

Wicked Problems: 5 Steps to Help You Tackle Wicked Problems by Combining Systems Thinking with Agile Methodology

BY EUPHEMIA WONG | 1 MONTH AGO

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*Learn five steps to tackle **wicked problems** by combining **systems thinking** with **agile methodology**. Many successful organizations like Boeing, Walmart, Chrysler and Hewlett-Packard (HP) have adopted agile methodology and have been achieving success and innovation*

through this collaborative method. By becoming more agile, the team at Chrysler had innovated their steering wheel, outpacing Ford and GM. By incorporating customer input into their [design process](#), Boeing produced a new airline fleet in record time. New problems require innovative thinking, and innovative ideas arise from new perspectives.

10 Characteristics of Wicked Problems

So what defines a wicked problem? [Horst Rittel](#) (1930-1990), a [design](#) theorist and university professor, first coined the term “wicked problem” in ‘Dilemmas in a General Theory of Planning’ (1973). In the paper, Rittel details ten characteristics that describe a wicked problem:

- There is no definitive formula for a wicked problem.
- Wicked problems have no stopping rule, as in there’s no way to know your solution is final.
- Solutions to wicked problems are not true-or-false, they can only be good-or-bad.
- There is no immediate [test](#) of a solution to a wicked problem.
- Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly.
- Wicked problems do not have a set number of potential solutions.
- **Every wicked problem is essentially unique.**
- Every wicked problem can be considered to be a symptom of another problem.
- **There is always more than one explanation for a wicked problem because the explanations vary greatly depending on the individual perspective.**
- The planner/designer has no right to be wrong and must be fully responsible for their actions.

Walmart’s Wicked Problems Led to Disaster

Walmart, a North American multinational retail corporation, faces its fair share of wicked problems. As a large, global company struggling to speed up growth, you can see that this company’s major challenge exhibits many characteristics of a wicked problem.

Firstly, **there is no immediate test of a solution** (4th characteristic) for a wicked problem as these solutions often generate unexpected consequences. In the mid-2000s, Walmart attempted to shift their brand to appeal to higher-income customers. In 2005, they started re-branding themselves by launching a high-fashion campaign in Vogue, a high

fashion and lifestyle magazine. They also presented fashion shows in New York and opened an office in Manhattan's Fashion District. Shifting their unique brand would prove to be a "one-shot operation" as it has not been done before, making it difficult to measure effectiveness and control risk. There is no way to test a one-shot solution at full capacity on such a large scale. The result was that, by 2008, massive layoffs shut two divisions at its headquarters in Arkansas. Walmart's move to high fashion proved to be a disaster.

Second, **the root of a problem is often considered to be another problem** (8th characteristic), a never-ending cycle! For example, the low-cost practice of the company, originally advantageous, is vulnerable to China's decisions on its health and safety policies for their workers. It is also susceptible to changing labor laws and economic growth in China.

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Finally, explanations for a wicked problem **varies greatly depending on individual perspectives** (9th characteristic). In a large company like Walmart, there is bound to be many stakeholders with differing perspectives and priorities. Stakeholders include everyone from employees, trade unions, shareholders, investors, suppliers, partners to even the government. Walmart's wicked problems are surely tangled and complex.

How Could Walmart Tackle their Wicked Problems by Combining Systems Thinking with Agile Methodology

Between 2015 and 2016, Walmart's stocks tumble 30 percent as they go on to close 269 stores. This is an example where a company could benefit from employing both systems thinking and agile methodology. By seeing their wicked problems as systems and breaking them down into digestible nodes (chunks of information – that can for example be objects, people or concepts) and its relationships (system thinking), they can more easily share each other's ideas with stakeholders and team members. Conceptualizing the problem in such a tangible manner allows those involved to iterate more quickly

based on a variety of concrete feedback. Let's take a closer look at how this method evolved.

