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**PACKAGE**

# **Design Thinking Lab Methodology**

## Table of Contents

1.	Introduction: Creative Thinking .....	3
2.	Method of Design Thinking: .....	4
2.1.	Definition of Design: .....	4
2.2.	Basic concept of Design Thinking method .....	4
2.3.	Problems addressed by Design Thinking .....	5
2.4.	Tools for using DT: .....	7
2.4.1.	Visualization:.....	7
2.4.2.	Chunking: .....	9
2.5.	Mind mapping: .....	9
2.6.	Value Chain Analysis .....	10
2.7.	Brainstorming.....	11
2.8.	Concept development .....	12
2.9.	Testing Assumptions .....	13
2.10.	Learning Launch .....	14



## 1. Introduction: Creative Thinking

Creative thinking involves much more than the logical, linear thinking that dominates the Western view of intelligence. To understand this, we need to look at how the human brain functions.

The left and right hemispheres are completely separate. Since they process information differently, each hemisphere thinks about different things. The right hemisphere is about the present moment, everything is about "here and now". It thinks in pictures and learns kinesthetically, through the movement of human bodies. Information, in the form of energy, simultaneously arrives through all sensory systems and then explodes into one huge collage of the current moment: what it looks like, how that moment smells, what its taste is like, how it feels to the touch, and what its sound is like.

The left hemisphere thinks linearly and methodically. It is concerned with the past and the future. The left hemisphere is designed to take that huge collage of the present moment and start to pick out details, details and more details about those details. It then categorizes and organizes all that information, connects it to everything learned in the past, and projects all the possibilities into the future.

Being creative means being able to create new connections to see things in a new way and from a different perspective. In logical, linear thinking, one moves from one idea to another in a series of rules and conventions. Either a step further is taken or certain ideas are rejected because they are illogical. That's why logical, linear thinking doesn't foster creativity.

Creative insights often come in a non-linear way, through seeing connections and similarities between things that were not noticed before. Creative thinking relies heavily on lateral thinking, especially on thinking in metaphors or seeing analogies.

This doesn't mean that logical thinking is opposed to creativity. The rules of logic allow a huge space for creativity and improvisation within themselves. Logic can be very important in various stages of the creative process, depending on the task at hand, especially when evaluating new ideas and how they fit in or challenge existing theories. However, creative thinking goes beyond logical and linear thought and involves all areas of the human mind and body.

Creative work also delves deeply into human intuition and the subconscious, as well as the heart and emotions. Beneath the noisy surface of the mind, there are deep reserves of memory, associations, and feelings from human lives that individuals are not even aware of. Sometimes, creativity is a conscious effort. But sometimes, ideas must be allowed to mature on their own in the subconscious, over which there is very little control. If allowed, the sought-after solution will suddenly appear on its own.

## 2. Method of Design Thinking:

### 2.1. Definition of Design:

In traditional understanding, design is associated with a person involved in both the design and production of an object. This concept changed with the onset of the industrial revolution, which began the division of labor and the need for specialization. As a result, two views of design emerged: design as art and design as engineering, each with different meanings.

Etymologically, the verb "design" is derived from Latin words, from the prefix "de" and "signare," meaning to mark, devise, choose, name. The prefix "de" is not used in a derogatory, rejecting sense. In this context, the word "design" refers to the execution or attainment of something that assumes the presence or existence of facts, conditions, or qualities. In Greek, the word for design is "σχέδιο" (pronounced schedio), which in the root of the word means "almost, nearly, close, approximately." From this definition, the word design speaks of incompleteness, indefiniteness, or imperfection, but it also speaks of probability, expectations, or anticipation. In a broader sense, design denotes not only ambiguity, intangibility, or ambiguity but also a striving to grasp the unattainable.

### 2.2. Basic concept of Design Thinking method

Design Thinking is a systematic approach to problem-solving that puts the end-user at the center, is opportunity-focused, provides multiple options, and is iterative in its approach.

