The Magic 5 of Innovation – Basic Techniques

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Creative thinking is a key skill in almost every domain. Creativity is required to innovate, develop new ideas, get deeper insights, address challenges and resolve conflicts. In this context we understand creativity as the process of creating and developing new and original ideas as one step in the innovation process. This paper presents five basic tools as patterns: Personal Journal, Sticky Notes, Thought Triggers, Templates, and Whiteboards. Personal Journals help you to capture ideas where ever you are. Sticky Notes maximize agility in the process of structuring, combining, sorting and categorizing ideas. Thought Triggers give you a push into unexpected directions of thoughts. Templates are visually appealing, stimulate thoughts and are checklists for specific thought triggers. Whiteboards are large areas for individual or collaborative visual thinking. In addition to the traditional tools, there are also examples of digital versions as apps.

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1. INTRODUCTION

Creativity means the generation of ideas or products that are novel, implemented, valued and socially accepted (Csikszentmihalyi, 1996). Likewise, DeBono (2009) points out that creativity does not only mean to create something new, but that the new concept needs to mean progress and it needs to create values. He also focusses on idea creativity rather than naïve creativity, e.g. creating new but not original types of artifacts (for instance, painting is not necessarily creative if the style is just a copy of existing paintings). “Idea” is a very generic term. For Plato ideas where the abstract, non-material forms. As all objects have forms, an idea can refer to many different things. What it really means to you depends on the field you are working on. An idea can be a solution to a problem, a product, method or process, concept, product name, or marketing campaign. Creative thinking helps to generate more and unexpected ideas. However, it is only the actual implementation and adoption of ideas that leads to innovation. Very often this adoption process requires detailed planning and the evaluation of alternatives and options. Moreover, to come up with great ideas one needs to understand the situation, do research and divide concepts into their parts. This shows that creative thinking is not a replacement for analytical thinking. Rather, the two intellectual operation modes work together hand in hand and one needs both to innovate. Very often, however, creative thinking is not approached systematically. While creativity often happens spontaneously, a systematic approach can increase the outcome, both in quantity and quality. Teams and individuals are excited when they are “kissed by the muse” and the inspiration seems to come out of the blue. While it is inevitable to come up with some good ideas accidently if one really commits to a topic of interest, this pattern language intends to generate more good ideas in a systematic rather than accidental way.

The assumption is that creative thinking can be learned in the same way as analytical thinking (DeBono, 1990). Many creative thinking tools are highly structured and the same methodical patterns occur again and again. This paper continues to collect and connect the basic patterns of creative thinking. It will not present any new method but will try to generalize the commonalities of similar methods and approaches. There are many descriptions of creativity methods and tools out there. What motivates the description as patterns is the generalization of similar methods, the reasoning for the actual form in terms of forces, and the contextualization and connection of the methods/tools. Very often a specific method implies other methods to follow up or it can be combined with other methods. A pattern language captures such relations. There are already some beautiful attempts to capture patterns about creative collaboration,

presentation and learning in pattern languages (Iba, Ichikawa, Sakamoto & Yamazaki, 2011; Iba, Matsumoto & Harasawa, 2012; Iba & Isaku, 2013). Moreover, there are many collections of creativity methods, techniques and tools: Lateral Thinking (De Bono, 1990), Thinkertoys (Michalko, 2006), How to get Ideas (Foster, 2007), or 101 Design Methods (Kumar, 2012), to name just a few. While these are all helpful collections many of the methods overlap. A pattern language can help to organize the various methods in a more coherent way. Moreover, patterns do no only describe the steps of a method but also capture the appropriate context of its application, the reasons for the general structure in terms of forces, and the consequences of choosing one way of doing things. Instead of just describing a method, patterns also explain why a method should be selected and why it works. As such, patterns can integrate research on how the creative mind works and link these principles to specific techniques.