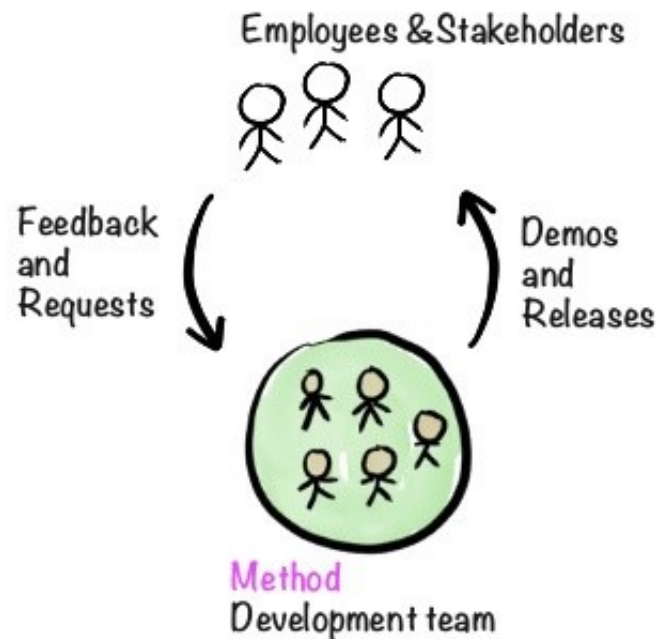
Wicked Problems and Design Thinking

The design theorist and academic, [Richard Buchanan](#), connected [design thinking](#) to the innovation necessary to begin tackling wicked problems. Originally used in the context of social planning, the term 'wicked problems' had been popularized in the paper, 'Wicked Problems in Design Thinking' (1992) by Buchanan. Various thought leaders following Buchanan continued on to suggest we utilize systems thinking when faced with complex design problems, but what does that look like in practice for a designer tackling a wicked problem and how can we integrate it with collaborative, agile methodology?

How to Tackle a Wicked Problem using Systems Thinking and Agile Methodology

Design thinkers of the past had already begun the discussion on how to work with wicked problems by utilizing systems design, but why not take it a step further? We know **systems thinking** helps us understand the components and relationships of a problem. We also know that **agile methodology** helps with improving solutions through collaboration. Together, the two ways of thinking can be combined to lead us to a better solution at each iteration as they both *evolve* with the wicked problem.

Agile methodology is an iterative approach to [product development](#). An agile, collaborative environment breeds the ability to be efficient and effectively meet the stakeholders' changing requirements. On the other hand, **systems thinking** is the process of understanding how components of a system influence each other as well as influence other systems.



