

SUPPLEMENTARY NOTES

Title: Brainstorming to harness the spontaneity of problems as opportunities: EIDeM

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The recorded times correspond to the approximate moments when the different phases described started (HHMM).

Timeline diary for the function-level scenario:

0814 function-level priming starts.

0816 Review of planned methods.

0818 Listing of different everyday contexts.

- Kitchen
- Garden
- Car
- Office
- Bathroom

0822 Kitchen was selected due to its universality.

0825 Listing of common and enough complex kitchen utilities.

- Toaster
- Blender
- Fridge
- Freezer
- Dishwasher
- Oven
- Microwave oven
- Carbonator

0829 Recognition of the diversity of ovens (wood, electric resistor, or MW). Ovens are universally recognized and enable diverse substance for the morphological chart.

0832 Use of other design methods. Recap of problem-definition principles from the DELFT book (Van Boeijen et al. 2020).

0907 As an usual consumer who likes warm meals, **what is the initial problematic situation: having cold or even uncooked foods while being hungry or soon hungry. What is the desired situation: having warm and cooked foods served in front of me.**

What is the context: own kitchen, because going to restaurants takes too much time and is more expensive. The author also like cooking, but efficiency is sometimes the more important factor due to other pending tasks. Side effects to be avoided: unnecessarily dishes and mess, waste of food, food-borne illnesses, burns and other injuries and accidents.

0933 Use of other design methods. Recap of WWWWWH method (Sloan 2010; Van Boeijen et al. 2020) to review the previous problem definition.

1006 List of WWWWWH (Sloan 2010; Van Boeijen et al. 2020) results obtained using internet search:

-Solutions so far include wood, electric-resistance, and microwave ovens. Microwaves having electric grilling elements are also available. The electric ovens can include air circulation (convection ovens) to enhance heat transfer and prepare crispy surface texture. Wood and electric stoves, resistor and inductance based, are also available where the heat is first conducted or inducted into the container such as a pan or kettle. Also grills relying on charcoal, wood, gas, or electricity can be used, and even campfire. Heating and cooking in other mediums than air are also available, such as boiling in water or oil, or using water steam.

-The problem occurs frequently along the awake periods of the problem owners being in home or outside home.

-The problem owners are people expecting to become served with warm and cooked foods, including both the users of the design and non-users.

1034 Start of a break and lunch. A meal of macaroni stored in a freezer, with frozen cooked ground meat kept a while in the freezer, were reheated in a microwave oven together with medium power for about 5 minutes (700W max power). The preparation was quick and convenient resulting in evenly warmed up meal without drying. Previously steam-cooked broccoli and uncooked salad and sauces were also added on the plate and were eaten. Despite the convenience, none of the foods were originally cooked in the microwave (wood oven or electric stove was used earlier, don't remember which one). These observations are reflected on the design process if necessary.

1053 Use of other design methods. The function analysis is recapped from the DELFT book (Van Boeijen et al. 2020).

1059 Function analysis is conducted for solving the above-mentioned **problem, to close the gap between the initial problematic state and the desired situation in the specified context**. The chronological order of expected usage is primarily followed in the listing. Only general-level functions required for a minimum-viable-design were included:

- Bound to environment
- Accept food and enable retrieval
- Accept energy
- Accept control
- Converge energy to heat
- Confine heat in food

- Avoid excess heating*
- Stop when food is warm or cooked*

*Excluded as non-necessary functions for a minimum-viable-design, the "Accept control" covers these in general level.

1121 Use of other design methods. The morphological chart is recapped from the DELFT book (Van Boeijen et al. 2020; Zwicky 1967).

1137 Drafting and populating the morphological chart using pencil, eraser, ruler, and paper. The functions were ordered according to assumed importance as a descending list of rows. The rows (functions) were labeled with letters and columns (characteristics) with numbers. The number of characteristics found for each function is listed below:

A) Confine heat in food	8 characteristics
B) Converge energy to heat	9 characteristics initially, 10 with fair separation of wood and wood pellets
C) Accept energy	8 characteristics
D) Accept control	5 characteristics
E) Accept food and enable retrieval	7 characteristics
F) Bound to environment	4 characteristics

Each row was populated by the characteristics obtained previously using the WWWWWH method (Sloan 2010; Van Boeijen et al. 2020) and general internet search. Spontaneous new ideas were also included in the chart. No new ideas emerged after a while watching and considering the morphological chart.