The goal is a pattern language on innovating and finding new ideas. Each pattern will be very brief (1-2 pages), in order to provide a quick entry into the world of innovation. As the patterns are high level, there are certainly many more specific patterns that can be discussed in future papers.

This paper adds to some patterns on creative thinking from past *PLoPs, including:

- Patterns for Creative Thinking - PLoP 2012
- Dream teams and the right place – EuroPLoP 2014
- Patterns for Creative Thinking - Idea Generation (EuroPLoP 2015)

The paper is called “Magic 5 of Innovation” because I have clustered the patterns into groups of fives. In this paper we will cover the magic five tools that can help you. But first let’s have a look at all five things of innovation.

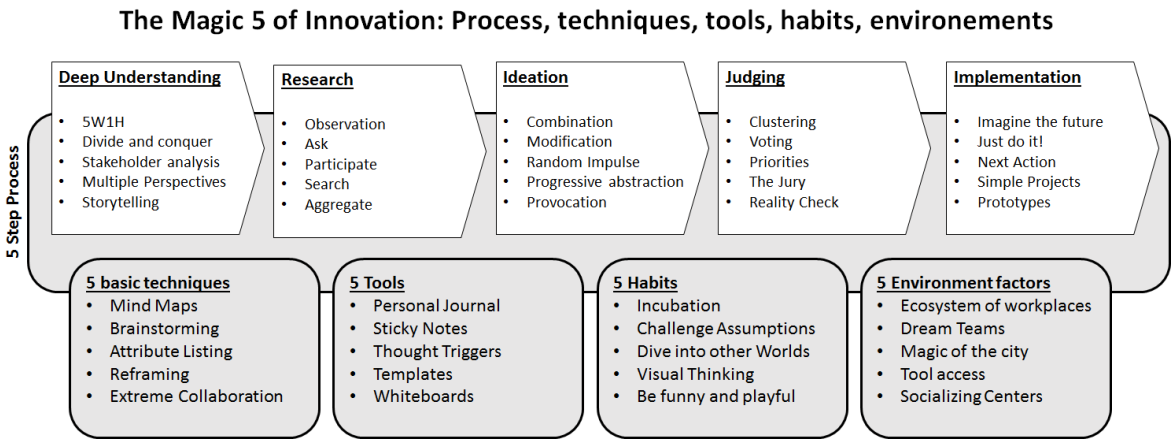


Fig. 1. Pattern Map.

In this paper we will cover Personal Journal, Sticky Notes, Thought Triggers, Templates, and Whiteboards.

PERSONAL JOURNALS help you to capture ideas where ever you are. They keep your mind clear. They are second brain. They are endless sources of inspiration.

STICKY NOTES maximize agility in the process of structuring, combining, sorting and categorizing ideas. They provide order. They are flexible. They are easy and fun to use. Inspiring.

THOUGHT TRIGGERS give you a push into unexpected directions of thoughts.

TEMPLATES are visually appealing, stimulate thoughts and are checklists for specific thought triggers.
WHITEBOARDS are large areas for individual or collaborative visual thinking.

2. PATTERN 1: PERSONAL JOURNAL

2.1 Context

We never stop thinking. Even when we are sleeping, our mind produces new combinations of thoughts. Our subconscious works on solutions and they come to our conscious mind at unexpected times.

2.2 Problem

As there are so many things on our mind, we can easily forget the best ideas.

2.3 Forces

Very often we cannot identify which ideas are valuable and worth to remember. What seems to be unimportant now may become relevant in the future. The value of a thought depends on its meaning in different contexts. We cannot remember all the thoughts that come to our mind. Writing something down implies deeper elaboration of a thought and triggers new thoughts. We need a way to capture and organize our spontaneous ideas and inspirations.

2.4 Solution

Therefore, start capturing all your thoughts, ideas and experiences in a notebook.

1. Have at least one digital and one paper notebook to write down your ideas.
2. Carry your notebook with you at all times.
3. If an interesting thought comes to your mind, write it down.
4. Review your notes on a regular base.
5. If stuck with a problem, open your notebook at any page and use it as a THOUGHT TRIGGER.