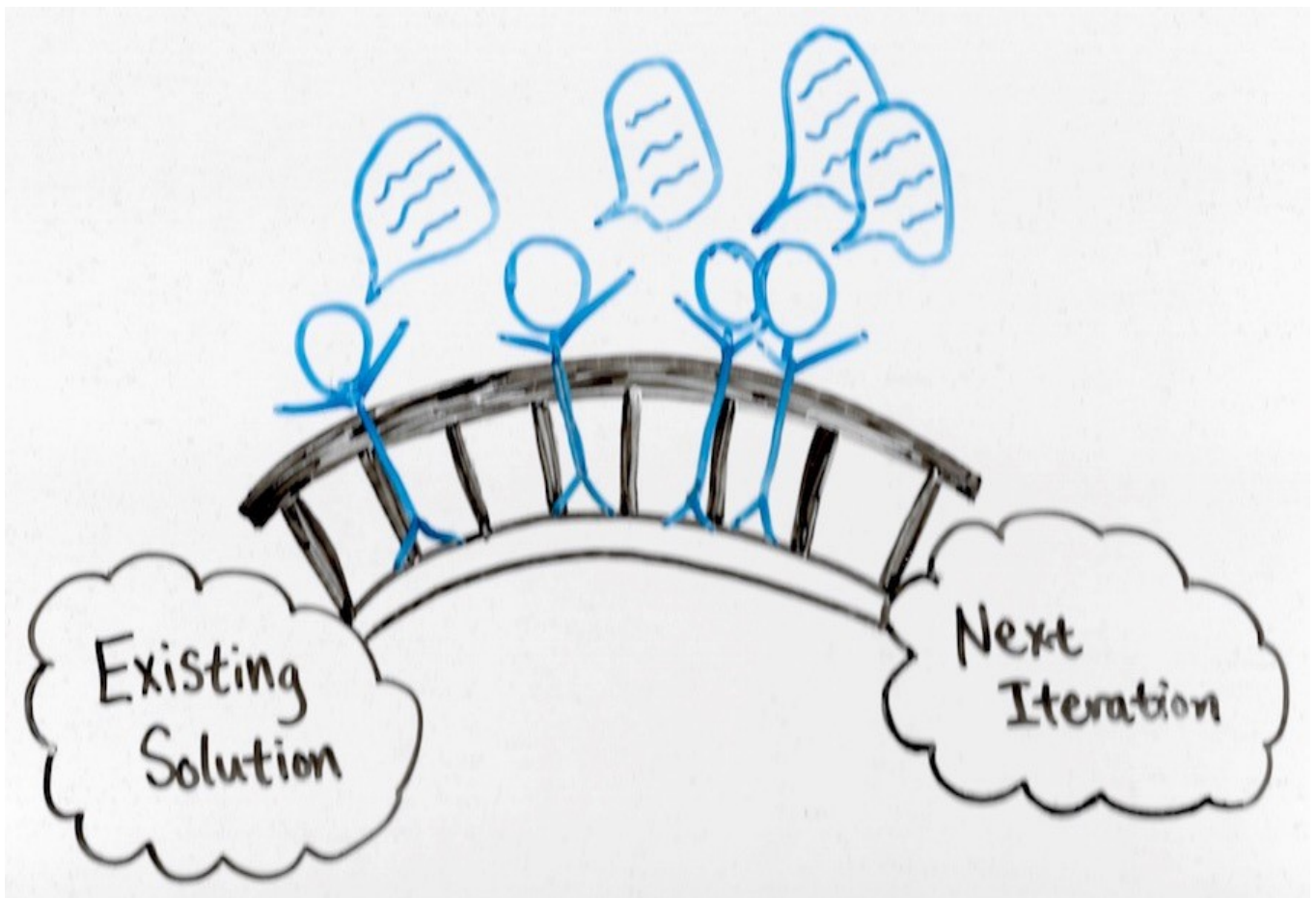
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Agile Methodology. Every iteration incorporates feedback from the previous release.

Rodale Inc. Reclaimed Lost Revenue and Customer Satisfaction by Using a Collaborative Exercise in Systems Thinking

Rodale Inc., the large publishing company with flagship products like *Men's Health* and *Runner's World*, had greatly benefitted from a collaborative exercise in systems thinking. As a result, the company reclaimed its lost revenue of 50 million dollars and moved from a D in customer satisfaction rating to an A.

Tom Wujec of Autodesk Inc., and a keynote speaker in the field of business visualization had suggested that organizations break down wicked problems into nodes (chunks of information) and links (the connections and relationships between the nodes), hence utilizing systems thinking when faced with a wicked problem. In his TED Talk, 'Tom Wujec: Got a Wicked Problem? First, Tell Me How You Make Toast', Wujec describes a perfect example of how an organization was able to tackle a wicked problem through systems thinking. Besides systems thinking, the "collaborative visualization" Wujec advocates for appears to have the agile elements of feedback and iteration to it. As the team gets together and combines each other's thoughts and ideas, the bridge between the existing solution and the next iteration is built from gathering feedback from the users and all the stakeholders involved.



Feedback from your users and stakeholders are crucial when you're trying to get from your existing design to the next iteration of it.

