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Introduction

This document describes the methodology that has emerged from a series of workshops we have facilitated over several years. These workshops brought together practitioners from a wide range of fields and engaged them in intense conversations about issues regarding technology and education. Such conversations are rooted in participants' personal experiences, driven by the problems they have overcome, and aimed at collaborative articulation of their design knowledge; knowledge of how to get things done. We call these workshops **COLLABORATIVE REFLECTION WORKSHOPS**.

Our process goes beyond a single workshop. Over the years, we have identified a structure of three consecutive workshops; a **DESIGN NARRATIVES WORKSHOP**, a **PATTERN MINING WORKSHOP** and a **DESIGN SCENARIOS WORKSHOP**. Together, these form what we call the **PARTICIPATORY PATTERNS WORKSHOPS** framework.

If you are about to participate in such a workshop, this document will tell you what to expect and how to maximise your benefits from the event.

If you would like to run such a workshop (or series of workshops) yourself, this document should give you a good starting point for their design. You will still need to adapt the framework for your own needs and circumstances, and we will be happy to assist you in doing that.

Everything presented here is a reflection of work in progress. If you find this document useful, please check for new versions. If you find some mistakes or gaps, please let us know. If you run a workshop, please share your experience and insight with us.



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Structure of the pattern language

The bulk of this document comprises a set of design patterns, which outline the **Participatory Methodology for Practical Design Patterns**. At the heart of the methodology is the **PARTICIPATORY PATTERN WORKSHOPS** pattern, which describes the interrelation between three **COLLABORATIVE REFLECTION WORKSHOPS: a DESIGN NARRATIVE WORKSHOP**, a **PATTERN MINING WORKSHOP** and a **DESIGN SCENARIOS WORKSHOP**. Apart from these, the language includes a “toolkit” of support patterns, which address critical points in the process or specific recurring needs. Some of these are presented here, while others are only mentioned as “thumbnails”. The pattern descriptions are followed by a general discussion and conclusions.

Pattern format

The process embodied by these patterns aims to transform a group of practitioners into a pattern community. It therefore makes sense to formulate them in a similar format to the one we with the emerging communities to use. However, while pattern templates used by various communities share many features, the specifics of the format are tuned to the context of work.

For the purpose of this paper, we chose to use a minimalistic format. This consists of four sections: summary, problem, context and solution. The summary includes an illustration capturing the essence of the pattern. The full format used by workshop participants incorporated additional elements, such as a forces sub-section including a

graphical force map, a support section with empirical and theoretical justification, and a related patterns section. These are omitted here for simplicity’s sake, and to avoid duplication: the related patterns, for example, are evident from the map of patterns in the next page.

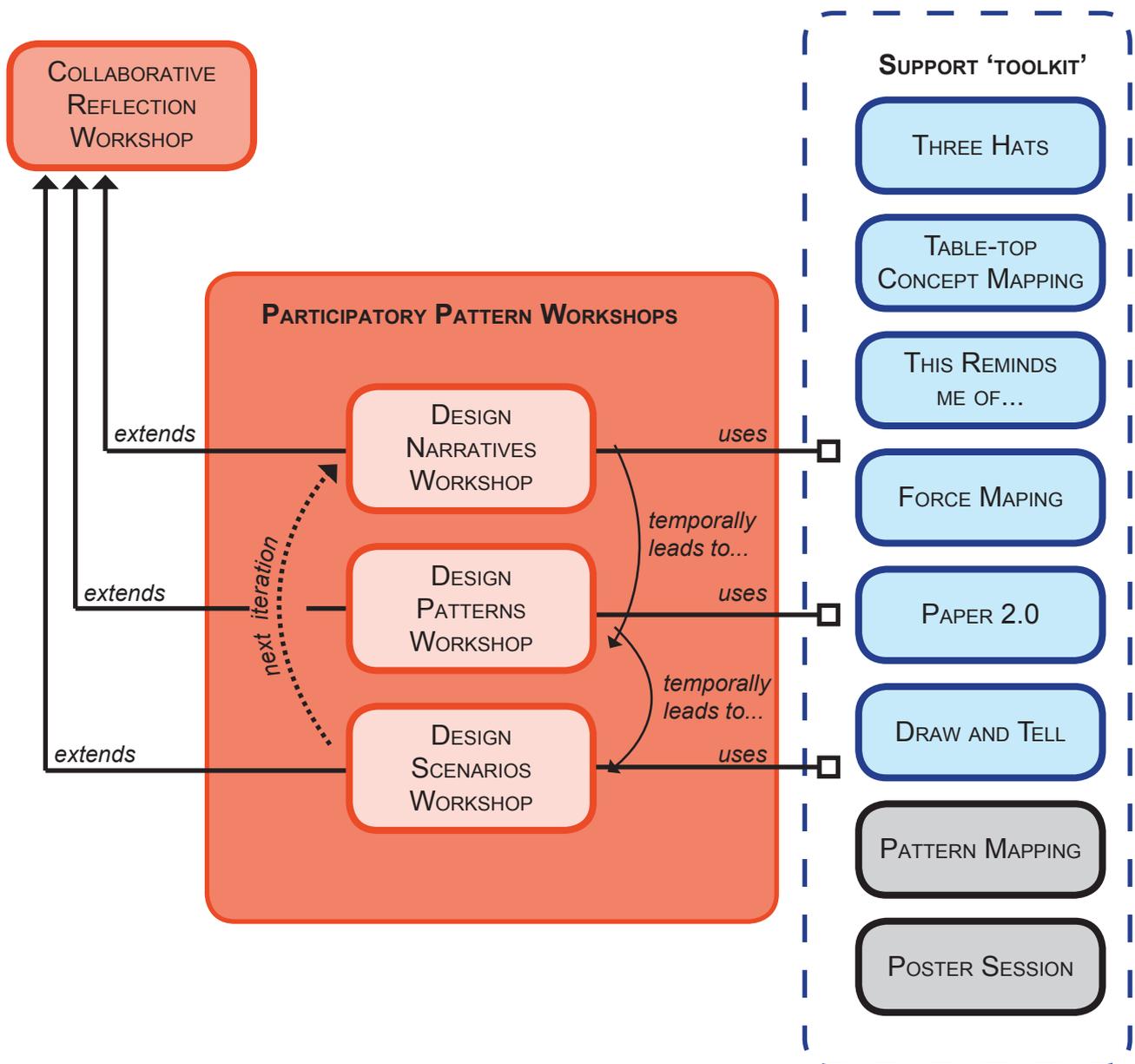
Target audience

The primary audience are teams and individuals wishing to engage communities of practitioners in collaborative pattern writing in their domain of practice. However, we see the patterns (see Annex 1 for an overview) here, and the processes they embody, as having potential value in other scenarios:

- A small professional team might use these patterns as part of their design revision;
- Institutions can use them as a framework for organisational growth and professional development. In such a scenario, the institution might focus less on the derived patterns and more on the process of derivation;
- Individual pattern writers, or small teams of co-writers, may find it useful to adapt some of these patterns to their needs.