1224 Recap of the problem statement.

1230 Considering only the most efficient-appearing solution for answering the problem definition, an intuitively best looking combination of characteristic was selected to form a design. The chosen combination was fundamentally a microwave oven, likely because electricity is readily and quickly available, it is easy to control, the microwave energy can simultaneously generate and confine heat into the food, and the microwave ovens have convenient sizes for tabletop use in variety of buildings. The use of internet or any other media for generating ideas for this design scenario was stopped at this point to avoid contaminating the following EIDeM process with new external information.

1245 Overall inspection of the morphological chart. It was observed that despite the popularity of the microwave ovens for heating foods, their use for cooking foods is not well established in general (see also the previous notes about the recent lunch, a possible source of fixation), making microwave ovens eventually suboptimal solutions for the initial problem definition. However, popular electric ovens also covered by the morphological chart do answer the cooking issue, again excluding the wood-based carbon-neutral energy sources.

1256 EIDeM start, total time of priming was 4 h and 23 min. With the lack of more convenient ecological solution in mind, the author considered the wood, wood-pellet (drawn in the same B1 cell of the morphological chart), and charcoal-based characteristics (B2) of the "converge energy to heat" function, and recognized the **common problematic**

factor of "slow-igniting fuels". The problematic factor was spontaneously reflected back at the function to update it into more relevant form **"converge energy to heat quickly"** making it match better with the needs of a user looking for ecological yet convenient alternatives for purely electricity-based heating methods. The forms seemed to be abstract, comprehensive, and relevant. The cognitive processes happened very quickly, and the following sudden flow of ideas was promptly written down before forgetting:

[The bracketed comments below were added during the categorizing and counting of the EIDeM ideas. Individual ideas are **bold continuous strings (the extend also affected by the ease of counting)**, **duplications and combinations are also in cursive**, **ideas found from the morphological chart are in red**, **the new distinct ideas relating to the updated-B function are in yellow**, and **new distinct ideas relating to the D-function are in orange**, and **ideas relating to both functions are bicolored**]

- Use **electric arc to ignite** wood, wood pellets, or charcoal
- Same but with electrical resistors** [in the B4 cell of the morphological chart the resistor heats the food directly].
- Same but with microwaves** [in the B7 cell of the morphological chart the microwave source heats the food directly].
- Use electric arc or electrical resistors to **preheat the combustion air**.
- Use fans to control the intensity of combustion** and/or **flows of hot air** used to control the heating of food [in the A8 cell the air circulation was considered only for even heating, the above includes passing the hot air by the food].
- Use thermal probe to measure the temperature of the cooking container or food itself to inform user and control the combustion**.
- Use timer to control the assisted combustion period**.
- Ways to control heat: **deplete oxygen from combustion**, **move food in relation to the heat source**, and/or **direct air flows towards food or pass** [considered as distinct new idea if guided with vanes or similar, not fans].
- Auxiliary hybrid combustor** that can be inserted in pre-existing fireplaces or grills to enhance cooking with fire.
- Stand-alone hybrid combustor** for terrace or similar use.
- A hybrid combustor suitable for both stand-alone use and within pre-existing fireplaces**.

1330 Start of break, previous active EIDeM session was 34 min.

1811 End of break. The previous flow of ideas was unexpectedly sudden and fast. This thinking session is initialized by focusing more formally on the isolated function of "converge energy to heat quickly" and the problematic factor of "slow-igniting fuels".

Focus is not paid on the previous listing at this stage. Possible overlaps and other further analyses are dealt after the time reserved for the idea generation ends.

- Ignition by spinning the fuel such as a piece of wood against solid member or other piece of fuel to generate friction heat** [in the B8 cell of the morphological chart, two non-fuel cylinders are rotated against each other].
- Hydraulic press splits the fire wood into smaller pieces with larger surface area for combustion** and **simultaneously feeds the combustion process with fuel in controlled manner**. [In an automated system it is more natural to think about two distinct operational

states, one for ignition and one for controlling the once started combustion].