It is crucial to start with the end-user, a real human being who feels and lives. Design Thinking emphasizes the importance of deep exploration of the lives and problems of the people for whom it seeks to create value before starting to generate solutions. That's why it's often called "user-centered creativity." It adopts a qualitative and empathetic market research methodology, which is very enthusiastic about involving other human beings in co-creation.

Once this information is discovered, the question arises: what if everything were possible when thinking about new ideas? Design Thinking focuses on generating multiple options. Since user desires and needs are "guessed," it is expected to make mistakes. A lot of them. That's why the aim is to offer multiple solutions, and then stakeholders are asked to choose which solution suits them

best. That's why a portfolio of new ideas is created, rather than just one.

Finally, the process is iterative. It is committed to conducting experiments in the real world rather than relying on analyses based on historical data. It's a constant process of forming and testing and then reforming ideas about what works. It's not expected to get it right the first time, but rather to iteratively reach the goal.

### 2.3. Problems addressed by Design Thinking

Design Thinking isn't a method suitable for all problems. Some problems are better suited for traditional analytical methods. To understand the difference and characteristics of problems suitable for Design Thinking, the following metaphors are used in this work.

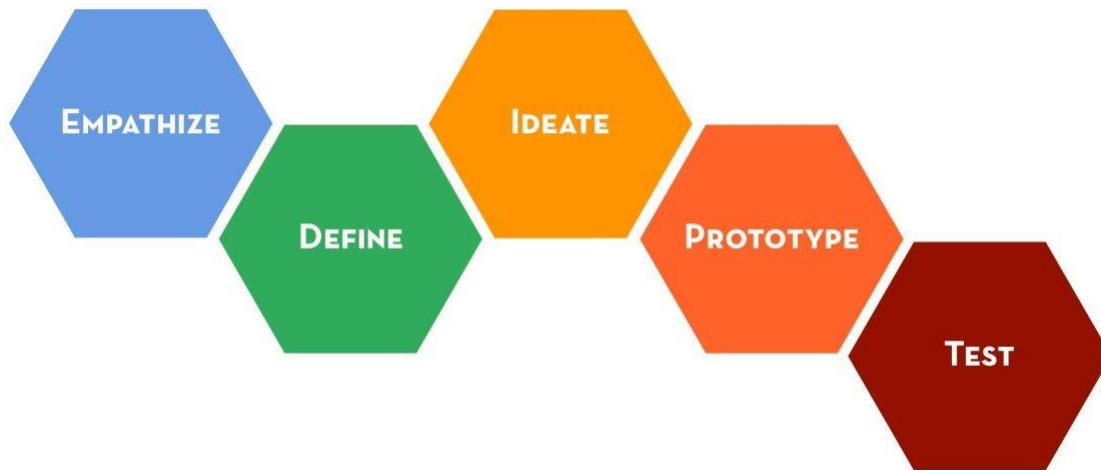
There are two types of problems:

- "Puzzle" problems - These are problems that are missing only one piece to complete the puzzle. It starts with a well-defined problem. Often, relevant data is available to determine causes and effects, and an answer is reached through a linear approach.
- "Mystery" problems - They don't even know what the puzzle is. In this type of problem, stakeholders often can't agree on what the exact problem to solve is, let alone its solution. There can be vast amounts of data, but it's uncertain whether and how that data is relevant. Because of this, it's impossible to assert or predict causes and effects with certainty. The only way to check if something works is to try it out.

