


# *Zen and the Art of User Requirements*



Documenting user requirements can be challenging. Agile methodologies advocate building use cases and user stories, but there are no standard processes or notations available to help gather requirements for these. Without strong interpersonal communication and facilitation skills, the process can fail, leading towards ineffective requirements and inadequate software.

This guide offers a path to overcome these obstacles. Through the simplicity and serenity of mind mapping, we will explore the “User Wish” - a vague shape of requirements before they are formalized. Taking this concept one step further, we will then clarify the requirements into UML.

# To being our journey towards understanding user requirements, let's first consider an important topic: *Mind Mapping*.

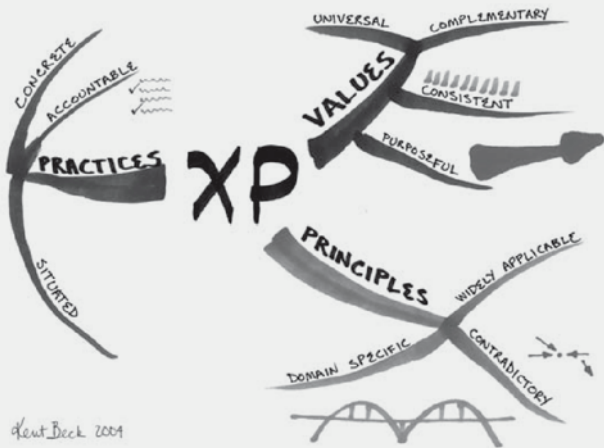


Image from "Extreme Programming Explained: Embrace Change (2nd Edition)" by Kent Beck.

Intuitive and natural, mind mapping is a graphical technique of taking notes by visualizing thoughts into a simple tree structure of keywords with a radiant shape containing colors, pictures, and drawings.

Consider Kent Beck's mind map of eXtreme Programming. Around a central word, concept, or image, radial branches called "Basic Ordering Ideas" grow with keywords along them, and associative sub-branches grow recursively. In this case, "XP" is the central image and "Values", "Principles" and "Practices" are the BOI.

This approach to representing ideas is a natural fit for humans, as our memory

is wired very much differently than a computer's hard disk. Consider your ability to immediately recognize an old friend or colleague among a whole crowd of people: computers have a long way to go before being able to search its database of images for that.

While you may not know the name Roger Sperry, you mostly certainly are familiar with his work. He was the neuropsychologist and Nobel laureate who found that the two hemispheres of the brain separate intellectual abilities.

- The left brain is geared for words, logic, numbers, sequence, linearity, analysis, and lists.
- The right brain is better suited for rhythm, spatial awareness, imagination, dreams, colors, and dimensions.

Mind mapping stimulates both the right and left brains using shapes and colors along side with logical keywords. As a result, it uses the full power of the brain to evoke human memories, as opposed to structured notes which only leverage half.

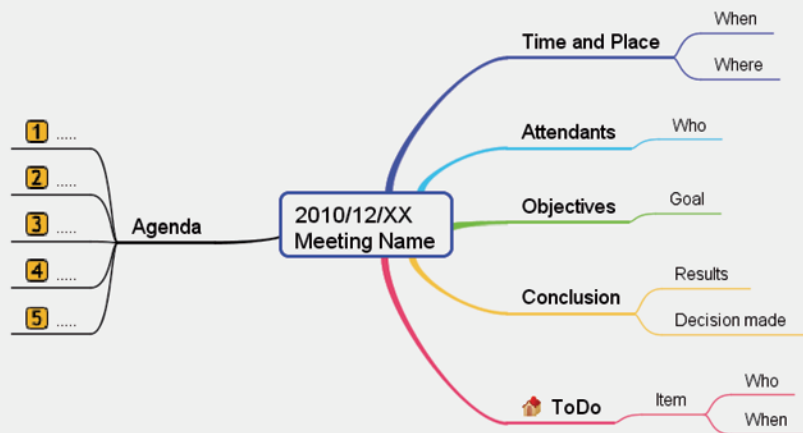
## WHY ARE MIND MAPS SO EFFECTIVE?

- The structural elements of mind maps are **keywords**, not sentences.
- **Loose association** is the only relationship between linked keywords.
- You can use mind maps as **fast, easy, and real-time shorthand** minutes for meetings, interviews, and other conversational sessions.
- You can have a **high-level overview** a whole mind map in a glance.
- A mind map **evokes the context** of the scene in which it was created.
- **Constantly growing** and evolving on demand to capture ideas in real-time.