Structure

At the heart of the methodology is the PARTICIPATORY PATTERN WORKSHOPS pattern, which describes the interrelation between three COLLABORATIVE REFLECTION WORKSHOPS: a DESIGN NARRATIVES WORKSHOP, a DESIGN PATTERNS WORKSHOP and a DESIGN SCENARIOS WORKSHOP. Apart from these, the language includes a “toolkit” of support patterns, which address critical points in the process or specific recurring needs.



Toolkit patterns

Summary

PARTICIPATORY PATTERN WORKSHOPS

The Participatory Methodology for Practical Design Patterns was developed by the Learning Patterns project and refined by the Planet (Pattern Language Network) project. It is a process by which communities of practitioners can collaboratively reflect on the challenges they face and the methods for addressing them. The outcome of the process is a set of case stories, design patterns and design scenarios situated in a particular domain of practice. At the heart of this process are three COLLABORATIVE REFLECTION WORKSHOPS.

COLLABORATIVE REFLECTION WORKSHOP

Elicit design knowledge by sharing, analysing and scrutinising personal experiences. This is the base structure, the “super-pattern” for all workshops.

DESIGN NARRATIVE WORKSHOP

Engender collaborative reflection among practitioners by a structured process of sharing stories.

PATTERN MINING WORKSHOP

Use comparative analysis of case stories to define proto-patterns*. Elaborate the proto-patterns to alpha-state** patterns, by articulating the problem, context, core of the solution and related patterns.

DESIGN SCENARIOS WORKSHOP

Put patterns to the test by applying them to novel problems in real contexts.

* **Proto-patterns** represent the first iteration of a pattern that captures the basic elements of the problem, solution and context.

** **Alpha-state** denotes patterns that have undergone refinement through a number of iterations to a state where they can be released for general use and testing by designers.



PARTICIPATORY PATTERN WORKSHOPS

The Participatory Methodology for Practical Design Patterns is a process by which communities of practitioners can collaboratively reflect on the challenges they face and the methods for addressing them. The outcome of the process is a set of Design narratives, design patterns and future scenarios situated in a particular domain of practice.

Problem

Domains of technology-infused social practice are dominated by accelerated change. Examples of such domains appear in almost every aspect of our life: any activity that involves (digital) technology and other people is subject to the rate of technological developments on one hand and the ever-shifting social conventions, practices and norms in using technology. In such domains, the dynamics of design knowledge questions two of the fundamental assumptions behind the design pattern paradigm: timelessness and

expertise. Timelessness refers to qualities of artefacts which have been refined over an extensive period of use. Expertise suggests that design knowledge has a focus of locus.

Alexander's seminal work (Alexander et al., 1977) was focused on the design of built environment. In this domain, there are certain problems, and associated solutions, which are rooted in fundamental characteristics of human existence, and have been refined over millennia - for example, the form and location of doors and windows in a building. Architects' expertise relies on tacit knowledge of these design patterns. The agenda of the patterns movement included an attempt to democratise the design of buildings, giving residents greater ownership over their living spaces. When the rate of change is such that new solutions are afforded and new problems emerge every day, no one person can keep pace of all changes. Expertise becomes highly distributed: an early adopter of one technology may become an expert in



its use, while falling behind on other fronts. The challenge is no longer one of pushing design knowledge down from experts to laypeople. Instead, we have a much more complex problem of continuous sharing of design knowledge across networks.

In order to elicit powerful and contemporary design patterns from communities of practitioners, and make these patterns useful for broad audiences, we need a structured process of guided design-level conversation, leading participants from their personal experiences to coherent pattern languages.

Context

The methodology is aimed at interdisciplinary communities of practitioners engaged in collaborative reflection on a common theme of their practice. These can be ad-hoc communities e.g. participants in a workshop, but a sense of community is nonetheless a prerequisite, in the sense of a common commitment to an inquisitive process and a genuine attempt to establish a shared discourse.

The methodology assumes a blended setting: at its heart it is a series of workshops; co-located (on-site) meetings of 4-8 hours. In between these meetings, participants communicate and develop their ideas using an on-line collaborative authoring system. During co-located meetings, participants refer to the on-line materials or use the system for archiving their work for later reference. This system could be a standard wiki or CMS, or a bespoke tool designed to support editing and discussion of narratives, patterns and scenarios. Examples of such tools can be found at <http://lp.noe-kaleidoscope.org/workspace/patterns/> and <http://patternlanguage.network.xwiki.com>.

This pattern is an “envelope” for the rest of the patterns in this paper, and the context

described here is the baseline for all the others. The context descriptions of the following patterns will only include the elements specific to them.

Solution

The methodology is based on two fundamental assumptions: we are all experts, and we are all designers. This methodology utilises narrative epistemology: practitioners are prompted to recount their experiences as design narratives, and discuss these with their peers. The construction and discussion of these narratives are scaffolded by a set of tools and activities to extract transferable and verifiable elements of design knowledge in the form of design patterns.

This methodology defines a process by which individuals and groups elicit structured design knowledge from their experience through a series of open yet directed activities. In an ideal setting, this process would have the following phases:

- Sharing expertise through structured stories of problems in the target domain and their resolution.
- Scrutinizing and refinement of these stories by guided conversation with peers.
- Comparative analysis with respect to similar cases.
- Extraction of common features across similar cases, in terms of problem, context and method of solution.
- Grouping triplets of context, problem and solution as proto-patterns.
- Articulation of problem description by collaborative mapping of forces.

- Collaborative composition of a map of key concepts emerging from the cases and the analysis.
- Articulation of alpha-state design patterns based on the proto-patterns using the vocabulary derived from the concept mapping.
- Developing these patterns to beta-state, by providing support, in the form of triangulating cases and theoretical rationale.
- Introduction of novel problems, in the form of future scenarios.
- Validating the patterns and demonstrating their use by applying them to the scenarios.

This process is realised by a series of Collaborative Reflection Workshops, typically:

A DESIGN NARRATIVES WORKSHOP

Engender collaborative reflection among practitioners by a structured process of sharing stories.

A DESIGN PATTERNS WORKSHOP

Eliciting patterns by reflecting on and comparing design narratives.

A DESIGN SCENARIOS WORKSHOP

Addressing validation and dissemination by applying the patterns to novel problems from real situations.

Ideally this would be a series of 3-4 full-day workshops, with 1-2 months in between. However, this process can be condensed or stretched as circumstances dictate. Needless to say, expectations should be adjusted to match the allocated resources.



COLLABORATIVE REFLECTION WORKSHOP

Elicit design knowledge by sharing, analysing and scrutinising personal experiences.

hoc communities, which cannot rely on established norms and relationships.

Problem

Technology-infused social practices produce complex and dynamic problems. Addressing such problems requires on-going design-level conversation between designers and practitioners involved in diverse aspects of the problem domain. Such a conversation is most effective when it is grounded in actual experiences, concrete problems, relevant to the participant's current work, which have been solved or are still pending solution.