<b>Question?</b>	<b>Method of Design Thinking is suitable...</b>	<b>Linear analytic methods are suitable...</b>
<b>Is it problem-oriented to people?</b>	<b>... deep understanding of real users and people is crucial.</b>	<b>... a smaller number of people are involved in the problem and its solution.</b>
<b>How clearly do we understand the problem?</b>	<b>... further research and agreement on the problem are needed.</b>	<b>... we clearly understand the problem and are confident we are addressing the right one.</b>
<b>What is the level of uncertainty?</b>	<b>... there are many unknowns (both large and small) and little likelihood that old data will help.</b>	<b>... historical data is excellent for predicting trends and the future.</b>
<b>What data do we already have available?</b>	<b>... there is a very small amount of data for analysis.</b>	<b>... there are multiple clear sources of data.</b>

Table: Which problem method of Design Thinking can resolve.

## Design Thinking:

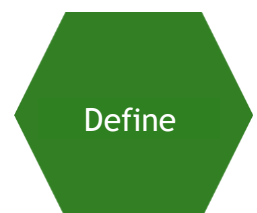


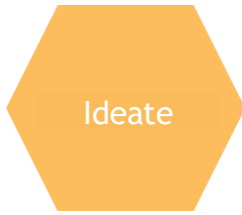
Design Thinking method has 5 key phases:



**Empathize** – empathy is a central design element that puts a human being at its core. Through empathy, we try to understand the person, within the context of the design challenge. It is a process through which one tries to understand the way people do things and why, their physical and emotional needs, how they think about the world and what really matters to them.

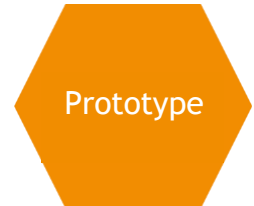
**Define** – during this phase, clarity and focus of the design space are taken into account. There is an opportunity and a responsibility, to define a challenge that is trying to be solved, based on what has been learned about the user and the context. Once the necessary knowledge has been acquired as well as empathy about the user for whom the problem is being solved, at this stage the meaning is sought from the huge amount of information gathered.





**Ideate** – in this phase the focus is on generating ideas. Mentally, this is a process that goes into width in terms of concept and potential outputs. This phase represents both fuel and material for prototyping and creating innovative solutions that will be presented to users.

**Prototype** – represents an iterative process of generating “objects” that are intended to provide answers to questions that will lead to a final solution. In the earlier stages of the project, simple and cheap prototypes are created, but which can give useful feedback from both users and colleagues. A prototype can be anything that people can interact with, from a wall full of sticky "post-it" papers, a simple device, a role-playing activity. Anything with which the user can have some experience.



**Test** – testing is a phase in which feedback is sought on the prototypes that have been created, in which another opportunity is given for empathy towards the users for whom the design is intended. It is another opportunity to understand the users, but unlike the first phase, there is now a specific problem and solution that is being examined. Although both phases are intended to interact with the user, it is now not only testing whether the user likes the prototype or not, but the question is why? while focusing on learning from him and the problem itself as well as its solution.

## 2.4. Tools for using DT:

### 2.4.1. Visualization:

Visualization helps reduce project risk because when text is turned into an image, there is no misunderstanding about what is meant exactly. When an idea is explained in words, each person will form their own mental picture based on their previous experience and training. Therefore, mistakes often occur because each team member elaborates on that idea based on what those words mean to them individually. If the idea is visualized as an image or told as a story, the possibility of different mental images and models is reduced. This doesn't guarantee that everyone will agree on the idea, but at least it will be clear what people don't agree on. Visualization also reduces project risk by building commitment to a solution that has been developed together.

Visualization also helps to unite the "left" and "right" brains. Visualization is the work of the "right" brain. Although neither the right nor the left side of the brain is superior to the other, the possibilities of the right brain are often excluded in considerations. This tool helps to make better decisions more easily.

