their web presences because of a better cash forecast. Typically, museums are interested in web-representations that consider their specific demands, e.g. to be able to design exhibit arrangement stories and to offer special museum tours. So, the composition processes should not be too far from their current non-web processes at the best. Unfortunately, such types of representation are not easy to build and maintain at present because of the absence of high-level concepts. Nevertheless, museums can profit from new technologies by utilising new possibilities, e.g. to offer the same information via several distributive channels. Moreover, museums can benefit from existing methodologies of WIS (web information system) development like task models, e.g.

ConcurTaskTrees (CTT) [6], and website description languages, e.g. SiteLang [9] that can be used to specify some types of stories. This paper introduces an approach for museums that tries to ease the layout development process and make it flexible against changes by the use of patterns as introduced by Alexander [1]. Such layout patterns are able to reuse generic layout components and concepts and can influence the WIS development process depending on their order and point of execution.

A lot of HCI approaches [10,5,8,11] have introduced guidelines how to develop good and useful websites, with a range from generic recommendations to directly applicable solutions.

For example, Shneiderman [8] has defined eight 'golden' rules of interface design that should be considered while the development of layout. These general rules are not directly applicable and have to be refined context-dependent. According to Herczeg [3], development mistakes can occur in complex situations if the context was not taken into account. For example, in the case of multiple page displays, it is impossible to define a fix and universally valid value, how many changes between two interaction steps are acceptable to achieve an adequate short-term memory load. The acceptable load depends on the possible attention of a user, the abilities of the equipment and its application area. Too little changes cause long ways to get to the information, while very short ways result in too many changes. Thus, refinements are obligatory that consider further aspects of the development.

At the opposite end Welie [11] has developed a pattern language that tries to benefit from relations between specific layout patterns. The patterns of this language describe problem-oriented solutions based on a specification of well orchestrated layout elements at different levels. They are problem-based, so that this approach results in a huge number of patterns and possible combinations. Unfortunately, it is hard to take all of them into account while the development process and moreover it is hard to handle all valid transitions between the proposed levels. Therefore, it can be useful to classify by application domains to keep up the decidability. We prefer a split by dimensions as mentioned in [7] to limit decision problems in the case of multiple domain applications.

Subsequently, we give a short introduction of museum patterns in section 2. Afterwards, we discuss future work and conclude the paper in section 3.

2   Museum Patterns

Static and individualised templates are often (page) layout patterns of current websites but templates are only reusable in the case of nearly the same demands by other applications, so that such patterns are not flexible enough. Therefore, some approaches (e.g. Welie [11]) try to ease the reuse of layout components by a split into parts and problem fields. These approaches result in a huge number of patterns, which predominantly solve specific presentation problems of one problem field. Valid compositions between different problem fields are possible but not intended so that it is hard to take into account all useful compositions.

Problem-oriented layout guidelines mainly help to create a good website in any way, while concepts of creation and maintenance (back-end) are not defined and considered. We intend to take into account all dimensions of WIS development (intention, story, context, content functionality, and presentation) as illustrated in figure 1 and as introduced in [7] with the aim to increase the flexibility and to support different types of equipment. It tries to close the conceptual gap and generalises development aspects with the aim of making the layout development process more flexible. The weighting of each dimension depends on the type of application and their execution order can influence the whole layout development process as introduced in [4].
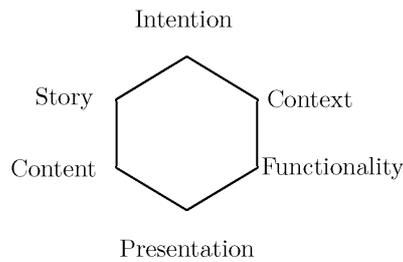
Figure 1 - Development dimensions hexagon

Consequently, layout patterns have to be considered as classifiable, hierarchical, and combinable restrictions to the development domain. Therefore, we defined some pattern types (figure 2) that are able to support the development process and are partly taken from cognitive psychology.

Communication patterns deal with navigation and interaction aspects and have to define the physical communication between communication partners. This category is important if the application has to handle more than one client type (PC, PDA, mobile) and is able to couple new technologies with current museums processes, e.g. take a PDA guided tour of the museum. Perception patterns concern the orientation within the story and the screen, while composition patterns have to realise a sufficient placement of media objects for a good orientation within the arrangement.
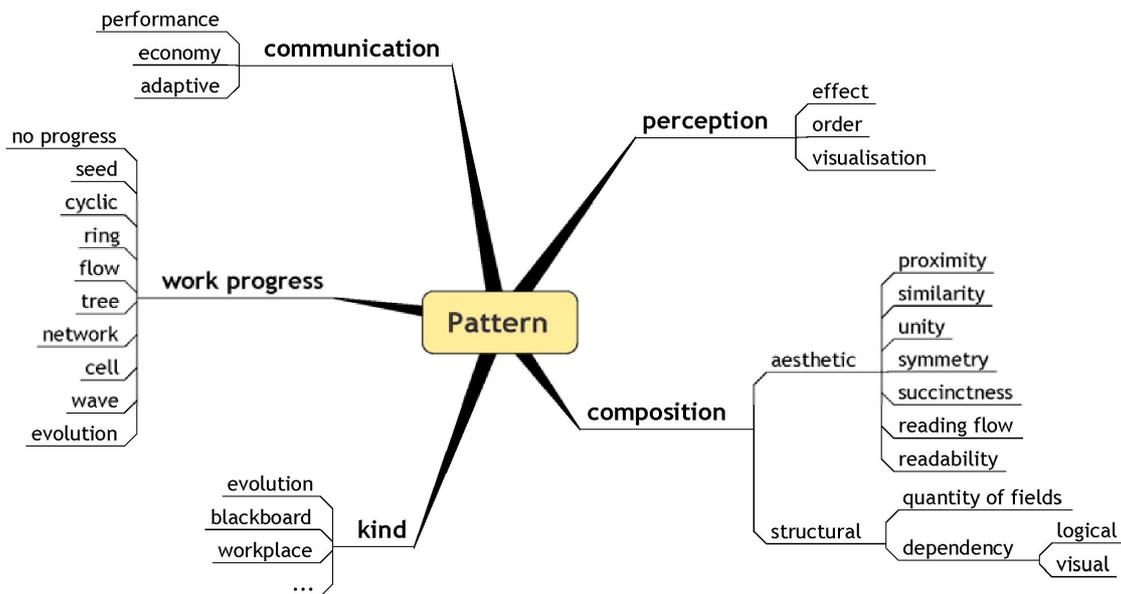