In order for such a discussion to be fruitful, it needs to be open, trusting and convivial. At the same time it should be critical, focused and output-directed. These qualities tend to create conflicting forces, in particular in ad-

Context

This pattern assumes a co-located (on-site) half to full day workshop with 20-40 participants, and with a collaborative authoring system to support a-synchronous contributions before, during and after the workshop.

It can be adapted to smaller or larger groups, and to a shorter time-frame. A cohesive community could also adapt it to a distributed location event using audio-graphic conferencing.

This pattern relates to a single workshop, either a one-off event or, preferably, part of a series. Each workshop is conducted in a venue which can host 20-40 participants for both group work and plenary discussions.

Participants will typically use their laptops and the venue will supply internet access. Participants will register to the workshop several weeks in advance.

This pattern is the basis for the three workshop patterns, and all three assume a similar context. The individual context statements hereafter will only include specific expansions of this one.

Solution

Identify a theme of interest within the domain of practice. This theme should be focused enough to assume it would draw people who can benefit from each others' experiences, and wide enough to support rich examples and dilemmas.

Convene a workshop where participants work in groups to explore the selected theme through sharing personal experience.

Before the workshop

- Enlist the participants well in advance, ideally 3-4 weeks before the event.
- Establish a reliable medium of communication with all participants (e.g. a mailing list)
- Provide a tool for collaborative authoring of multi-media texts, and mark a clear space for the workshop within that space.
- Introduce the workshop in terms of aims, rationale and methods.

Ask all participants to make a contribution:

- Contributions should follow a common theme, or answer a common question.

- They should also adhere to a common structure, realised by a template.
- Provide an example of the desired output.

Follow-up by:

- Encouraging those who have not submitted a contribution to do so.
- Commenting on the submitted contributions, and asking authors to iterate on them.
- Pointing out links between contributions and provoking authors to comment on each other work.

On the day

Briefly present the theme, methods and objectives of the day. Introduce the first activity, and split the participants into groups.

Working in groups of 3-6, participants:

- Begin with an inspirational exposition activity, e.g. a Draw-and-tell game. The aims of this activity are:
 - To establish an open, honest and fearless tone of conversation.
 - To provoke participants to abandon entrenched forms of discourse.
 - To provide a fresh and humoristic perspective on the theme of the day.
- Each group selects a contribution of one of its members, elaborates and scrutinises it in a structured discussion, e.g. by means of a three-hats discussion. Provide the groups with a list of questions to guide the discussion.

- Use a **THIS REMINDS ME OF** exercise to elicit comparable experiences, either from the existing repository or from participants memory.
- Use a **TABLE-TOP CONCEPT MAPPING** exercise to elicit key concepts and focal issues from the contributions tabled by the group (optional).
- Instruct the groups to produce a concrete artefact, which can be shared with other groups and with a broader audience, e.g. a diagram, document, or paper prototype.
- Converge to a plenary, in which each group presents its work. This presentation can take the form of a **POSTER SESSION**. Conclude with a feedback and reflection discussion, in which participants recap their experience from the day.

After the workshop

Prompt participants to:

- Publish any new contributions that emerged on the day.
- Add details and artefacts (images, illustrations, diagrams, links, etc.) to their contributions.
- Comment on the contributions, noting questions that have emerged from the discussion.



DESIGN NARRATIVES WORKSHOP

Engender collaborative reflection among practitioners by a structured process of sharing stories.

Problem

Schank and Abelson (1977) argue that stories about one's experiences, and the experiences of others, are the fundamental constituents of human memory, knowledge, and social communication*. They call for a shift towards a functional view of knowledge, as Schank (1995) explains: "intelligence is really about understanding what has happened well enough to be able to predict when it may happen again" (p.1). Such knowledge is constructed by indexing narratives of self

and others' experiences, and mapping them to structures already in memory.

While everyone enjoys a good story, not everyone trusts their ability to tell a good story. People who base their confidence on a professional image often hesitate to share personal stories in public.

When people are induced to share stories, they tend to harness them to three interleaved goals: understanding the world in which they operate, establishing their identity, and identifying methods of problem solving ("where am I, who am I, how do I get where I want?"). In order to establish a productive design-level conversation, we need to subdue the first two and amplify the latter.

**The use of narrative to encode knowledge rests on extensive psychological research. Bruner (1986; 1990; 1991; 1996) identified narrative as the predominant vernacular form of representing and communicating meaning. Humans use narrative as a means of organizing their experiences and making sense of them. A narrative is always contextualized. It habitually begins with an exposition, which lays out the context: time, location, props and characters. These ideas are supported by recent findings in neuropsychology and cognitive psychology (Mar, 2004; Atance and O'Neill, 2005; Atance and Meltzoff, 2005).*

Context

This workshop will typically be the first in a series, followed by a DESIGN PATTERNS WORKSHOP and a DESIGN SCENARIOS WORKSHOP. If run as a one-off event, it would be modified to include elements of the other two workshops.

Solution

Establish a case-driven discussion of common problems and solutions in the target domain, by facilitating a COLLABORATIVE REFLECTION WORKSHOP, focused on participants' stories of their own experiences. The discussion is instigated by prompting participants to post their design narratives in a shared space. It culminates at a workshop, where the scenarios are analysed by groups of 3-6 participants. After the workshop, participants and facilitators revisit the cases, patterns and scenarios that were discussed.

Apply the COLLABORATIVE REFLECTION WORKSHOP structure, adding:

Before the Workshop

Instruct participants to contribute a story from their own experience, using a STARR template*

On the day

Provide guiding questions for the THREE HATS and THIS REMINDS ME OF... discussions, such as:

- What is the story about? What is it an example of?
- What was successful, what was not so successful?

- What was the critical element of design behind success?
- What was the critical contextual factor? When would it fail?

STARR template*

Situation

What was the setting in which this case study occurred?

Task

What was the problem to be solved, or the intended effect?

Actions

What was done to fulfil the task?

Results

What happened? Was it a success? What contributed to the outcomes?

Reflections

What did you learn from the experience?

*Here is an example of the template as a PowerPoint presentation: <http://www.slideshare.net/yish/star-case-study-template>. Remember to provide guidelines for 'good stories', for example <http://www.slideshare.net/yish/case-study-how-to-presentation>.



DESIGN PATTERNS WORKSHOP

Use comparative analysis of Design narratives to refine candidate patterns. Elaborate the candidate patterns to full patterns, by articulating the problem, context, core of the solution and related patterns.

- Practitioners reporting on their experience often take critical factors for granted, both in terms of the context and in terms of the key actions they took.

Problem

DESIGN NARRATIVES WORKSHOPS guide practitioners in articulating problem-solving narratives from their experience. Narratives are a fundamental form of capturing and communicating knowledge. Yet they fall short in several accounts:

- The endpoint of a narrative, its central message, is always implied. In order to expose it to scrutiny it needs to be made explicit.
- Narratives are loosely structured, and thus do not lend themselves to modularisation.