You can get cheap or very expensive notebooks. You may wonder whether it is worth to invest so much money for a book of blank white pages. But the value comes with what you write into the book. To remind you of this value, it may be a good idea to have a notebook that looks valuable and is produced of high quality paper. You see many people writing down notes while traveling or sitting in a coffee shop. All great thinkers are reported to have written into their notebooks. It is a common habit of authors to have a notebook of ideas.

Fig. 2. Classic personal journals.

2.5 Consequences

You will have a rich resource of inspirations that are based on your own experiences. Good ideas will be preserved and can be accessed many years later. Thoughts can be reviewed in different contexts. But very often we forget to review our ideas. Instead of going through all the pages it is often easier to just open one page randomly for inspiration. This can be done when you are working on a new problem or on a frequent base – it could become a ritual for Sunday afternoons. There is a risk of losing a book and exposing the ideas to others. You also need space to store all the notebooks.

2.6 Digital tools

Fig. 3. The Create app by PeroperiKit

3. PATTERN 2: STICKY NOTES

3.1 Context

The result of a BRAINSTORMING is a large list of unstructured ideas. In the phase of idea generation quantity comes first but quality comes next! Whether you work alone or in a group, you need to order your initial ideas.

3.2 Problem

Static text is hard to re-organize. The higher the effort to make changes to a structure, the less likely you will explore different options for structuring your collected ideas.

3.3 Forces

Writing down new ideas should be done quickly, group members should work in parallel. Moving concepts from one category to another is an essential process in developing new ideas, solutions, processes, and products. Spatial arrangement of items can have deep meaning, such as belonging to one category, defining the order of steps, indicating strong or weak relation.

It should be easy to explore alternative structures. (Re-)structuring often leads to new solutions. Whether you are working alone or in a group, changing the structure should be effortless.
Setup costs and times for a highly collaborative environment should be cheap. You should be able to use any area for collaboration.

3.4 Solution

Therefore, use sticky-notes to write down your ideas. Provide sticky-notes in every meeting room, and have a sticky note app installed on your smart phone.

1. Setup a topic for a sticky-note session.
2. Sticky notes can be placed on a wall either uncategorized or sorted into categories directly. (e.g. use headlines such as **S**trength, **W**eaknesses, **O**pportunities, and **T**hreats for SWOT).
3. Write down ideas, text items or draw small sketches on sticky notes. You can use sticky notes of different colors, shapes and size and assign special meaning to them.
4. Iteratively re-structure the location of the sticky notes. Identify clusters, headlines, sequences, hierarchies…
5. Capture the final result by making a photo of it.

Using sticky notes is among the most effective creativity methods, yet it is rarely applied despite its cheap and spontaneous setup. To encourage more use you should ensure TOOL ACCESS. People also need to be trained (of course, these patterns can help!). You can use sticky notes in all environments: they stick to walls, tables, whiteboards, and large sheets of paper. If you put them on a whiteboard, flipchart or piece of paper, then you can also draw connections between sticky-notes or encircle groups of related entities. Placing sticky notes on paper backgrounds also has the benefit that you can transport them to another place.

Fig. 4. Sticky notes on everywhere.

3.5 Consequences

You can cluster ideas, sort ideas, prioritize ideas. Ideas can be written down simultaneously. Re-structuring is encouraged. Sticky notes have a high affordance to explore and rearrange. You can put multiple sticky notes on top of each other to have dense information spaces. While it is easy to try out different arrangements, it is hard to store the information. Smart phones are very helpful at taking pictures of the result. But very often small handwritten texts are hard to read. Moreover, very often only the end result is captured, the process of exploring alternatives is not captured. If you use a digital tool to create sticky notes, then you can save interim solutions and return to alternative approaches. However, digital sticky notes work better for individuals than for large groups because only one person can directly manipulate the structure. Interactive whiteboards combine both: you can easily save structures (and continue to work on them later) and multiple persons can work at the board at the same time. This works great for collaboration rooms but the technology is not often available yet.