**How to use it:** To begin with, a very modest investment is needed – a whiteboard and markers, flipcharts, and post-it notes. There are more advanced techniques, but this is enough to start. A few things to keep in mind:

- Keep it simple – simple visual presentations and a few colors are entirely sufficient. It's not about artistic skill but about bringing ideas into reality. Drawing overly polished pictures can backfire when it comes to the feedback needed. Designers use drawings to think "out loud." Once the idea is on paper, it can be refined and elaborated on, kept in a notebook, and easily shared with others.
- Break down problems into components – this can be done by answering questions like who, what, how, how much, where, when, and why. Breaking down simplified problems is often easier than trying to solve the entire puzzle at once.
- Think in metaphors and analogies – metaphorical thinking is the process of finding connections between two seemingly unrelated things. It's an excellent way to simplify explaining a more complex concept.
- Use photographs – they can be very useful for capturing information, making it more tangible.
- Storyboarding – a storyboard is nothing more than a series of elements and images representing a sequence of events and is an excellent way to tell a story.
- Creating personas – Personas are fictional characters that can represent specific attributes and characteristics. Since they help humanize and make abstract concepts like "customer" more real, personas increase the chance that designers have an empathetic understanding of the client and people at the center of the Design Thinking method.
- Telling stories – Stories help information fit more easily.
- "Guided" visualization – Creating a special story that takes the listener on an inner journey, allowing them to see into the future, an imagined reality, and unlimited possibilities. It helps them to imagine.

**The most common tools in the Empathy phase are:**

- User Interviews: Direct conversations with users to understand their experiences, needs, and challenges.
- Observation: Observing users in their natural environment to understand their behaviors, routines, and pain points.
- Empathy Maps: Creating visual representations of user experiences, thoughts, feelings, and actions.
- Personas: Developing fictional characters that represent different user types, with their goals, needs, and characteristics.
- Journey Mapping: Mapping out the user's journey, from the initial interaction to the final outcome, to understand their experiences and touchpoints.
- Shadowing: Following users throughout their daily activities to gain insights into their behaviors and challenges.
- Role-Playing: Acting out scenarios to understand the user's perspective and emotions.
- Surveys and Questionnaires: Gathering quantitative data about user preferences, behaviors,



and demographics.

- Secondary Research: Reviewing existing literature, reports, and studies related to the problem or user group.

These tools help teams develop a deep understanding of users' needs, motivations, and pain points, which is crucial for generating innovative solutions.

#### 2.4.2. Chunking:

Chunking is defined as:

- A communication process in which we change the level of abstraction at which the conversation is conducted.
- A way of grouping information into larger or smaller logical units.
- Changing perception by "moving" through logical levels.

Generalization is shifting to a higher level of abstraction that encompasses what we are studying (or talking about). Decomposition is descending to a lower level of abstraction towards specific examples of what we are studying. Here, we move from abstract concepts to details. A sideways step involves comparing with terms or events that are at the same level of abstraction. We can use comparisons and metaphors. We look for a concept that is equivalent or similar in a particular system

#### 2.5. Mind mapping:

Mind mapping is a term used for the process of finding patterns in a large amount of data collected during the What Is phase. As this phase concludes, from the vast amount of interesting data, we extract what is significant from what is not, seeking patterns and observations that will provide a new perspective on reality. The goal is to establish criteria for generating ideas, which occurs in the next step. To achieve this, data must be organized and displayed in a way that allows designers to see hidden patterns and implications. Throughout this process, collaborators must be involved to create a shared understanding of the desired design qualities. It's important to note that when using the term mind mapping, we're not referring to a specific diagram (like the "spider diagram" described by Tony Buzan). Instead, this term is used to describe the process of extracting meaning and sense from a large amount of information.

Empathy phase tools generate a large amount of data. The first challenge is to process all this information so that it can truly be used to generate better ideas than would otherwise be possible. The second challenge is to align the organization around the ideas to be pursued further. If nothing is learned from the collected data or if there is no agreement on the ideas that have emerged from it, all the resources used will be wasted. Mind mapping reduces project risk by helping to build a shared understanding of the current reality and thus reducing attachment to solutions that team members had before the start of the innovation project. That's why mind mapping is a team activity.