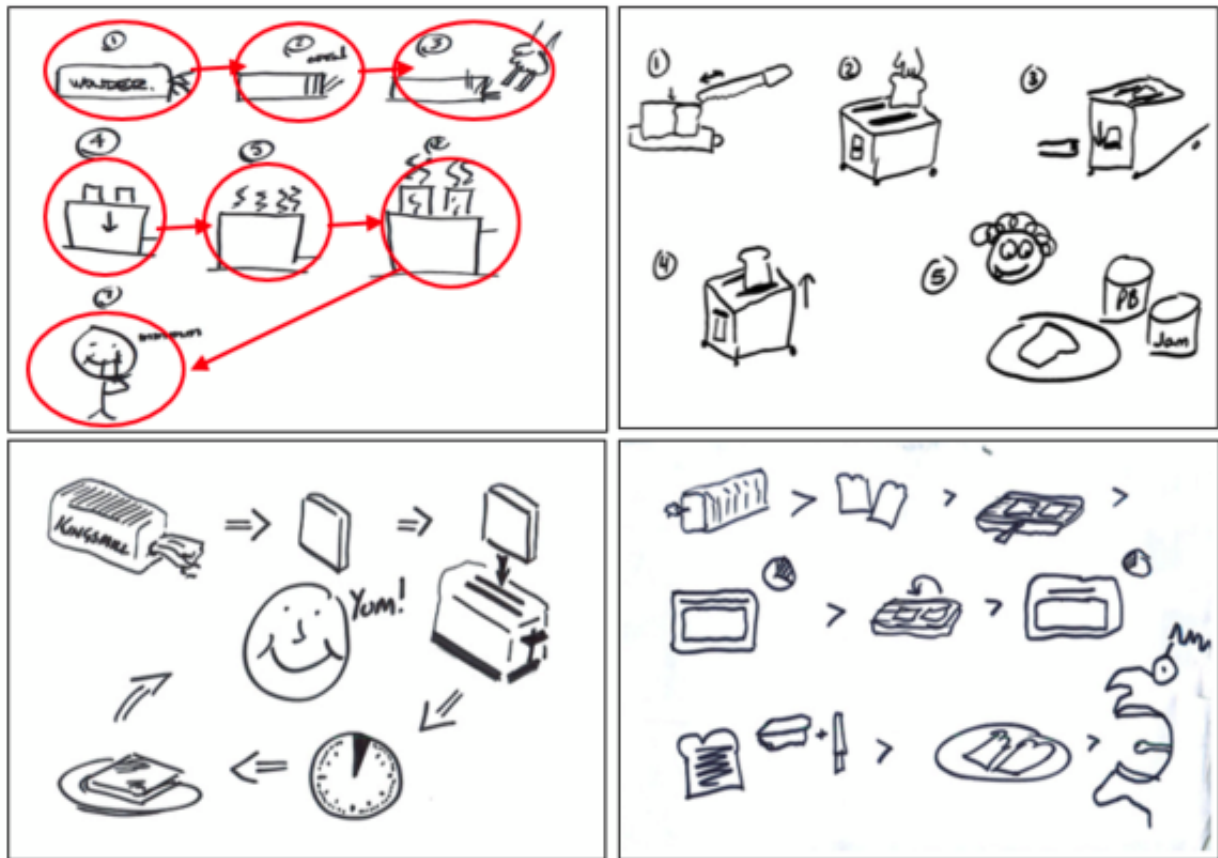
5 Steps: How You Can Apply Systems Thinking and Agile Methodology in Your Work

Anyone who's been faced with wicked problems have experienced frustration from not knowing where or how to begin when it comes to issues that are difficult and nearly impossible to solve. Next time, you'll have 5 handy steps and methods to use and share with your team when tackling wicked problems in design.

- **Break down information into nodes** (chunks of information – that can for example be objects, people or concepts) **and links** (the connections and relationships between the nodes) hence utilizing systems thinking when faced with a wicked problem. Doing so makes our private **mental models** (our representations of the external reality) visible to the outside world. Jay Wright Forrester, a pioneer in computer engineering and systems science believes that system thinking is:

“ The image of the world around us, which we carry in our head, is just a model. Nobody in his head imagines all the world,

government or country. He has only selected concepts, and relationships between them, and uses those to represent the real system.”



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Nodes represent the objects/people/concepts while links show the connection and relationship between the nodes. In this illustration, nodes are circled in red and links are the red lines drawn between the circles. *All four illustrations are systems models that participants created from Tom Wujec's workshops on collaborative visualization and systems thinking.*

- **Visualize the information.** Sketching and placing information into a physical space helps both you and your team take in and understand the systems at hand as well as the relationships within and between them.
- **Be collaborative and include stakeholders in the process.** Sharing your mental model helps other people build on your ideas and vice versa. Creating physical drawings and grouping notes to produce different systems models allows the team to synthesize several points of view.