Sticky notes are an easy way to make ideas in a BRAINSTORMING session visible. Each item may inspire new thoughts since it triggers new associations and all other participant's minds. However, there is a risk that a group may converge too quickly (Stephen, Zubcsek & Goldenberg, 2015). One variation of this method is to first collect all sticky notes without showing them to others. This is also supported by some digital tools such as "Shout It Out" in the SMART Notebook software.

Very often you have to copy the text from the sticky notes for further processing. This could be quite time consuming. Unfortunately it is common to have worked out great solutions with the sticky note method but then the solutions are not followed up because a taken picture does not allow further editing. Leaving sticky notes in the meeting room is also risky as other people can steal the results.

While the general setup is cheap, it is very unlikely that you will carry sticky-notes with you at all times. But it is easy to put a deck of different sticky notes into each meeting room and make it easier for participants to use the material when needed. You can also use apps for digital sticky notes. Good apps offer unlimited workspace and you can create a "wall" of sticky notes even when you are sitting in a train or in a small seat of an airplane.

3.6 Digital Tools

Fig. 5. ipad app "Canvases".

4. PATTERN 3: THOUGHT TRIGGERS

4.1 Context

The more you know about a domain, a solution or a concept, the harder it gets to develop new ways of doing things. Old clichés are taken for granted and finding a new path is biased by your current thought patterns. This could happen at the beginning of a new project (where should you start?) or in the middle of project (what should you do next?).

4.2 Problem

You are stuck and no new ideas come into your mind. You need a push into a new direction.

4.3 Forces

If you follow a path, it is more likely to take the next step into the same direction than wandering off the path (De Bono, 1990). Without an external push you will follow the old direction. But where does such a push come from? It is hard to push yourself into a new direction because you are captured by your old thinking.

If you are new to a field you might be overwhelmed by the options and it is hard to follow one of the many opportunities – you are stuck by abundance, your mind is too open. If you are an old expert in the field you might be preoccupied and biased by your known solutions – you are stuck by limitation, your mind is too closed. Old thought patterns need to be disrupted. Analytical thinking means that you only derive thoughts within your existing framework. One selects the most obvious and promising solution instead of generating many original alternatives (De Bono, 1990). There is a need to leave the existing path of thought and motion. Even artists are stuck by clichés and conventions as long as they are not forced to take a new direction (Lehrer, 2012).

You will not solve a problem or come up with innovative ideas by only looking harder and harder into the same direction. Looking harder into the same direction might even strengthen your old and biased thought patterns (Michalko, 2001). You need an external source to disrupt your thought patterns. You need a kick to start thinking differently.

4.4 Solution

Therefore, use thought triggers to give yourself a push into a new direction. A thought trigger is a textual or visual stimulus that lets you ask different questions, take in a new perspective or restructure your problem. Thought triggers can be drawn randomly (e.g. from a deck of cards), or organized into checklists, templates or structured processes.

1. Build a collection of different thought triggers: card decks, apps with idea stimulators, checklists based on acronyms (such as SCAMPER or SWOT, see below), and templates (such as business model templates).
2. When you are stuck with a problem, use any of the THOUGHT TRIGGERS from your collection.
3. Brainstorm new ideas with STICKY NOTES or write them into your PERSONAL JOURNAL.
4. Try to find as many new aspects using an IDEA QUOTA. If a particular THOUGHT TRIGGER is not generating enough ideas, try another trigger. But don't give up to early.
5. Identify the ideas that seem to be promising and further explore them.