Design patterns provide a semi-structured form which exposes the gaps and hidden messages in the Design narratives, while eliminating superfluous detail. However, the transition from Design narratives to patterns might seem insurmountable for the uninitiated. Many pattern communities rely on “pattern scouts”, experienced pattern authors who mine practitioners’ stories for potential patterns. While this approach may guarantee quality, it does not scale, and it loses the intimate knowledge of a first person account.

Context

This workshop is typically a second in a series. Ideally workshop participants should have conducted a DESIGN NARRATIVES WORKSHOP prior to the event, but alternatively the two workshops can be combined to one. A community dominated by experienced software designers might choose to start from this workshop, drawing on Design narratives collected from other sources.

Solution

Facilitating a COLLABORATIVE REFLECTION WORKSHOP which shifts the conversation from a case-driven discussion to a pattern-based discussion of common problems and solutions in the target domain. Present groups with Design narratives from a previous DESIGN NARRATIVES WORKSHOP and prompt them to compare the cases and identify recurring patterns. Guide them in articulating these patterns in full.

Apply the COLLABORATIVE REFLECTION WORKSHOP structure, adding:

Before the workshop

- Collate a selection of Design narratives pertinent to the workshop theme, including both previous contributions of the workshop participants and notable contributions from other sources.
- Prompt participants to comment on these cases and identify possible links.

On the day

- Introduce the selected cases using an exercise which provokes attentive reading, e.g. use them as inputs for a TABLE-TOP CONCEPT MAPPING exercise.

- Instruct participants to
 - Identify parallels between the cases in terms of context, problem and solution. These should be noted succinctly on cards or small note paper.
 - Choose one of these notes, and elaborate it as a full-bodied pattern.
- First, ask the groups to present a short portrayal of the new pattern, by providing: Name, Short description, Illustration
- Next, guide them in using a pattern template.*
- Provide specific guidance on articulating each one of the core components. For example: <http://www.slideshare.net/yish/stories2patterns-presentation>

Patterns template*

Name

Naming is important. Think of a short catchy phrase that captures the essence of your pattern. Pattern names are often imperative - 'do this'.

Summary

Try to capture the essence of the pattern in 2-3 sentences. Focus on function - what it does, not how its built. The summary will appear as a tooltip on the index page.

Illustration

Metaphoric or inspirational image or graphic, which captures the spirit of this pattern.

Problem

What is the problem that this pattern addresses? What does it try to achieve?
One useful method of defining the problem is as a conflict between the two main forces dominating the situation.

Context

When and where is this pattern most relevant?
To which settings can it be extended?

Solution

Describe the core of the solution in such a way that it can be directly implemented a million times without doing the same thing twice.

Diagram

Structural or narrative graphic which supports the detailed description of the solution.

Related Patterns

List other patterns related to this one, under categories such as component, assisting, conflicting, uses this, etc.

Support

Source: The original design narrative from which this pattern was derived.

Triangulation: Additional supporting cases where this pattern was observed

Theoretical justification: Reference to relevant domain theories which explain why this pattern is expected to work, and link it to larger bodies of knowledge.

Verification: Scenarios / solutions which were developed using this pattern



DESIGN SCENARIOS WORKSHOP

Put patterns to the test by applying them to novel real problems in real contexts.

Problem

Design patterns provide a powerful language for such a conversation, enabling stake-holders to identify potential problems as early as possible and make an informed choice of solutions. Paradoxically, often as more expert knowledge is embedded in a pattern language it becomes less accessible to novices. In order for patterns to be used effectively by their prospective audience, they need to be presented in an approachable manner.

Furthermore, many patterns suffer from lack of validation; while they may seem compelling, this impression is not backed by unbiased empirical evidence. This reduces the

audiences' confidence in patterns, and creates a second obstacle to their adoption.

Such problems can be overcome by careful editing of patterns and pattern languages. Yet, with the abundance of candidate patterns which can emerge from any design discussion, for example at a DESIGN PATTERNS WORKSHOP, we need a mechanism for prioritising efforts.

Context

Although this workshop would typically be the third in a series, following a DESIGN NARRATIVES WORKSHOP and a DESIGN PATTERNS WORKSHOP, alternative combinations may be more fruitful in some cases. For example, one option would be to start from scenarios and then select cases that seem to share similar problems. Alternatively, when a one-off two-day event could be organised as a

DESIGN NARRATIVES WORKSHOP followed by a SCENARIOS WORKSHOP, leaving the patterns implicit.

Solution

Establish a scenario-driven discussion of Design narratives and design patterns in a domain of practice, by facilitating a COLLABORATIVE REFLECTION WORKSHOP in which participants share concrete problems in the form of future scenarios, compare them to past cases, and identify the patterns most applicable to form a solution. The discussion is instigated by prompting participants to post their scenarios in a shared space. It culminates at a workshop, where the scenarios are analysed by groups of 3-6 participants. After the workshop, participants and facilitators revisit the cases, patterns and scenarios which were discussed.

Follow the COLLABORATIVE REFLECTION WORKSHOP structure, adding:

Before the Workshop

- Instruct participants to contribute a rich description of a real problem they are confronted with in their practice, using a template, which prompts them to specify:
 - Situation: What is the setting for this scenario? Describe the educational, technological and institutional setup.
 - Task: What is the problem to be solved, or the intended effect?

On the day

- Tag the scenario and the cases with keywords and concepts highlighting the essence of the context and the problem. Find patterns that match the same

tags, and consider their utility in solving the problem.

- Describe a possible solution, based on applying the selected patterns.
- Note how the patterns themselves evolved in the process.

The template should provide additional slots for capturing these outputs, thus producing a coherent description of the problem and its proposed resolution.*

After the workshop

- Prompt participants to
 - Publish any new Design narratives, patterns and scenarios that emerged on the day.
 - Add details and artefacts (images, illustrations, diagrams, links, etc.) to their scenarios.
 - Comment on the patterns, noting questions which have emerged from the discussion.



Scenario template*

Patterns

Identify patterns appropriate for the situation and the task. How would they inform the solution?

Solution

Describe a possible solution derived from the patterns you selected.

Expected Results

Concrete, measurable criteria for success.

Lessons Learned

What have you learned from writing this scenario?

Support patterns

Summary

THREE HATS

I tell a story, you write it down, and she will present it.

TABLE-TOP CONCEPT MAPPING

Establish a shared vocabulary by negotiating a concept map of the problem domain.

THIS REMINDS ME OF ...

Provoke collaborative reflection on a Design Narrative or scenario by asking peers to suggest similar stories.

FORCE MAPPING

Alexander defines a pattern as equivalent to a diagram resolving a set of interacting and conflicting forces. Many pattern authors see the articulation of forces and relations as key to the problem description. Others claim that the notion of forces causes confusion, and is an obstacle to novice pattern writers. To resolve this conflict, groups of authors are asked to represent forces as icons and draw the links between them.