##### **How to use it:**

- Organize a Data Gallery - The mind map begins by presenting the data that has been collected for everyone to see. Months of data collection can be wasted if they are not presented in the right way to the rest of the team. Therefore, visualization principles are

used to present the most important information in the simplest way possible.

- Invite Visitors - A group of people and their intuition are invited to give their opinions on the displayed data.
- Conduct Tours - Visitors can be guided by a team member to explain more easily what each visual representation represents, making their time more efficiently used.
- Select the Best Insights - Participants provide their conclusions, things they have learned, and observations that will help with new ideas.
- Group Ideas by Areas - Participants independently group these areas.
- Identify Observations - Related to each area and search for connections between them.
- Translate Observations into Design Criteria - The question is posed, "Given everything learned, if everything were possible, the design would...?"
- Create a Common Criteria List - If multiple smaller teams participated in this process, they are given the opportunity to familiarize themselves with each other's outcomes, and then a final common list of criteria is created.

## 2.6. Value Chain Analysis

What is a chain – a series of links. What is a value chain – a series of organizations that take the product from input to final product/service for the user. In the traditional supply chain model, companies focus on what they do and "push" the product down the chain to the end customer. In the value chain model, the product is "pulled" through the chain by what the end customer wants and is willing to pay for. Therefore, the relationships between all partners in the chain are very strong, with a high level of trust among them. With this trust, information flows much more freely. The richer the flow of information, the growth and success are guaranteed for all. For a company, this is equal to mapping the customer journey because it identifies pain points and, with that, opportunities for development and improvement.

**When to Use:** Conducting a value chain analysis from start to finish is an essential part of research because you don't want to start the ideation phase without knowing what makes a new business model attractive to the company. This model helps to see the market from the perspective of all partners, potential partners, as well as competitors.

Value Chain Analysis helps reduce project risk because creating value for the customer alone is not enough for a company's success. For new businesses to be sustainable and attractive, they must be able to create value for both the enterprise and its partners. This also means that new offerings must be difficult for competitors to copy. They must also be achievable with current capacities or with the help of partners.

Using this tool brings the focus back to the organization itself (unlike journey mapping, which focuses solely on the end customer) and the entire market system where the customer's journey takes place. This analysis often reveals the dominant logic, a set of rules and beliefs that drive the behaviors of most companies, which can be challenged, thereby revealing new opportunities for innovation.

**How to Use:** The analysis begins by specifying the outcomes that this chain creates for the end customer and then works backward to include the capabilities and bargaining power of all key players.

Construct the value chain for the company – This step involves exposing all clusters of activities, working backward from the point of delivering value to the end customer. These clusters, when taken together, form the basic structure of the chain. It is important to note that clusters of activities are mapped, not companies.

- Analyze the competitive environment – In each link of the chain, key players are identified, and their market share is determined.
- Identify key strategic opportunities – necessary to create value in each link of the chain.
- Assess the bargaining power and influences of each player – Who are the key players? How difficult would it be to replace any of them and their contribution? How much value does the end customer see in the contribution of all participants in the chain?
- Determine opportunities for improving one's own strengths and profitability in the chain.
- Assess own weaknesses – It is important to deal with defense as well as offense.
- Identify areas related to bargaining power, opportunities, partnerships.

## 2.7. Brainstorming

Brainstorming is a goal-oriented way to generate ideas. It's the fundamental method used in innovation, so much so that even during journey mapping and value chain analysis, it's impossible not to think about new ideas.

**When to Use:** Brainstorming is used at the beginning of the ideation phase because there's a risk if it's used before empathy is understood. Ideas generated in such cases often falter because without empathy maps to represent the client's true priorities and without design criteria to evaluate them, there's little chance of selecting the best ones.

How brainstorming reduces project risk: There's no innovation without new ideas. Brainstorming ensures that ideas that will create new value are considered. It's done in groups and teams to harness the power of different viewpoints and experiences and to leverage collective intelligence.