*Mind maps  
have found  
their way into  
several business  
functions,  
especially  
to-do lists,  
presentation  
preparation,  
and note taking,  
but they can  
provide a high  
value elsewhere.*

*Consider the  
following  
cases of mind  
mapping in  
business:*



### MEETING AGENDA AND MINUTES

Mind maps are an effective tool for both planning and taking minutes for a meeting. For example, the above template has “fixed” BOI branches for basic meeting information, along with “open ended” BOI branches for a conclusion and to-do items.

By starting with an open branch for the conclusion and to-do items, the facilitator can specifically address these items rather than leave them undecided by the end of the meeting.

### BRAINSTORMING

Mind maps are an ideal tool for brainstorming ideas, especially among teams.

In the example, shown below, the BOI branches are named “Keep”, “Problem” and “Try.” During a mind map-driven brainstorm, the team discusses things they should keep doing (“Keep”), issues found in the last iteration (“Problem”), and the things they want to try in the next iteration (“Try”). This can be an ideal, agile way to develop and fulfill requirements.



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## User Stories and Mind Mapping

One of the core values of agile development is interaction with the customer. This is a fundamental shift from traditional written requirements documents that are simply “thrown over the wall” from analysts.

In agile development, a key tool used to gather these requirements are user stories. Quite simply, a user story is short description – one or more sentences – that’s written in the common, everyday language that the end-user will understand. They’re designed to capture what the user wants to achieve.

Extreme Programming (“XP”), a fairly unique agile methodology, uses the concept of “story cards” to record conversations from a user interview. While XP is certainly not for everyone, the idea of story cards is that they restrict the written information to a tangible, small piece of paper, and by doing so they naturally promotes conversation with the customer.

Story cards are often written out by the customer and posted on the walls of the development workspace to evoke the memory of the conversation. This also gives the developer who has a question about the story “a ticket to conversation” by physically removing the card from the wall and discussing it with the customer.

Similar to story cards, mind maps evoke memories and capture the context of the conversation. The shape, color and other properties help the participants remember more easily and clearly than a memo.

## Exploring User Wishes through Mind Mapping

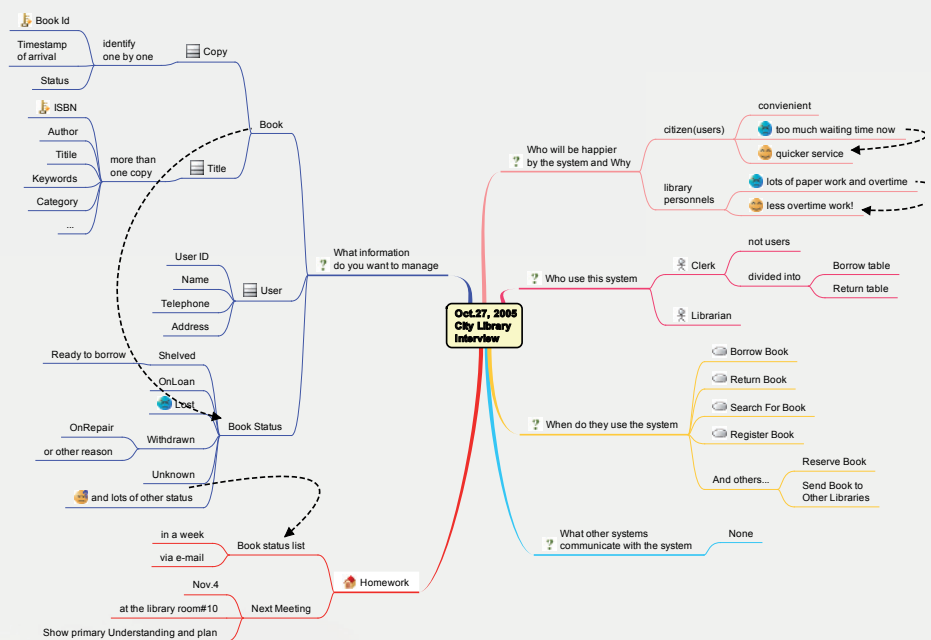
In and of itself, a user story is a small fragment that tells very little. It is only through combination and contextualization that user stories can tell what a user actually wants, or the “User Wish.”