Some examples for idea triggers:
• Negation of assumption: Use an established concept or rule and pretend that it is no longer valid.
• Negation of goals: Think about everything you can do to not reach your goal.
• What if…?: Think up different scenarios without taking care for any restrictions or constraints.
• Random Impulse: Use a random word or image to trigger new ideas.
• Exaggeration: Exaggerate a form, effect, approach, or statement.
• Provoke: How can you shock a potential audience?
• Effects of time: Which effects do time or the historical context have to your product?
• Metaphors: Are there metaphors or analogies to describe your solution or idea?
• Parody: Could you think of a parody to highlight clichés about your product or target group?
• Playing around: Are there playful uses, descriptions or re-framings for your idea?

SCAMPER is an acronym for many useful thought triggers. S = Substitute: Can you substitute parts of the solution? C = Combine: Can you combine the solution with other ones? A = Adapt: Can you adapt an existing solution to solve your problem? M = Magnify: What can be enlarged? P = Put to Other Uses: In which other contexts could the solution be used differently? E = Eliminate (or Minify): What could be reduced or simplified? R = Rearrange (or Reverse): Could you rearrange or reverse the parts of your solution?

Fig. 6. *Card Decks:* Creative thinking card decks – each card is a thought trigger.

4.5 Consequences

By asking the right questions you are more than half way to your solution. Good questions help to better understand the situation, the problem, its forces, the opportunities and available resources. Questions can lead you to different thought directions, see new things, and provide views from MULTIPLE PERSPECTIVES. A good question or way of viewing gives you the right kick to start thinking.

A thought trigger always puts your mind in motion. It suggests a new direction of thinking for your current problem. While many of the triggers state obvious questions, these questions are often not in our head when we concentrate deeply on a challenge. By working with a checklist or randomly picking up an idea trigger we are reminded of these important questions. Because they are often very simple they immediately generate new ideas or show a new direction of thought. A common mistake is to stop too early in the search for more ideas. An idea trigger should be used to generate more than one idea.

4.6 Digital tools

Fig.7. Examples: From left to right: Random spinner with Osborn tools, idea cards widget for design observations, Whack Pack creativity app, templates to collect ideas, ideaStimulator app.

5. PATTERN 4: TEMPLATES

5.1 Context

A problem should be tackled from MULTIPLE PERSPECTIVES and THOUGHT TRIGGERS can help to push yourself into new waters and escape biased thinking. Asking the right questions is essential to get the right answers.

5.2 Problem

It is hard to remember all the important questions. Especially when you are fully engaged there is a tendency to focus only on one particular view.

5.3 Forces

You need a stimulus to ensure that all important questions are asked. Very often questions are related and their dependencies can be grasp best if visually outlined. Some THOUGHT TRIGGERS are more promising than others. How can you indicate their relevance? Sometimes questions work best if they are asked in a specific order and you want to remember that sequence. You want to organize thought triggers into one method.

5.4 Solution

Therefore use templates as checklists that integrate interrelated THOUGHT TRIGGERS into a visual whole. Templates provide thought provoking questions and structures that can be used instantly in many situations.

Blank areas or boxes should indicate where users should add content. The spatial arrangement of blank boxes can indicate sequences, relations, hierarchies, ratios and set up expectations. Many templates are canvases that need to be filled out, such as the “Business Model Canvas”, “Design Thinking Canvas” or “Gamification Model Canvas”.

Templates should be visually appealing and their visual structure should guide the collaboration process. Use professionally designed templates or hire a designer if you need to create your own templates. There are many template collections available on the web. Some smartphone apps are already equipped with useful templates.

1. Identify the templates most relevant to you.
2. Adapt existing templates to you own domain or create templates relevant to your domain.
3. Make sure that templates are not too complex.
4. Make the templates easily accessible.
5. Use the templates in your creative sessions as thought triggers and fill out all fields.

Each template should be self-explanatory. Short explanatory texts can be supportive. Templates should only contain sections that are required. You can also adapt templates to your own needs. For example, replace a general headline “view of stakeholders” by naming more specific stakeholders such as “users”, “developer team” and “management”. Have print-outs of templates ready to use, make a folder on your computer with the best templates, and put useful template-based apps on the first screens of your smart phone.