**How to Use:**

- Invite the right people – Success comes from a small and diverse group of people (12 is the maximum number). In addition to the direct participants in the project team, clients or unbiased third parties can be included.
- Set the right challenge – the focus for the team. Design criteria are an excellent starting point.
- Adopt the right mindset – It's important to adopt a creator's mindset rather than a critic's, for which an inspirational environment can be used (such as somewhere outside the usual meeting rooms), stories of past successes, or a video of a client talking about their problem, all to humanize the problem. It's important to include a few rules: a. One person speaks at a time b. No delaying (30 seconds per idea) c. Ideas are presented through sketches d. No judgment (assessment and evaluation of ideas come later) e. Build upon each other's ideas f. Have fun
- Genuine empathy – For brainstorming to be successful, participants must care about the

problem, which means the human cost must be shown to them (results from the empathy phase are very useful here).

- Proper stimulus – this is usually done by asking the right questions to find answers. There are several key things to consider to create the right stimulus: a. Use quotes and stories b. Constantly challenge assumptions ("Devil's Advocate") c. Explore extremes d. Change roles (who does what) e. Explore technological scenarios and trends f. Project the team into the future and then work backward to see how they got there
- Proper facilitation – to ensure the group process is taken care of and so that each individual can contribute.
- Proper follow-up – It's important to use the ideas generated here and turn them into action.

## 2.8. Concept development

Concept development is the act of selecting the best idea from brainstorming, developing it into a detailed solution, and evaluating it based on client and business criteria. Unlike brainstorming, concept development requires the work of the core team only because people outside the team often lack the project context and the necessary time for introduction and execution.

The goal is to create multiple concepts that can be presented to clients. If 200 ideas are generated during the brainstorming phase, 12 concepts can be developed from them, of which 3 will be tested with clients and ultimately only one will be launched.

**When to Use:** Immediately after brainstorming. But it's important to ensure that the boundaries are pushed first to create a diverse range of ideas before diving into the details of the most important ones. Concept development prepares to evaluate ideas according to design criteria.

**How it Reduces Project Risk:** The outcome of brainstorming is often too raw and incomplete to be evaluated through design criteria. Concept development takes the most innovative ideas, combines them, and complements them with business logic. This phase also serves to protect unusual ideas from premature rejection and prevents designers from getting too excited about creating new value and forgetting to approach the business case for new ideas.

### How to Use:

- Gather the key elements – needed for concept development: the core team, design criteria, and outcomes of brainstorming.
- Scatter the elements – similar to a gallery in mind maps, it's easier to work with hundreds of ideas if they can be easily seen and moved to form connections and patterns. Ideas are organized using the following methods: a. Eliminate excess b. Similar ideas are placed side by side c. Identify missing elements and add ideas where possible d. Create a list of emerging areas e. Prioritize based on design criteria f. Mark ideas and areas that must not be overlooked
- Choose several anchors – 5 to 12 areas that serve as anchors for similar concepts.
- Formulate initial concepts – different elements from brainstorming, which are thematically related, balanced, and proportionate, and which form distinctive concepts. Designers call this phase a "combination game" because elements are selected to create irresistible value for the client and a sustainable business model.

## 2.9. Testing Assumptions

Testing assumptions is a tool for selecting key assumptions that make a new business model attractive, using data to verify their probability. This approach assumes that every new business model is actually a hypothesis, a well-informed guess about what the customer wants. Like any hypothesis, a new business model is built on certain assumptions about what makes it attractive. These assumptions must be valid for the hypothesis to be correct, which is why testing them is essential.

**When to Use:** Testing assumptions is a crucial activity when defining a concept that changes when defining the concept. Although primarily used after defining the concept, it can be a very useful tool much earlier in the process, as well as later in the testing phase. This tool helps to prioritize and prevents testing on the market what doesn't need to be tested.