- **Release solutions quickly to gather continuous feedback.** Feedback of success helps with solving problems we don't have one right answer for. The more feedback you gather from your users and stakeholders, the more guidance there is to get to the next step.
- **Iterate.** With each iteration, you and your team have the chance to utilize feedback and determine what changes are needed to further improve the solution for your wicked problem.

The Take Away

We as **UX designers** have the responsibility to come up with the best solution possible even when the problem itself is indeterminate and the best solution does not yet exist. Knowing that systems thinking and agile methodology can help us begin on tackling any wicked problem, we should utilize these practices and share them with others so that we can, together, get to the next iteration of the design. Remember the 5 Step process: Break down information into nodes (chunks of information: objects, people or concepts) and links (the connections and relationships between the nodes). Visualize the information. Be collaborative and include stakeholders in the process. Release solutions quickly and gather continuous feedback. Iterate.

Where To Learn More

For more information about Horst Rittel please see:

Horst W.J. Rittel: Dilemmas in a General Theory of Planning

For more information about Richard Buchanan please see:

Richard Buchanan: Wicked Problems in Design Thinking

For more from Tom Wujec's TED Talk on how to practice systems thinking and collaborative visualization, please see:

Tom Wujec: Got a wicked problem? First, tell me how you make toast



Reference

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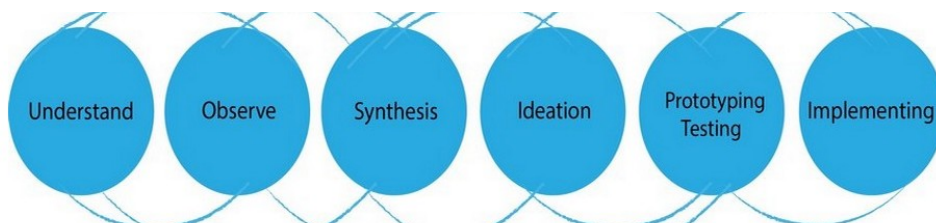
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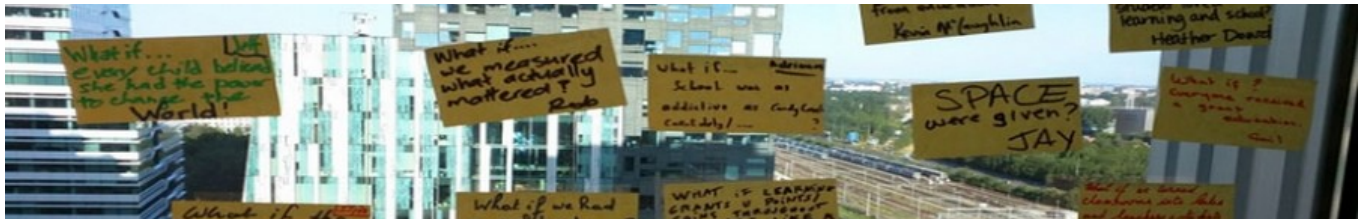
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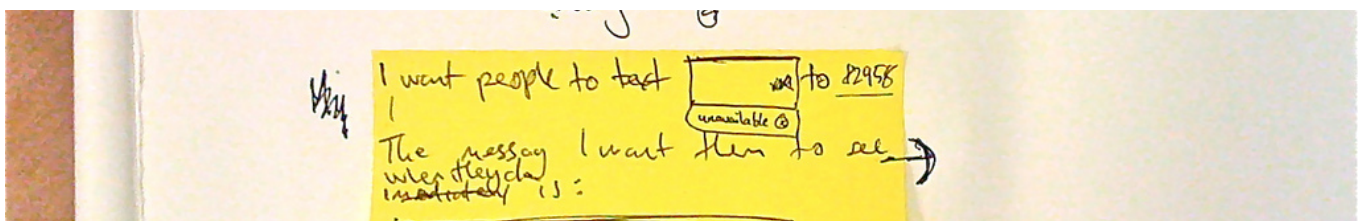
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