-**Similar approach with the previous one but the user operates a manual force-multiplying lever mechanism** [to both speed up ignition and control combustion with the amount of fuel. As manual operation it is harder to think about two distinctively different operational states, the user does what it does and thinks about].

-Manual, possibly **spring-aided back-and-forth lever mechanism used to quickly chop more pieces of wood into combustion when needed** [to both speed up ignition and control combustion with the amount of fuel utilizing more oscillative motion].

-**Gravitational feed of fuel towards any cutting mechanism.**

-**A mechanism similar with electrical planer** detaching more pieces of wood for the combustion when needed [to both speed up ignition and control combustion with the amount of fuel].

-**Bellows** can be added to all the mechanisms utilizing back-and-forth motions to increase the oxygen flow into the combustion, and the fuel fed and oxygen supplies can be used separately with proper disengagement mechanisms [to both speed up ignition and control combustion with the amount of oxygen flow].

-**Use of oxidizing or carbonizing chemicals**, such as hydrogen peroxide or sulfuric acid, to release heat energy from the fuels [to both speed up and control heat release]

-If ecological and technically feasible, the **users could prepare the above-mentioned chemicals** themselves using electrolytic reactor or similar.

-Rotating member such as **circular-saw producing finer saw dust from the fuel** [to both speed up ignition and control combustion with the amount of fuel].

-A **metallic belt rotating between the fire and stove** transferring heat in controlled manner according to the rotation speed.

-**Metallic members such as plates, blocks, etc. rotating between the flame and stove** to control heat flow. This and the above-mentioned ideas could remove the inconvenience of working with open fireplaces. [...which are still wanted to preserve for example for aesthetic reasons].

-A **cylindrically shaped container** for heating and cooking the food rolling on a above-mentioned rotating belt or metallic members.

-**Electric ignition and/or air blow** can be used together with the above mentioned ideas.

2124 Start of break after 3 h and 13 min, 3 h and 47 min of total time for the active EIDeM today.

The second day of the function-level scenario starts.

0812 End of break. Recap the function of interest and problematic factor.

1040 The attentiveness is clearly not as good as it was yesterday. A substantial sensation about depleted idea resources is distracting.

1123 Use of other design methods. Due to the lack of concentration, natural flow and direction of thoughts, SCAMPER (Eberele 1996; Van Boeijen et al. 2020) is used to examine the isolated function of interest and problematic factor. The following new ideas was produced:

-**Move the fire in relation to the stationary food** to control the heating [in the D5 cell of the morphological chart the food is moved in relation to the heat source].

-**Recycle the charcoals from the previous combustions** as more flammable tinders

containing less volatilizing, energy-consuming materials [this is intentional dual-fuel use, in the morphological chart the different types of fuels are used separately during ignition].

-Use the previous **and currently formed charcoals as the main heat source** providing higher temperature and quicker cooking. For example, fuel in the dry-distillation phase could warm the sides of the oven, from which the formed charcoals drop below the oven along sloping surfaces for heating the bottom with higher temperature.

-**Use of superheated steam to ignite the fuel**, an approach which could be safer than using high-voltage electric arcs (dangers of heat and pressure vs. heat, electricity, and ozone).

-Conventional approaches such as using a blow torch for igniting wood quicker [thought previously and strongly reminded again by the “What other product or process could you use to achieve the same outcome”. The stance was hold to reject these approaches because these everyday solutions could have been easily recognized if the reformatted function of interest would have been available when the morphological chart was populated].

1255 End of EIDeM and the function-level scenario. More active EIDeM today 4 h and 43 min, total time 8 h 30 min. Total design-scenario time was without priming 23 h and 59 min.

Timeline diary for the requirement-level scenario:

0900 Start of priming. The planned methods are recapped.

0922 The previously found everyday contexts are reviewed. Office was selected as the context of interest due to its universality including a plurality of both non-digital and digital appliances enabling flexibility for the priming, and to have a different context from the previous design scenario.