**How Testing Hypotheses Reduces Project Risk:** When new projects fail, it's almost always because reality turns out to be different than thought. Launching a new concept with the aim of quickly finding out if it will sell well is a risky approach that should be avoided for all ideas except the most attractive ones.

### How to Use:

- General Business Tests are Presented: The goal is to see what it takes for a new idea to become an attractive, sustainable business, so tests that can be applied to any new business in any industry can be used:
  - Value Test (is it worth it)
  - Feasibility Test (is it feasible)
  - Adaptability Test (is it adaptable)
  - Defensive Test (is it defensible)
- Specific Business Tests are Presented: These tests relate to the organization/institution/enterprise itself and the current situation. Here, an overview of design criteria is made because these criteria emphasize which customer needs are being attempted to be satisfied.
- Identify the Most Important Assumptions for Testing: There are many more assumptions than can be tested, so it's important to identify the most important ones.
- Identify Necessary Testing Data: Consider what data is needed to test assumptions and how to obtain it.
- Data Sorted into Categories: Sort data into what is known, what is not known and cannot be known, and what is not known but could be known.
- Develop Methods to Quickly Obtain Data from the Third Category: Identify the necessary data and make efforts to obtain it.
- Create an Experiment: Be mindful of data that can refute the assertions made.

## 2.10. Learning Launch

A learning launch is a market experiment conducted quickly and inexpensively. It's a joint creation with the user in four dimensions, involving three physical ones and time as the fourth dimension. The success of a learning launch is not measured by how much is sold, but by how much is learned. The goal is to test the remaining key assumptions of the new concept.

**When to Use:** When a company is ready to test an idea in a real environment. While merely asking users can provide useful information for developing a new concept, it's only a weaker form of real testing. The real test is when users demonstrate their enthusiasm through their actual behaviors, ideally over an extended period. Do they value the product? Do they use it in the way they said they would? Ideally, their behavior includes a willingness to pay for the product.

**How Learning Launch Reduces Project Risk:** The primary hallmark of the design thinking method is to bypass a culture of debate and help managers learn through market action. Using historical data to predict market behavior has certain limitations. After a certain point, focusing on analysis rather than experimentation actually increases risk.

A learning launch comes after co-creation, and unlike it, it must feel real for both the user and the organization. It must be clearly constructed but open to significant changes in the end.

### How to Use:

- **Set Clear Boundaries:** It's essential to finish the plan eventually. Clear boundaries must be set for key variables, such as time, number of customers and partners, as well as characteristics.
- **Design with a Clear Focus on Key Assumptions:** Reconsider key assumptions and identify those that have not yet been tested. Choose those that can be tested in this phase.
- **Form a Disciplined and Adaptable Team:** It's good to have both passionate innovation enthusiasts and skeptics.
- **Work in Rapid Feedback Cycles:** As soon as the project comes into contact with the market, be prepared for surprises and react quickly.
- **Make It Feel Real:** For clients, partners, and the internal team. If it feels like a game or simulation, then behaviors and data will be created accordingly. The more realistically this phase is approached, the more real the resulting data will be.
- **Prepare Backup Plans for Everything:** All potential problems must have appropriate responses.

## Learning guide

... serves to establish the project's strategic intent and then define parameters for testing the remaining assumptions. It's used to address the question that's probably on everyone's mind – What if the project fails? It's an excellent tool for defining:

- The overall intent of the new concept
- Key assumptions to be tested
- Financial resources to be invested
- The knowledge that must be acquired even if the project doesn't continue

Answers

<b>Strategic</b>	Describe in two to three sentences what you want to achieve with this project, both for the user and for your organization.	
<b>Remaining key assumptions to be tested</b>	List the key assumptions about your concept that you have not yet been able to test with the data you already have.	
<b>Plan of testing</b>	What assumptions are most important to test during this phase? For each of them, define how you will measure the success of the test.	
<b>Financing</b>	Testing these assumptions is financially feasible, even if the results discourage further investment. What resources are needed for this?	



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