PAPER 2.0

Paper is a wonderful technology, but web2.0 has some nice features. Why not combine the best of both?

DRAW AND TELL

In a conversational activity, start off by a structured task in which participants represent a personal reflection in drawing and present it to the group. The subject of the task should be related to the theme of discussion at an abstract level so that it inspires the ensuing conversation.

THREE HATS

I tell a story, you write it down, and she will present it.

Problem

Stories (narratives) are a powerful form of capturing, structuring and sharing knowledge. Inexperienced story writers may find it hard to express their knowledge lucidly in this form i.e. storytelling as a craft with flow and form:

- They may feel too insecure or unconfident to simply tell a story, and may drift into terse descriptive phrases, preaching or promotional mode.
- Often they take their setting for granted, and fail to provide a description which would allow readers to contextualise the story adequately.
- Might gloss over inconvenient details.
- Feel constrained by their audience.

Many of these issues can be addressed by offering constructive peer feedback. However, peers may be:

- Reluctant to criticise
- Attribute misunderstanding to their own faults
- Skim the story rather than consider it attentively

Context

Co-located collaborative knowledge sharing activities, i.e.

- Learners are present in the same place and time
- Learning is driven by sharing learners' personal experiences / observations.

In addition, learning is supported by a collaborative web-based authoring tool. Although this pattern can be generalised to relax this requirement, there is added value in this particular setting.

Solution

Instruct learners to work in groups of 3-5. In each group,

- One learner tells a story
- A second writes it using the collaborative authoring tool
- A third will later use this write-up for presenting the story to the larger group.
- Remaining members of the group participate in interrogating the details of the narrative

The collaborative authoring tool needs to provide a Narrative space. Preferably, the

tool should include a template to provide Soft scaffolding.

A story is complete when all participants feel that the presenter has enough in the write-up to be able to present the story accurately.

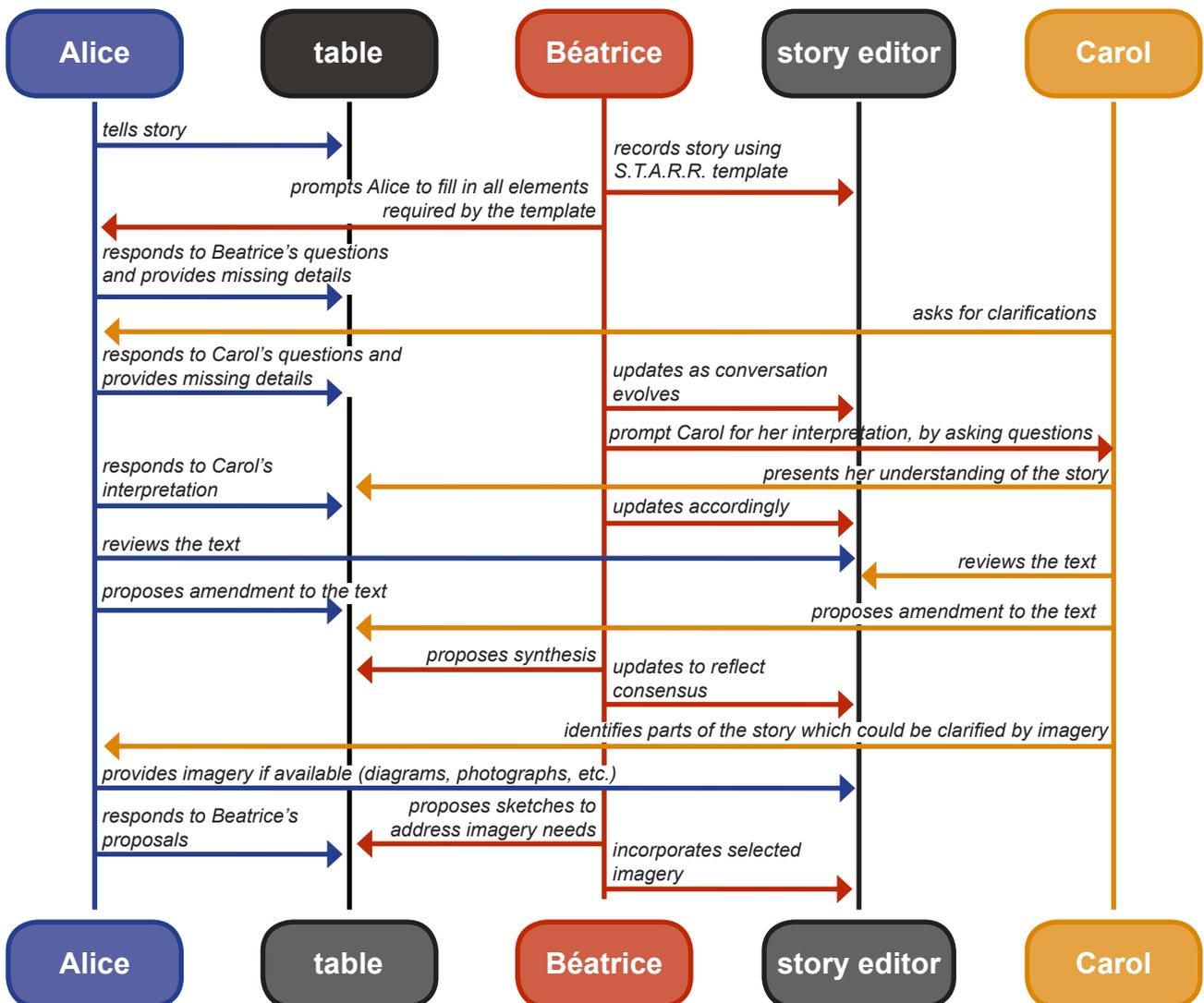
Once the group is satisfied with the outcome they change roles and repeat.

Related Patterns

- THIS REMINDS ME OF ...

Supported by

- SOFT SCAFFOLDING
- NARRATIVE SPACE



Alice tells a story of an event in which she was confronted with a challenge and how she solve it

Table could be a physical table around which participants hold the conversation or could be a virtual synchronous multi-user medium

Beatrice records the story using the S.T.A.R.R. template

Ideally the story editor is an online multi-author multimedia structured narrative environment. In the absence of such, paper and pen go a long way

Carol interrogates Alice for the story details until she is convinced she can present the story to a wider audience

TABLE-TOP CONCEPT MAPPING

Establish a shared vocabulary by negotiating a concept map of the domain.

Problem

The pattern methodology aims to engage multidisciplinary communities in a design-level discourse. In order to achieve this, a community needs to first establish a shared vocabulary. This vocabulary should be rooted in the practices of the domain, and informed by the relevant bodies of theory.

Context

This pattern originates from our PARTICIPATORY PATTERN WORKSHOPS, but would probably be relevant in other situations where a group of practitioners are engaged in an on-site (co-located) collaborative reflection.

The basic form of this pattern does not involve any “high” technology: it uses tables, post-it notes, ribbons and markers. However, it would ideally lead to an on-line, collaborative concept mapping activity. E.g. transferring the map to a tool such as <http://www.aypwip.org/webnote/> or an embedded FreeMind map.