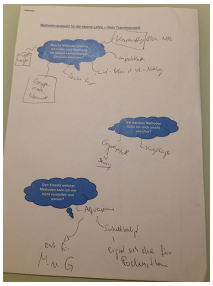
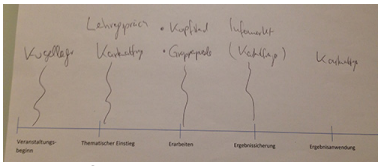


Fig. 8. Print out with several questions



Print out for planning teaching phases

5.5 Digital Tools

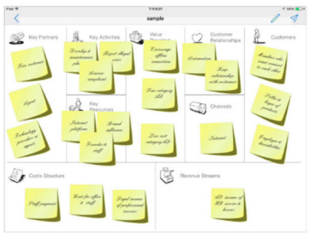
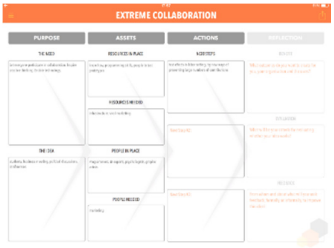


Fig.9. iPad app “Business Model”

iPad App “Personas”



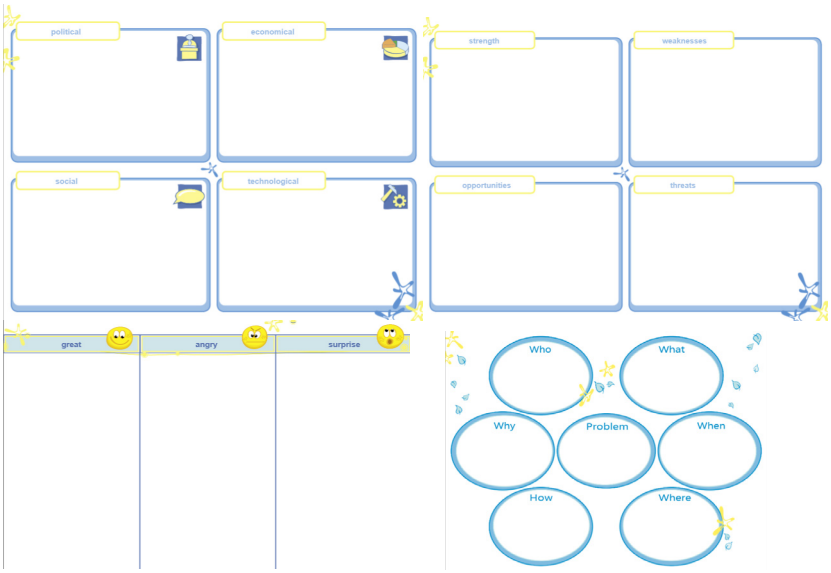


Fig. 10.Templates for SMART Boards

5.6 Consequences

You will gain all the benefits of THOUGHT TRIGGERS. Moreover, you integrate several THOUGHT TRIGGERS into a structured processes that ensures that different questions are asked, MULTIPLE PERSPECTIVES are taken and no important aspect is overseen. Templates also provide some sort of “authority” and are appreciated as a more serious business tool than decks of cards. They can also be used as a visual aid for checklists. Digital versions of templates may also offer additional guidance on demand (e.g. explanatory texts, introductions, of variation of questions). To fill out a template can often take some time. Not every template fits to the situation at hand. Following a template too strictly may ridicule the purpose if the fields are filled out by brute force. Choosing the wrong template may also confuse its users or even restrict their creative thinking as their thoughts are narrowed to the predefined categories. The template has to fit to the task at hand.

6. PATTERN 5: (INTERACTIVE) WHITEBOARDS

6.1 Context

A visual representation is often the best way to show structural relations of problems, solutions, processes or plans. Teams need a shared space to draw their visualization collaboratively.