0925 Listing of common and enough complex office utilities:

- Printer
- Scanner
- Stapler
- Hole puncher
- Desktop and laptop computers
- Cell phone
- Power banks
- USB hubs
- External CD and DVD drives
- External hard drives
- Cameras
- Clocks
- Wrist watches
- Calculators
- Ballpoint pens
- Rulers (quite simple though)
- Air humidifiers
- Keyboards

-Computer mice

0933 Use of other design method. The method Future Visioning is recapped from the DELFT book (Van Boeijen et al. 2020) and it is conducted (mostly relying on the introductory steps) until a single user value and desire are found which will conflict with the real everyday experiences. As an everyday user of offices and office appliances, the author is acting as the "user", and the Future Visioning was adapted for a single-person use. First spontaneous problem the user faces is the overall distracting clutter of digital space, taking time to manage, and bothering memory: a lot of services, different user interfaces, user accounts, passwords, service policies, security risks, ads and content creators demanding attention, automatic reminders of mobile-phone features that are not interesting or eventually not needed, and so on. The user values clarity and limited, only beneficial and purposeful information within the space of the current focus. In the desired state, new information is introduced into the space of the awareness only if it is beneficial for the initial intentions, or it is needed for steering the work towards arguably better direction the user wasn't aware of.

1030 Use of other design methods. Recap of problem-definition steps from DELFT book (Van Boeijen et al. 2020).

1033 As an usual user of information technology in an office, what is the **initial problematic situation: distraction, waste of time and attention on secondary matters while trying to achieve a primary goal**. What is the **desired situation: having no distractions, having peace to focus on using the tools for achieving the primary goal**. And when the unavoidable secondary problems do occur, the author wants to find and utilize only the relevant information to solve the problems quickly. The **difference between the above-mentioned states is the project-management problem for the requirement-level scenario**. What is the context: office with internet, computers, mobile phones, and other utilities. Side effects to be avoided: not to add the clutter and distraction, and if (or likely when) efforts are required for the setup of a new approach/tool, it should be much less demanding than the waste of resources if current practices are continued.

1046 Use of other design methods: recap of WWWWWH method from DELFT book (Sloan 2010; Van Boeijen et al. 2020) to review the previous problem definition.

1100 Listing the WWWWWH (Sloan 2010; Van Boeijen et al. 2020) results for the question "What has been done so far to solve it". Only the solutions already available are considered to find designs to populate the Pugh matrix. While browsing different products on the internet, recognized requirements were gathered simultaneously in a separate list (all the links listed below were accessed on 27th of January 2023):

-Solutions so far include a variety of AI assistants for computer and mobile phones, such as the **Heyday** that automatically records online browsing and gives relevant reminders when similar topics are searched later:

<https://youtu.be/-mnMvTsFKag>

-AI-research assistant accepting text inputs are also available such as **Elicit** that can conduct tasks similar to browsing sessions of research literature returning research results as takeaway, outcome, intervention, and similar reports: <https://youtu.be/xerJiCCpGro>

-AI-assistants with physical embodiments are also available such as **Alfred** robot having tires, image projector, camera, and internet access.
<https://youtu.be/gglc7zFg3ZU>

-Goal tracking apps such as **ClickUp** for organizing and scheduling projects:
<https://youtu.be/0Q8aA0Lwuyc>

-Special utilities to partially reduce mind consumption are also available, such as **NordPass** password manager:
<https://youtu.be/-Yq16DxejHk>

-Mobile phones provide pre-installed voice assistants such as the **Google Assistant** which was the best-performing tool in this series of tests: <https://youtu.be/rgTGKcoq2Os>

-The author has a **personal tactic** for general management of running projects. A variety of tasks is included, such as finding, comparing, storing, and recalling relevant information, and making job definitions, task partitioning, and execution for reaching higher goals. The tactic utilizes various information sources such as internet, scientific, technical, etc. literature, and motor-memory enhanced storage of low-limit manual or digital notes and drafts in digital diary or in a pocket calendar. Near-future-task reminders are used both in the calendar and next to the latest diary notes in the "here I was at the last time" list to keep the projects on the track. Other common techniques are also used naturally, such as ctrl + f to quickly retrieve previous information from the digital notes, mobile-phone alarms, etc.