Solution

Participants work in groups of 3-5. First, provide each participant a few texts from their previous work, and ask them to highlight key terms using two colours, one for “assets”, the

other for “hazards”. Assets are terms they see as having a well-understood and agreed meaning, hazards are vague, contentious or provocative terms.

Next, participants need to agree on a common list of “assets” and “hazards”, by writing them on two colours of post-it notes. Each post-it should have the term written on top and a definition below.

Having agreed on the list of concepts, the group moves on to mapping them, using coloured threads or markers to note links.

Finally, the group presents its map to other groups to stimulate discussion and further clarify details.

In order to build on the outputs of this activity, they need to be converted to a persistent and manipulable form. This could be done by using the map as a basis for a digital on-line knowledge structure. A less work-intensive alternative would be to apply the PAPER2.0 pattern and post pictures of the map in a shared, annotatable digital space.

Related Patterns

- PAPER2.0
- PARTICIPATORY PATTERN WORKSHOP

THIS REMINDS ME OF ...

Problem

Case-stories of successful practice form the basis for identifying patterns. However, they need to be gathered in sufficient quantity to fulfill the 'Rule of Three'. This requires that three examples of practice support any pattern that is developed to an eventual release state.

Context

This pattern originates from the PARTICIPATORY PATTERN WORKSHOPS, but is also relevant in other situations where a group of practitioners are engaged in collaborative reflection around case-stories of successful practice. It works best with group sizes of three to five members but this is not a requirement. This pattern also forms a subset of the THREE HATS pattern for interrogating case-story narratives.

Solution

During a DESIGN NARRATIVE WORKSHOP ensure that the format gives time and space to eliciting related stories during the discussion of individual cases (for example, when using the THREE HATS pattern). These stories can be invoked formally - by singling out individual group members - or informally by letting them emerge spontaneously during the group discussions. The key is to ensure that these related stories are captured in a relevant format to be referenced later. Assigning

the role of scribe to one of the group members and using either an electronic or paper-based template can successfully achieve this. All of these emergent stories should undergo similar scrutiny to the main case-story or stories that are under discussion.

Related Patterns

- THREE HATS

FORCE MAPPING

Problem

Alexander defined a pattern as equivalent to a diagram resolving a set of interacting and conflicting forces. Without opposing forces there is in effect no problem to be solved. Many pattern authors therefore see the articulation of forces and their relationships as key to the problem description. But the notion of forces is often a difficult and confusing concept for novice pattern writers and identifying forces can then become an obstacle to good pattern writing.

Context

This pattern is used during the **PATTERN MINING WORKSHOP** where a group will be discussing a number of case-stories of successful practice and identifying the key elements that form the description of the problem statement for the resultant pattern.

Solution

Ask groups of authors to undertake a force mapping exercise where they represent forces as icons. These illustrate the tensions that exist within the problem space identified across the case-stories. Authors should then build up the relationships between these by drawing links between the icons and at the simplest level indicating whether they act positively or negatively upon each other.

Related Patterns

- [TABLE-TOP CONCEPT MAPPING](#)
- [PAPER2.0](#)

PAPER 2.0

Paper is a wonderful technology, but web 2.0 has some nice features. Why not combine the best of both?

Problem

Paper is the ultimate mobile technology. It works in broad daylight or near darkness, never runs out of battery, is compatible with all readers, you can survive a 10 meter drop unscratched.

That said, on-line tools have their merits, some of which are hard to implement in paper:

- Collaborative commenting and authoring;
- Instant and virtually zero cost updates;
- Embedded interactive media.

Context

Predominantly informal learning communities, sharing a common interest but geographically disparate.

Solution

Conduct the main expressive activity using a paper-based medium, but use a participatory web medium to share, annotate and remix works.

In small co-located groups explore a theme through drawing, sketching, collage or other forms of paper work.

Display these works locally at a site relevant to the group (e.g. a classroom display)

Photograph or scan the works, upload them to a shared area on a photo sharing site, embed these in a wiki or blog dedicated to the activity theme.

Using the photo-sharing site and the blog / wiki, share the works with similar-minded groups in other locations.

Annotate / comment on others' work using the participatory web media.

Print other groups' works to share with your group

Remix works from remote sites - create collages or paint over them, and upload back to the web.

Related Patterns

- DRAW AND TELL
- OBJECTS TO TALK WITH

DRAW AND TELL

Problem

How can you support participants to begin sharing their experiences at the start of a workshop, when they are only just getting to know each other?

Context

Similar to **THREE HATS**, the context is for participants engaged in co-located collaborative knowledge sharing activities, i.e.

- Learners are present in the same place and time
- Learning is driven by sharing learners' personal experiences / observations

Solution

In a conversational activity, start off by a structured task in which participants represent a personal reflection in a drawing and then present this to the whole group. To facilitate interpretation of the drawing, text may be added. The subject of the task should be related to the theme of discussion in order to support further discussion.

The following processes can be used for producing relevant drawings:

- Spend a few minutes outlining your idea

- Make some initial sketches and bounce ideas around your group
- Complete your drawing, taking into account group feedback
- Explain your drawing to the whole group
- Respond to questions to clarify
- Finally, write any additional text that will support de-contextualised understanding, i.e. for people who were not at the workshop. You may want to use Paper 2.0 for this, although it is not strictly necessary.

Related Patterns

- PAPER 2.0
- OBJECTS TO TALK WITH

Acknowledgements

Terry Russell

Annexes

What are Design Patterns?

The Design patterns paradigm (Alexander et al, 1977) was developed as a form of design language within architecture. This was done with the explicit aim of externalizing knowledge to allow the accumulation and generalization of solutions, and to allow all members of a community to participate in discussions relating to design. Alexander's patterns were organized into a coherent system called a *pattern language* where the interrelations between individual patterns were articulated. The idea has been embraced in several other disciplines, starting with software engineering*. More recent examples of design pattern collections include hypermedia (c.f. German & Cowan 2000), interaction design (c.f. Erickson, 2000 and Borchers, 2001), and mergers of cinema studies and computer science (Walldius 2001), e-learning systems (Derntl & Motschnig-Pitrik, 2004), and the design of computer science courses (Bergin, 2000). These patterns and pattern languages have enabled designers to share, discuss and aggregate their knowledge across diverse communities.

* "One thing expert designers know not to do is solve every problem from first principles. Rather, they reuse solutions that have worked for them in the past. ... Consequently, you'll find recurring patterns of classes and communicating objects in many object-oriented systems. These patterns solve specific design problems and make ... designs more flexible, elegant, and ultimately reusable. They help designers reuse successful designs by basing new designs on prior experience. A designer who is familiar with such patterns can apply them immediately to design problems without having to rediscover them" (Gamma et al., 1995, p1)

The original definition of a design pattern positions it as a high-level method of design which specifies the context of discussion, the particulars of the problem, and how these can be addressed by the designated design instruments. In *Pattern Languages* Alexander writes:

Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice. (Alexander, 1977)

And in the *Timeless Way of Building* he elaborates:

Each pattern is a three-part rule, which expresses a relation between a certain context, a problem, and a solution.