Since mind maps are as evocative as story cards, a mind map is better suited to see the whole user wish on a high level. While starting with a predefined mind map template can support a semi-structured interview, the dynamic and flexible nature of a mind map allows branches to be added at any point in a conversation.

The Basic Ordering Idea branches of a typical user wish mind map will often include:

- **Who will be happy because of the system and why?** This captures the system’s stakeholders and their values along with current problems, context and expectations. These are the essential success factors and risk drivers behind requirements.
- **Who will use the system?** This captures the system users and potential use-case actors.
- **When will they use the system?** This captures the system’s story or use-case candidates.
- **What information is managed with the system?** This question can gather entities or objects of the domain model, including user concerns and domain keywords.

As an example, the mind map below captures the user wish of a fairly complex library system.



## Converting a Mind Map to UML

Once the previous questions have been answered, there are two ways to proceed: gather user stories as in XP planning games, or create an agile model of use-case and domain-entity models in UML.

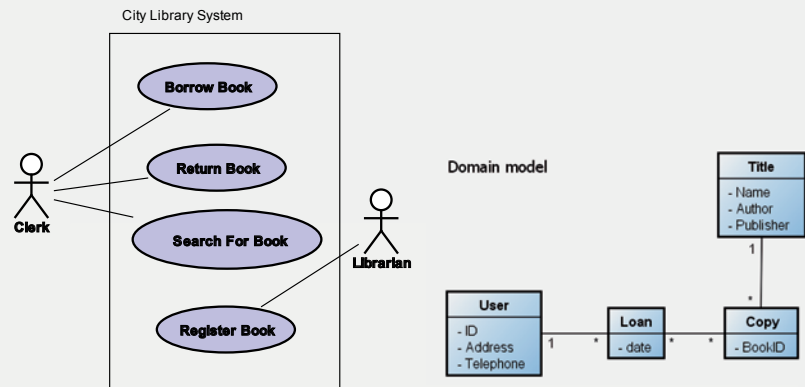
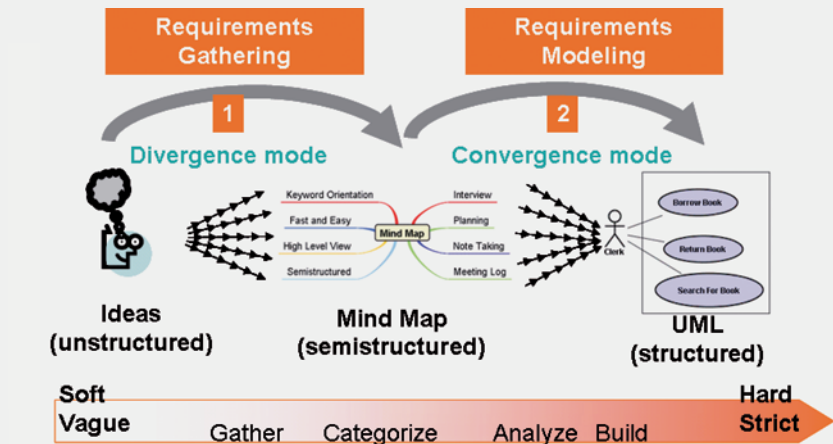
For either process, the user wish mind map is a great starting point. On the mind map, icons of actors, use-cases, and classes are added to their candidates.

Going back to the city library example, a use case and domain model can be created directly from the mind map.

Using mind maps in conjunction with UML means dividing requirements exploring thinking into two modes, the first being “Requirements Gathering” or “User Wish Exploration”. The mind map quickly captures and shares high-level ideas. In the second mode, “Requirements Modeling” with UML, domain objects and use-cases are modeled from keywords gathered in the first mode.

## Conclusion

Mind mapping offers the interviewer a semi-structured inquiry format that facilitates asking important questions as well as accommodating unexpected topics. Mind mapping also helps eliminate communication errors and captures a soft structure of user wishes at a high-level view, allowing users to recall the session where the information was recorded.



After gathering ideas in a mind map, keywords can be used as seeds for UML model elements. By the rigorous syntax of UML, one can build rich semantics of a domain model and use them as a design of software application.