Extracted requirements in arbitrary order, these will be judged based on assumptions without real-life experience on using all the approaches:

- Overall automatization
- Reliability (or at least the sense of control)
- Capability to bring directly usable relevant information
- Help to build upon previous information or made tasks
- Help to framework a project
- Suitability for a variety of goals
- Context, app, and platform applicability (e.g. all internet vs research literature, whole screen assistant or within app/software)
- Visual tidiness (anti-clutter)
- Logical tidiness (easy to comprehend, or at least does not bother)
- Focus on the current relevant things (no project-management escalation)
- Gentle learning curve

1320 From the list of products the **Alfred** robot was removed as it reminds of general voice assistant. **NordPass** was also removed as it is a very specialty tool only for password management. Thus, 5 different project-management assisting tools (and 11 requirements) were found that could be used to solve the problem. A variety of approaches from different domains are presented providing a diverse cross-section of characteristics for the primary scope, on which the EIDeM generated ideas will be compared to. Using this substance, a virtual Pugh matrix coded by the author was populated. The personal tactic was chosen as the first datum, as the author is familiar using it. After making the first equal-better-worse

comparisons, the resulted Pugh matrix was recored as an image.

1410 When the equal-better-worse selections were made, the Heyday emerged as the best tool for keeping the focus on the most relevant matter during project management and execution. It got the highest amount of "better"s (6) and the least amount of "worse"s (1). Thus, it was chosen as the datum for the second Pugh-matrix evaluation.

1431 After the second round of the Pug-matrix evaluation using the Heyday as the new datum, the Heyday hold its position as the best approach. None of the other approaches reached the same number of "better"s as the Heyday previously, the maximum being 5 for the personal tactic which also accumulated 4 "worse"s.

1435 End of the priming and use of internet for ideation. The duration was 5 h and 35 min. Start of a break and the EIDeM phase.

1839 End of break and start of more active EIDeM session. Unlike during the function-level scenario, not a single spontaneous idea or practically any further cognitive progress has been occurred after the framework was populated. This indicates the need for intended function-level analysis. From the final Pugh matrix iteration, the repeating pattern of "worse"s is observed in the "Overall automatization" and "Focus on the current relevant things (no project-management escalation)" favoring the Heyday (the datum of the last round of comparison). These are clearly related to the feature of the Heyday to automatically recall information from the past according to the current behavior of the user, helping to keep the focus on the relevant matter.

1847 A common underlying function is defined that tries to satisfy the "Focus on the current relevant things (no project-management escalation)" requirement. To keep focus on something, the something should be available within the reach of the awareness. Thus, one manifestation of the **function could be "get information relevant for the currently focused matter"**. At least the Heyday manifests this function, because it tries to fetch information relevant for the current focus, or at least the relevant information available from the recorded past.

1858 To define a common underlying form for the problematic factor, it would be beneficial to make it match with the limitations of the approaches that received the "worse" ratings. The initial forms of the problematic factors are listed here first:

Personal tactic: During manual search and result assessment, the user becomes exposed to non-relevant information and tasks.

Elicit: An elevated attention is needed for starting the service and forming the question to ask for the relevant information.

ClickUp: Not-so automated tool for retrieving relevant information, thus resembling the personal tactic.

Google assistant: also an alternative more automated way of retrieving relevant information with little effort, although the information does not appear spontaneously along other tasks the user is making.

1935 The Heyday browser extension can read the queries the user is making, and using no other inputs can automatically serve the relevant information (only from the recorded history). This is very convenient as the user does not need even elevated attention to ask

a separate question to retrieve a particular information. Actually a single keyword could expose the previous, relevant, yet forgotten information for the user. Though, it is still likely beneficial to define more accurate questions also for the Heyday to make its search results more valid, why the common problematic factor of consumed attention for search is not fully absent in the Heyday either. To validate the problematic factor, an extreme imaginary reference is considered: if the intensity of the problematic factor would be very large, it could fully disable the function if all the attention, efforts, and energy becomes consumed for executing the mechanism of the search itself. This indicates that the function and problematic factor of interest are complementary and relevant to each other.