As an element in the world, each pattern is a relationship between a certain context, a certain system of forces which occurs repeatedly in that context, and a certain spatial configuration which allows these forces to resolve themselves.

As an element of language, a pattern is an instruction, which shows how this spatial configuration can be used, over and over again, to resolve the given system of forces, wherever the context makes it relevant. (Alexander, 1979, p 247).

In other words, a pattern has three facets: descriptive, normative, and communicative. It is an analytic form, used to describe design situations and solutions, a meta-design tool, used to highlight key issues and dictate a method of resolving them, and a communicative tool enabling different communities to discuss design issues and solutions.

Alexander's patterns were aimed at capturing age-old design knowledge and making it available to a wide audience. In a domain where age-old knowledge does not exist, patterns should instead aim at identifying elements of effective practice as they emerge, and capture them as objects for discussion, scrutiny and manipulation. Alexander's architectural design patterns are informed by theories of construction, engineering and human psychology. In much the same way, pedagogical patterns should be based on a theoretical layer concerning pedagogy and epistemology. And software design pattern may need to include justification in terms of computational efficiency and robustness.

The Promise of Design Patterns

The core of a design pattern can be seen as a functional statement: *“for problem P, under circumstances C, solution S has been known to work”*. Such a structure reads as a generalisation of the narrative form of “something happened to someone under some circumstances”, when that narrative is a record of a problem solving effort. Complexity and context-dependence are characteristic of design-based research and the design patterns approach is sensitive to these issues. It reflects them by restricting solution statements to compact classes of problems in clearly delineated contexts.

Design patterns have been used extensively in object-oriented programming for over a decade. Apart from their popularity amongst software designers, recent studies indicate measurable benefits in terms of cognitive load (Kolfschoten et al., 2006), software quality (Guéhéneuc et al., 2006) and system maintenance (Prechelt et al. 2001).

The modest nature of design patterns can also be seen as an expression of a pragmatist philosophy, suggested by several authors as the foundation of design-based research. This philosophy supports the notion of ontological innovations, which diSessa and Cobb (2004) derive from the need to address the gap between practice and theory. Design patterns are situated abstractions of expert knowledge; they generalise from successful practice without detaching from its context. As such, they offer a two-way bridge between practice and theory: opening practical wisdom to theoretical scrutiny and allowing theory to be projected into practice. As such, the core structure of design patterns demands precision in description of problem, context and solution, and subjects to them theory and evidence.

The functional, holistic and compact form of design patterns also makes them promising candidates to serve as boundary objects in design-level interdisciplinary discussions. Following Bowker and Star (1999), there is a growing acknowledgement that practitioners from different communities interfacing in a joint enterprise may inhabit distinct activity systems (Tuomi-Gröhn and Engeström, 2003). Consequently, the conceptual spaces that these communities form around the joint enterprise would diverge, impeding communication and coordinated resolution of emerging issues. Boundary objects are artefacts that might help to calibrate these diverse perspectives towards a shared canon of knowledge, situated in common problems (Noss et al., 2007; Bakker et al. 2006).

Templates

Design Narrative template

As an alternative to the Design Narrative template, consider its interactive form on the Pattern Language Network site at:

- <http://purl.org/planet/Cases/>

Patterns template

As an alternative to the Patterns template, consider its interactive form on the Pattern Language Network site at:

- <http://purl.org/planet/Patterns/>

Design narrative template

Name of your case-story <i>Write a short meaningful name</i>	
Summary <i>Write a concise summary of your case-story</i>	<i>Add an icon if possible</i>
Primary Author	Contributors
Situation <i>What was the setting in which this case study occurred?</i>	
Task <i>What was the problem to be solved, or the intended effect?</i>	
Actions <i>What was done to fulfil the task?</i>	
Results <i>What happened? Was it a success? What contributed to the outcomes?</i>	
Lessons Learned <i>What did you learn from the experience?</i>	
Notes, Links and References	
Licence <i>Choose and specify your licence.</i> <i>We recommend Creative Commons Attribution-NonCommercial-ShareAlike.</i>	
<input type="checkbox"/> Attribution <input type="checkbox"/> Attribution-NonCommercial	
<input type="checkbox"/> Attribution-NoDerivs <input type="checkbox"/> Attribution-NonCommercial-ShareAlike	
<input type="checkbox"/> Attribution-NonCommercial-NoDerivs <input type="checkbox"/> Attribution-ShareAlike	
<input type="checkbox"/> Other: _____	

Design narrative template

Name of your case-story	
Summary	<i>Add an icon if possible</i>
Primary Author	Contributors
Situation	
Task	
Actions	
Results	
Lessons Learned	
Notes, Links and References	
Licence <i>Choose and specify your licence.</i> <i>We recommend Creative Commons Attribution-NonCommercial-ShareAlike.</i> <input type="checkbox"/> Attribution <input type="checkbox"/> Attribution-NonCommercial <input type="checkbox"/> Attribution-NoDerivs <input type="checkbox"/> Attribution-NonCommercial-ShareAlike <input type="checkbox"/> Attribution-NonCommercial-NoDerivs <input type="checkbox"/> Attribution-ShareAlike <input type="checkbox"/> Other: _____	

Patterns template

Name of your pattern <i>Write a short meaningful name</i>	
Summary <i>Write a concise summary of your pattern</i>	<i>Add an icon if possible</i>
Primary Author	Contributors
Problem <i>What does this pattern try to achieve? Why is it needed?</i>	
Forces <i>List the forces in tension, provide a force diagram if possible.</i>	
Context <i>Where is this pattern applicable? Where not?</i>	
Solution <i>Provide a detailed and concrete description of the pattern. Include structure/process diagrams as needed.</i>	
Related Patterns <i>List other patterns related to this one, under categories such as component, assisting, conflicting, uses this, etc.</i>	
Support <ul style="list-style-type: none">• Source Case• Other Cases• Theoretical justification• Verification• Scenarios/solutions which were developed using this pattern	
Notes, Links and References	
Liabilities, potential risks, extensions, expected side-effects	
Licence <i>Choose and specify your licence.</i> <i>We recommend Creative Commons Attribution-NonCommercial-ShareAlike.</i> <ul style="list-style-type: none"><input type="checkbox"/> Attribution<input type="checkbox"/> Attribution-NoDerivs<input type="checkbox"/> Attribution-NonCommercial-NoDerivs<input type="checkbox"/> Attribution-NonCommercial<input type="checkbox"/> Attribution-NonCommercial-ShareAlike<input type="checkbox"/> Attribution-ShareAlike<input type="checkbox"/> Other: _____	