Figure 2 - Pattern classification

There is often a need to consider the progress within a story and to escort the whole workflow of a task that the user tries to accomplish. Unfortunately, only a few of current patterns support the visualisation of progress types as well as their specification. It is particularly problematic for museums because they can benefit from an explicit consideration of progress types as it allows the specification of patterns that are not too far from their current non-web processes.

Work progress pattern visualisations describe possible types of movements and are closely connected to the story dimension. We distinguish the following types by picking up the segmentation of [2] – *no progress*, *seed*, *cyclic*, *ring*, *flow*, *tree*, *network*, *cell*, *wave*, and *evolution*. Figure 3 illustrates acceptable transitions between the types.

no progress —interaction→ network

decomposition → cell

iterative → ring

advancements / directed → flow

directed → cyclic

advancements → evolution

decomposition → tree

duplication → seed
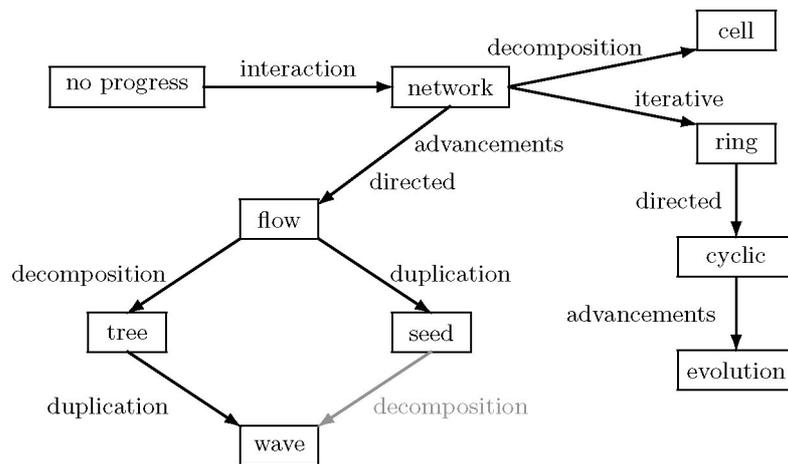
duplication → wave

decomposition → wave

Figure 3 - Work progress transitions

It should be of interest in the cultural field because stories are related to traditional composition approaches as visualisations of museum tours (guided or individual), quick-views (popular exhibits or topics), textual stories (abstract, itemisation, detailed view, or narrated), and maps (way to the exit or next point of interest). For instance, museum tours can be represented by a *ring* progress because they have a given set of states or steps and have a starting point as well as an end point. In the case of an unfocused search (*network* type), the system attempts to detect the intention of the user with the aim to guide him by some offers. Therefore, the system has to analyse the actions of the user and at the best, it is able to convert the detected progress to the *ring* type.
Other stories as the search story are based on a progress type, too. In this case, a focused search can be represented by the progress type *tree*. This type is suitable for a stepwise refinement of the result to find exhibits as fast as possible.

Work progress patterns don't define specific graphical presentation and implementation solutions but determine the area of possibilities, e.g. a guided tour with a stepwise progress implies that orientation, localisation, and search aspects play a minor role. Moreover, such patterns are only one part of the whole layout development process, which should not be regarded in isolation. It is urgent necessary to specify the application order and hierarchy of specified and chosen patterns, because of possibly existing interactions between these. For example, the user profile could ask for localisation aspects and overrule story demands. Furthermore, we have to distinguish between frame patterns that define aspects of corporate design and influence all pages and body patterns that are influenced by frame patterns but make the layout flexible to avoid monotonic representations.
Finally, the consolidation of chosen patterns results in a set of restrictions from that we can derive adequate representations.

3   Conclusion

This paper has introduced museum patterns that are mainly directed to realise easy-to-use websites. The pattern classification is based on six dimensions of WIS development [7] and ensures a high degree of flexibility as well as high-level compositions similar to arrangements within a museum.

Recently, we have started the development of a tool that follows the concept as mentioned above. In future, it has to escort the development and re-development process and proposes possible solutions in the case of multiple options. The main objective of that tool is to ease the development and to avoid frequently occurring layout problems. Afterwards, we will embed the approach in the WIS development process.

4 References

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