6.2 Problem

Team members need to be able to see and change visual representations of problems and solutions without any effort. Otherwise interesting ideas and contributions of individuals get lost and some team members get frustrated because they feel isolated if they cannot see and change the visual representation.

6.3 Forces

Team members should be able to write down notes and make sketches that are available to other team members. Visualized information should be easy to change in order to avoid static representations. However, you also want to have more important information available for a longer period of time. The use of multiple colors enhances visual representations as they add another dimension to make written and drawn elements distinct. Groups can only agree on decisions and work packages if everyone is “on the same page” by actually seeing the same page.

6.4 Solution

Therefore, use whiteboards to enable VISUAL THINKING and collaboration in groups.

A whiteboard offers a large space to write on. A lot of information can be put on a whiteboard. Using multiple pen colors is easy. The content can be changed and edited without effort using an eraser. Multiple persons can write on the board at the same time. Some sections can remain permanent for a period of time, other sections can be changed dynamically.

1. Equip many rooms with whiteboards. The size of the whiteboard should fit to the room.
2. Make sure that pens are available.
3. Encourage a culture where whiteboards are used frequently.
4. Practice drawing and writing on the board.
5. Use sticky-notes and magnets on the whiteboard to make the content less static.

Fig. 11. Working on whiteboards

6.5 Consequences

You can easily visualize ideas and collaborate in teams. You make all the benefits of VISUAL THINKING available to groups. However, there are some drawbacks to traditional whiteboards:

- The space is very limited
- The content is very static, exploration of alternatives is difficult
- Erased content is lost (unless you make a picture of it)
- You cannot take the information of one whiteboard to another room
- You cannot draw on other resources such as pictures or screenshots unless you have printed them out before
- Somehow pens are always empty and get lost

These drawbacks are resolved by interactive whiteboards. Professional interactive whiteboards offer an unlimited number of pages, unbound workspaces and dynamic visualization of content. Alternatives can be

explored, stored and shared easily. However, interactive whiteboards are more expensive, need maintenance and training. Since interactive whiteboards are digital tools, they can incorporate many of the creativity tools and techniques such as digital STICKY NOTES, EXTREME COLLABORATION, galleries of TEMPLATES, and export features to JOURNALS such as EverNote.

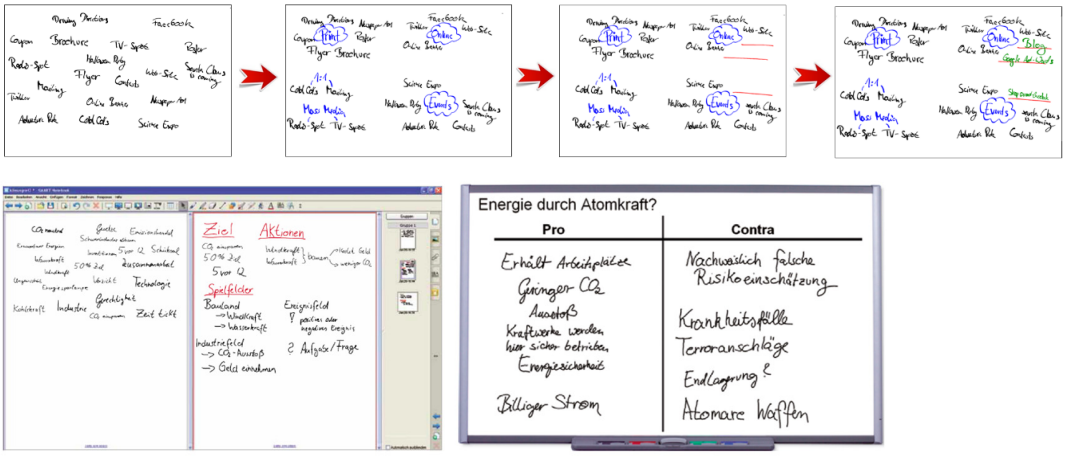


Fig. 12. Interactive whiteboard and SMART Notebook software.

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