Patterns template

Name of your pattern	
Summary	<i>Add an icon if possible</i>
Primary Author	Contributors
Problem Forces Context	
Solution	
Related Patterns	
Support <ul style="list-style-type: none">• Source Case• Other Cases• Theoretical justification• Verification• Scenarios/solutions which were developed using this pattern	
Notes, Links and References	
Liabilities, potential risks, extensions, expected side-effects	
Licence <i>Choose and specify your licence.</i> <i>We recommend Creative Commons Attribution-NonCommercial-ShareAlike.</i> <ul style="list-style-type: none"><input type="checkbox"/> Attribution<input type="checkbox"/> Attribution-NoDerivs<input type="checkbox"/> Attribution-NonCommercial-NoDerivs<input type="checkbox"/> Attribution-NonCommercial<input type="checkbox"/> Attribution-NonCommercial-ShareAlike<input type="checkbox"/> Attribution-ShareAlike<input type="checkbox"/> Other: _____	

Resources

Neighbouring languages

- *A Pattern Language for Pattern Writing*, by Gerard Meszaros and Jim Doble: a series of patterns for to help authors write well structured and meaningful patterns. A useful document for consultation before, during and after the Pattern Mining Workshop.
- *The Language of Shepherding*, by Neil Harrison: a pattern language to guide 'shepherds' in helping writers improve their patterns. A valuable document to support pattern improvement after the Pattern Mining Workshop.

Presentations

- <http://www.slideshare.net/PDPkit>

Videos of keynote at E-Learning Patterns Conference 2009:

- <http://www.iwm-kmrc.de/workshops/e-learning-patterns/videos/Keynote1Y-ishayMor.html>
- <http://www.iwm-kmrc.de/workshops/e-learning-patterns/videos/Keynote2Y-ishayMor.html>

On-line

- The Planet Project
<http://patternlanguagenetwork.org/>
- The Learning Patterns Project
<http://lp.noe-kaleidoscope.org/>
- The LDSE project
<https://sites.google.com/a/ikl.ac.uk/ldse/>
- The E-LEN project
<http://www2.tisip.no/E-LEN/>
- Pedagogical patterns
<http://www.pedagogicalpatterns.org/>
- Robert Mislevy's work on assessment patterns
<http://padi.sri.com>
- The idea of design patterns originates with Christopher Alexander, a theoretician of architecture, see
<http://www.patternlanguage.com>
- Brad Appleton Patterns and software: essential concepts and terminology
<http://www.cmcrossroads.com/bradapp/docs/patterns-intro.html>

Further readings

Design patterns for learning

The idea of design patterns originated in architectural theory, but the computer science community was the first to embrace it. It is not surprising that this is also where it has made the greatest impact with respect to education. The design patterns approach has manifested itself through three main trends:

- The first is the growing trend of *Pedagogical Design Patterns* (Anthony, 1996; Bergin 2000; Eckstein, Bergin & Sharp, 2002).
- The second is the development of software design patterns for educational technology (Dearden, Finlay, Allgar & Mcmanus, 2002; Avgeriou, Vogiatzis, Tzanavari and Retalis, 2004).
- The third is the search for patterns in related practices, such as evaluation and assessment (Barre, Chaquet & El-Kechaï, 2005).

Nevertheless, it is important to note that the first reference to learning is made by Alexander himself. In his seminal book (Alexander et al, 1977) he describes a pattern called “Network of Learning”. The premise of this pattern is that in a society that emphasises teaching, learners become passive and unable to think or act for themselves. He argues that creative and active individuals can only grow up in a society that focuses on learning

instead of teaching. The solution he proposes is to replace the structures of compulsory schooling in a fixed place, with decentralised processes of learning which engage learners through contact with many situations and people all over the city: workshops, teachers at home, professionals willing to take on the young as helpers, older children, museums, youth groups, scholarly seminars, industrial workshops, old people, and so on. This argument resonates with Illich’s call for “deschooling society” (1971) and conviviality (1973). We find such arguments motivating in our search for alternative means of mathematical learning.

Pedagogical design patterns apply the concept of design patterns to pedagogical design. The fundamental claim behind this effort is that many experienced practitioners in education have tried and tested methods of solving recurring problems or addressing common needs. Among the pioneers in this field were Anthony (1995) and later the pedagogical patterns project (<http://www.pedagogicalpatterns.org/>), initiated by a group of experienced software engineering and computer science educators (Bergin, 2000; Eckstein, Bergin & Sharp, 2002). They proposed a set of patterns dealing with issues ranging from the design of a college course to specific principles of computer science instruction and to concrete problems and their solutions.

A second arena that has seen a proliferation of design patterns over the last years is web-based educational technologies. Notable examples in this field include the E-LEN

project (<http://www2.tisip.no/E-LEN/>) and several initiatives within the IMS-LD framework (<http://www.imsglobal.org>). Most of the work in this area is focused on the engineering aspects of designing, developing, deploying and evaluating good technology for web-based instruction (Frizell & Hubscher, 2002; Hernández-Leo et al, 2006; Bailey et al, 2006)

This strain of work is done mainly in the context of developing large scale technological systems to support organizational and vocational learning or web-delivered higher and further education. Due to this context, much of the work is highly technical. Many of the valuable innovations have a strong engineering flavour to them (e.g. Bailey et al, 2006) which might deter teachers and educational researchers. The interaction between student and instructor is assumed to be mediated exclusively by web-based communication channels. Under such circumstances, most of the effort goes into designing the representation and organization of educational content and the mechanisms by which learners interact with it (Frizell & Hubscher, 2002). Design patterns are also situated in this context, with the engineer of educational technologies as the user in mind (Avgeriou et al, 2003; Garzotto et al, 2004; Kolås & Staube, 2004). From this perspective, pedagogical issues are often assumed rather than discussed. A noteworthy exception is Goodyear (2004). In an attempt to distance himself from the dominant approaches in e-learning, Goodyear focuses on what he calls networked learning, where technology is used to promote connections between learners and foster communities which make efficient use of their resources. In this context, Goodyear emphasises patterns as a means of empowering practitioners to utilize accumulated design knowledge. His patterns are succinct and written in plain language. Another study oriented towards educators is Dearden et al (2002; 2002b). They point

to the strong ideological and methodological parallels between Alexander's original vision of pattern language and the paradigm of participatory design. They propose the 'facilitation' model developed by Alexander et al (1985) in the Mexicali project as an alternative to the dominant approach of using patterns to deliver expert knowledge to novices.

Finally, design patterns have recently been used in the context of assessment, evaluation and analysis of learning and learning systems. Pachler et al (2009) apply a pattern-based methodology in the domain of formative e-assessment. Wei, Mislavy, and Kanal (2008) provide an extensive collection of patterns for language assessment. Gibert-Darras et al, (2005) offer a pattern language for assessing students' problem solving abilities in the context of a basic Java course. The standard Alexandrian argument holds here as well: assessing students' performance is a hard job, into which a lot of research has been done and many practitioners have accumulated insights through experience. Patterns allow us to offer this knowledge in a useful form to novice teachers.

By Yishay Mor,
September 2009

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