Thanks to Agile development practices, a key success factor of a software development project is commu-

nication among all involved parties. There are several methods for sharing information, but neither formal documents nor casual conversations are adequate. Mind maps and UML diagrams work collaboratively to capture vague and unstructured user wishes, giving them structure in order to advance through the software development lifecycle. ■



# *Change Vision has developed astah\*, a complete UML editor that offers the ability to generate UML diagrams directly from mind maps.*

## About Change Vision

Change Vision has developed astah\*, a complete UML editor that offers the ability to generate UML diagrams directly from mind maps.

In astah\*, each topic or node of a mind map can be dragged and dropped into any UML diagram and the mind map will automatically be converted into appropriate classes, use-cases, actors, states, activities, and so on.

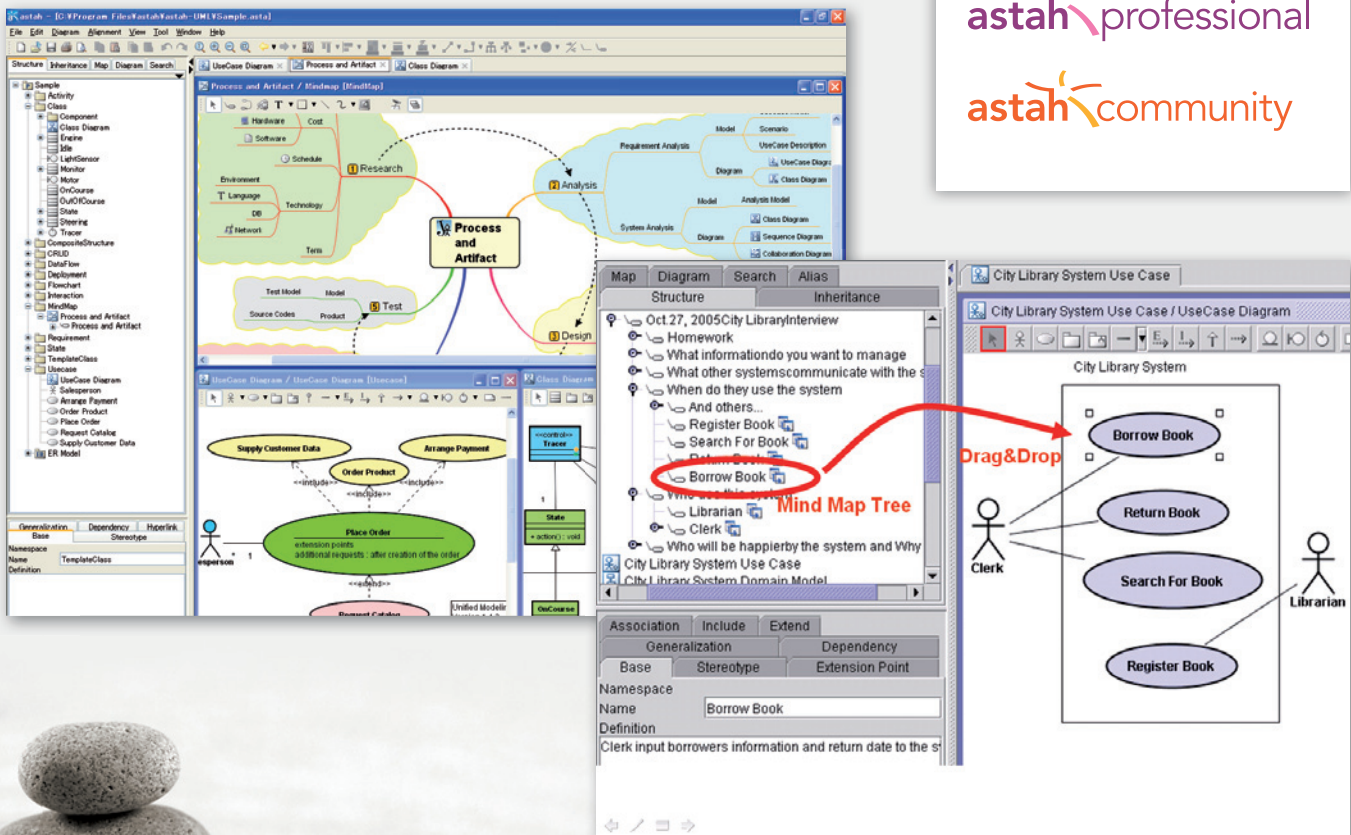


astah<sup>UML</sup>

astah<sup>share</sup>

astah<sup>professional</sup>

astah<sup>community</sup>



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