Tool / Approach	Description	Merits	Limitations
Brainstorming	A set of approaches based on the principle that quantity of ideas breeds quality through subsequent selection and refinement.	Widely used approach that can help generate a range of ideas and alternative perspectives.	Can support generating a large amount of ideas but requires multistage selection and refinement. Relies on several participants to leverage benefits.
Morphological analysis	By dividing a challenge into subsystems and providing options for each subsystem, selections can be made to explore a range of arising combinations.	Enables alternative ideas to be formulated from a set of options.	Can be very time-consuming; lack of methods to assess whether the ideas developed effectively address the brief.
Principles of invention	A list of 40 fundamental approaches commonly found in patents for resolving a challenge.	The 40 principles provide a comprehensive set of approaches used in patents to resolve challenges across a very wide set of, if not all, domains.	Limited application to physical problems. However, needs to be abstracted to apply to nonphysical problem briefs, such as service innovation.
Analogical reasoning	Use of a similarity between a source and target to support an assertion.	Enables transfer knowledge from one area to another.	Requires preparation to select examples that can be used for analogical reasoning.
Metaphor	Use of association between a commonplace idea with something that is unfamiliar to provoke understanding and ideas.	By combining elements that have sparse or no obvious logical connection, metaphors enable the mind to be stimulated by images, ideas, and concepts, thereby exploring ideas that are distinct from logical relations.	Randomness in metaphor choice can lead to unrelated ideation with little benefit to address original brief, despite being a powerful tool to motivate and create mindshift to address a brief.
Systems thinking	A set of analytical approaches used to model interrelated, interdependent, or interacting elements forming collective entities in order to provide predictions and enable control.	Enables understanding of the behaviour of collective entities, in order to provide predictions and control.	Supports clarifying a problem or situation, but barriers to developing provocative and breakthrough ideas.
Design thinking	Emulating some of the approaches that designers have traditionally used to realize their ideas, such as a user-centred focus, experimentation, prototyping, testing, and toleration of ambiguities until sufficient information is available.	Promotes consideration of the voice of the customer.	This technique often relies on user insights, which are time-consuming to obtain.
Deductive reasoning	Starts with a hypothesis and then examines possibilities and data to reach a conclusion.	Powerful for information-rich applications when significant information processing resources are available.	This technique relies heavily upon the initial premises being correct. This can prove especially difficult in context with many unpredictable variables with a lack of constants or controls. If used in a team setting, it can lead to frustration of participants
Inductive reasoning	Broad conclusions are inferred from a specific case and used to provide the basis for a generalization that the pattern of behavior is applicable to a much wider set of situations.	Enables insight from sparse data.	Conclusions drawn can be difficult to prove and have limited significance. Since this approach relies on observation, there can be limitations if the observations are incorrect or incomplete. Incomplete observations can lead to flawed conclusions.
Critical thinking	An organized and rational approach to enable evaluation of information and its interpretation.	Steps such as identifying the problem, data gathering, data evaluation, identifying any assumptions and bias, establishing the significance of information, making a decision, and conclusion can be readily followed.	It can be time-consuming to gather facts, sort facts from fiction, and consider the quality of the sources of information.
Analytical thinking	Consideration and review of information and its fundamental facets and basic principles	Enables separation of complex information into simpler parts, identification of trends, and cause and effect.	Can be time-consuming and challenging to make decisions. In a team setting this approach, can lead to frustration and induce the feeling of indecisiveness. This approach depends on the skill of the data analyst and the quality of data sources. Often, this approach sets out with a defined problem. If the problem is ill-defined or vague, the data collection can become difficult to manage.
...	Other tools and approaches that can be added to the diamond.	Allows for additional methods to be added and considered.	