1943 In the underlying level, the function of **"get information relevant for the currently focused matter"** is in conflict with the problematic factor of **"consumed attention for search"**. Now the first new ideas start to emerge once these two elements are considered in isolation without trying to remove, neutralize, or bypass the problematic factor. At least the first ideas relate to a thought of "what other useful can be done simultaneously when the attention is consumed" or "how to generate new relevant information for the coming searches while the attention is consumed":

[The bracketed comments below were added during the categorizing and counting of the EIDeM ideas. Individual ideas are **bold continuous strings (the extend also affected by the ease of counting)**, *duplications and combinations are also in cursive*, **ideas found from the Pugh matrix are in red**, **and the new distinct ideas relating to the function of interest are in yellow**. In general, this scenario resulted in many means of visualization and similar superficial ideas. These ideas alone without further and distinct logical or otherwise more meaningful substance were not counted.]

-Draw a **visual branching tree of search phrases and results to store the current thinking as relevant information for the following steps of the thinking process**. **When a new query is executed the most relevant part of the tree can be exposed**, and the user can hover the cursor over the view to zoom and pan the view, or click the view open to enter the full tree view. Past information could be enhanced with one particular color or other visual cues, to distinguish from the new information automatically fetch from internet.

-Using AI to **stack the most relevant search results as a micro-to-do list** and enhancing texts the AI thinks are relevant for the search. [Google Assistant does not seem to have even a simple feature similar to this, as it was not able to fulfill the task "Hey Google, find me a pizza recipe and make a shopping list of it. However, as an example, the prompts of the Heyday could be loosely considered as "check these (multiple) results" todo lists].

-In an interactive notebook, **draw a visual pathway from the portion of the text that lead to the need of the relevant information and where the relevant information was found from or where the user visited. Eventually, the notebook starts to resemble a map helping to find relevant information quicker** with most often visited sections enhanced visually with multiply incoming lines, while the problematic areas possibly needing some additional notes or some other enhanced focus are represented with many outgoing lines. Appropriate visual cues such as arrows can be used to visualize the direction of the paths.

-In a manual notebook, **dispense ink through selected pages, kept between fingers for example, to make a visual connection between the visited pages containing shared relevant information to ease the browsing next time**.

-The **ink trail can also be drawn on the edge of the page bundle** connecting the edge most areas of the pages.

-An interactive notebook for which images can be attached inline with the text. Hovering or clicking/tapping the marks will open the images and additional keywords obtained by AI-image recognition. Whole AI-recognized texts can also be available as such for copy paste, if text was present in the image. [Combining image and text information is available for example in the ClickUp, but image recognition was not found. This is considered as “other idea” due to the mostly manual addition of possibly relevant information for later browsing of the notebook, having tendency to consume more attention than alleviate the problem].

-Punch holes through bundles of pages in a notebook for visually connecting the pages sharing common relevant information to ease the browsing next time.

-Use pages that can be detached and reinserted to group relevant information in a notebook [easiest way to do this is to use folder-type approaches, well know yet EIDeM reminder in this session].

2101 Sensation of depleted ideas has been bothering for a while.

2126 Some new ideas emerge

-An interactive notebook of sections representing categories of different topics, projects, sub tasks etc. Each section are represented by a pile of blocks of previous notes, the topmost is the current one. [Information categorization is available in ClickUp for example] While the user browse the notebook, an AI assistant can search more information and place new (differently colored or otherwise marked) blocks between the previous ones as suggestions, or rearrange the user-written ones according to the expected relevancy. The heights of the piles could represent the time distances and/or the relevancy distances. Blocks from other piles could be enlighten by a slight gravitational pull towards the current view, or otherwise indicating relevant information, and once the user notes the hints he or she can decide whether to copy or move blocks between the piles. The user could view the piles of blocks like a bird watching mainly downwards and flying between skyscrapers.

-Take every keyword from the search queries or notes and cluster them automatically with earlier keywords. [Heyday is able to resurface information, even from notes, and present it in clusters relevant for the current queries of the user] Search snippets and links can also included in the clusters with the keywords. Connect the clusters via bridge pieces sharing the same keywords in different clusters.

2225 End of the first more active EIDeM session which lasted for 3 h and 46 min.

The second day of the requirement-level scenario starts.

0800 Start of new more active EIDeM session. Recap of the function and problematic factor of interest.

0849 No new ideas emerge. Focusing more intensively on the function and problematic factor of interest in their common underlying forms in isolation was tried without luck. An absurd imaginary scenario was also tried in which a stump in a forest is the problem of interest hiding the desired solution, and the investigator needs to break away his attention

from the stump for searching needed external information elsewhere from the forest. No help. It was felt that the imaginary scenario mislead to consider irrelevant yet strong physical experiences and interactions with environment narrowing the imagination.

1039 Start of break, the previous session lasted for 2 h and 39 min.

1213 End of break. Recap the function and problematic factor of interest and the earlier auxiliary question of "how to generate new relevant information for the coming searches while the attention is consumed".

1253 Use of other design method. TRIZ table (Altshuller 1999) from <http://www.triz40.com> was tried (accessed on 28th of January 2023). The features to improve and preserve selected were "Loss of information" and "Productivity", respectively, as somewhat descriptive expressions of the conflict at hand. The TRIZ table suggested the following approaches with explanations [in orange]:

The other way round:

+ Invert the action(s) used to solve the problem

-Considering the yesterday defined idea of **branching tree**, the above-mentioned suggestion helped to ideate an approach where **the "whole" tree to a feasible and practical extent is drawn first when the user makes the first or a few initial queries. The AI does not try to fetch only the information directly relevant for the query (or queries), but also guess the coming steps** [interesting observation that this is actually the "non-inverted" or at least the most direct approach to deal with the conflict, to provide as much relevant information as possible for the current query, not for the coming ones in delayed indirect manner. See also the related notes below*]. The user can then **trim the irrelevant main branches off the tree and narrow the scope to better match with the intentions of the user** [trimming of irrelevant clusters of information is a feature available in the Heyday and ClickUp, in a form or another]. Now the user could have more relevant information at hand than was asked, enabling better forecasting of the future, and how the assumed future could affect on the current steps.

+ Make movable parts Irrelevant

+ Turn the object (or process) 'upside down'

-The above-mentioned suggestion helped to generate an idea about **an AI assistant using the current search inquiry also for predicting the following steps**. It might be beneficial for the user to become aware of possible later steps, if the way how the current steps are conducted affects on the success of the later steps. **For example, if the user searches for "bolts", the AI can present different types of bolts also with a separate list of different types of nuts. Other categories of means for fastening can also be presented. I.e. the search results are categorized and ordered according to the direct relevancy for the current query**. Thus, from the point of view of selecting the nuts, the AI searches relevant answers before they are even asked for. [The above idea describes one way how the elementary connections within the automatically augmented or forming tree could be made. Thus, this lower-level and the above-mentioned higher-level* ideas can be considered as distinct ideas providing different approaches to different problems on different levels.]

Feedback:

+Introduce feedback (referring back, cross-checking) to improve a process or action

-The above-mentioned suggestion helped to ideate an AI assistant that reads both the notes and search inquiries of the user. **The AI assistant searches patterns of tasks from the notes of the user (also including the records of the previous searches) and tries to forecast where the user should go using various meters such as how many times corresponding threads are present in the internet and/or for how far they extend. The user can then select the suggestions based on these parameters, or the internet browsing of the user is rated accordingly.**

-Considering the idea of *block piles* defined yesterday, the *user could inquiry a seed information needed to start a task with a clear goal. Then together with an AI assistant providing suggestions about the intermediate steps needed to reach the goal, the user can rearrange the threads of tasks until a feasible assumed pathway to reach the goal is found.*

+If feedback is already used, change its magnitude or influence.

-This suggestion helped to ideate an **AI assistant which could search the notes of the user and try to make summaries of the relevant past notes when the user types search inquiries or writes new notes, or declares doing new plans** [the Heyday is able to fetch information from the documents such as notes and represent them in clusters relevant for the user's current queries].

Dynamics: Irrelevant

1334 End of final more active EIDeM session, which lasted for 1 h and 21 min, and thus the end of the requirement-level scenario. The whole more active EIDeM thinking during the scenario lasted for 3 h and 46 min + 2 h and 39 min + 1 h and 21 min. = 7 h and 46 min. The EIDeM phase lasted for 18 h and 55 min.