

Research Article

Evolving the Doctor's Waiting Room: Applying AI to Visioning the Future, a Cartographic Approach

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Received: April 03, 2024; Accepted: April 25, 2024; Published: April 26, 2024

Abstract

SCAS (Socrates as a Service), incorporating ChatGPT 3.5, was instructed to create ten visions for the future waiting room of the doctor, based upon positioning the waiting room as part of the continuum of healthcare, rather than just a room housing people before they are admitted to see the medical professionals. SCAS 'fleshed out' each of the 10 visions in paragraph form, and then generated 15 questions about aspects of implementing these visions. In the subsequent iteration, SCAS was given the 15 questions it had previously created, and instructed to provide answers to each question, as well as estimate the difficulty involved in achieving what the answer specified. At the end of the process, about 15 minutes later, the program returns with a detailed Microsoft Excel file, the Idea Book, showing each iteration, and providing additional insights generated by the AI-based 'Summarizer.' The process presented here shows the power of AI to help create the future by allowing easy-to-create, quick-to-run queries, and providing detailed answers and additional subsequent analysis. With the turn-around time in seconds, and with a system which is iterative, the user can explore a topic in depth, generating a strong educational experience for any topic that one can imagine. The strength of the approach is the ability to help one think and envision in a way which is absorbing, user-driven, and often filled with surprises.

Introduction

What the future will bring is always a topic of conversation. It becomes especially interesting when the focus is on something relevant to the daily lives of people, and when the evolution may improve the quality of life. This paper is an attempt to envision the doctor's waiting room as part of a smooth transition from greeting the patient to treating the patient. The strategy uses AI to help envision the future, doing so in a way which requests specificity from AI. Furthermore, the objective is to integrate OpenAI's freely available AI ChatGPT 3.5, a large language model (LLM), into an easy-to-use system with a limited number of queries, automatically built-in. All the work is done behind the scenes by ChatGPT 3.5 [1]. The objective is to create a system which lets the user focus on the work, not on the effort to code. As a result, the user spends time learning through iterations, the immediate feedback allowing a quick change of query, with the iterations eventually generating the information desired. The notion here is that AI becomes the collaborator in the up-front development, and in some cases a participant who estimates the difficulty of the task [2,3].

The approach used in this paper is called SCAS, an abbreviation

for Socrates as a Service. The name comes from the belief that the approach presented here is a coach to creative thinking. Rather than Socrates 'pulling out' ideas from the mind of slaves through questioning, the idea is for people to pull out ideas from the mind of AI through questioning. The questions are not meant to be factual, but conceptual. The user is challenged to let Socrates give expansive answers, not constrained ones, while at the same time ensuring that these expansive answers are feasible and produce something tangible. [4] called this approach '*Homo Silicus*'.

Systematizing New Idea Creation

Creating new ideas is a well-accepted business objective. Business always needs to create 'new' for the simple reasons that business must keep up with changes, whether the changes be responses to truly new situations and their requirements, or activities to maintain the interest of fickle customers. The world changes, people get tired of what they have, the two of these factors combining to force the creation of the new as a standard part of one's operations, one's business.

With all the focus on 'new,' it should come as no surprise that there are myriad publications with their pronouncements of how to create

the new, hundreds of thousands of experts who are ready to advise about the 'new' at a moment's notice and for an agreed-upon fee, not to mention the multitudinous best practices which dot the horizon of business.

The introduction of AI has changed the world of new product development. With user-friendly technology such as that embedded in Open AI's ChatGPT 3.5, it has become possible to provide AI with a specification, a request, and let AI return with the suggestions. It is from experience with AI in this format that the study reported here arose. The paper focuses on the application of AI to envision the patient's waiting room, an integral part of the medical facility, as a room where the healing process begins.

The process presented here grew out of the effort to understand how people respond to the world. The typical process of understanding the mind of a person with respect to something like the patients' waiting room is to ask questions about the waiting room, to identify the relevant features, and their importance. The typical approach is to use some type of scale and instruct the respondent to rate the importance of different features that the waiting room might feature. It is from this type of scaling that the designer gets a sense of what is important. It is up to the designer to then take the information and create the prototype rooms to be evaluated for acceptance, utility, and so forth. Sometimes the survey is put aside or occurs after a discussion with participants about the new patient's waiting room. In this case a trained interviewer discusses the nature of the waiting room, either with one or two people in a so-called 'depth interview' or convenes a group of people called a 'focus group'. In both cases the researcher ends up conducting a structured interview in the form of a conversation. The foregoing process is a standard part of most research approaches to understand what is needed in a new product.

One emerging problem embedded deeply in the foregoing conventional process is the failure to deal with the details. Surveys, discussions, and so forth can provide direction, but it is the execution of these ideas which is important. In research this is known as the gap between 'strategy,' the big idea, and 'execution,' making the particulars a reality and bringing that into the world. The emerging science of Mind Genomics was developed to incorporate the specifics, the executions, into the research process [5]. Rather than instructing the respondent to rate general ideas, hoping that these ideas would end being well executed, the Mind Genomics approach took its cue from nature. The approach was to create small vignettes, combinations of concrete ideas, specific descriptions, instruct respondents to rate these vignettes, and then through statistics (regression, clustering) deconstruct the response to the part-worth contribution of the individual concrete elements, the granular information shown to the respondent. The outcome was the recognition that valuable data could be obtained by focusing on the specifics of a situation, rather than focusing on large, featureless, general ideas. A good strategy was to generalize from the pattern of particulars, easier to do than particularizing from a featureless generality. It was this realization which pushed the focus of Mind Genomics to focus on the concrete, the granular.

It was the pattern of questions and answers, begun with Mind

Genomics, which was to evolve to the approach presented here. In its current form, Mind Genomics requests the user to create four questions regarding a topic (see Figure 1, Panel A), and then for each of the four questions create four answers (see Figure 1, Panel B). The process thus creates 16 elements, the four sets, each comprising four answers. It was the ensuing difficulty with having a user, develop four questions which eventuated in introducing AI was used as a coach, called, not surprisingly, the Idea Coach. The user would type background to a topic in the form of an AI prompt, which Mind Genomics calls a 'squib' (Figure 1, Panel C). In turn, the Idea Coach would then use AI to develop the four questions. (Figure 1, Panel D). The same approach could be used to create four answers to each question. The process of using AI a system to generate questions for a specific topic, or answers for a specific question soon moved AI to a central role in Mind Genomics.

It soon became apparent that the embedded AI in Mind Genomics was being used far more to create 'books of knowledge'. The user would create a set of questions to 'brief' the AI, and then run the AI several times, occasionally just iterating, but often changing the input slightly and then iterating. The emerging focus was using the embedded AI to provide a range of alternative answers to the same question. Furthermore, the AI had been programmed to provide additional summarization, viz., post-emergent analysis. The system ended up being renamed SCAS, Socrates as a Service, in recognition of this evolution from a system which recommended questions and answers into a system to educate people on a topic, using AI to help people think critically about a topic, imagine alternative realities, and create by typing descriptions of those realities.

Using AI to Drive the Future

The immediate stimulus driving this set of experiments resulted from a fortunate accident. than simply asking a question and getting the SCAS to provide 15 answers, something that was done a dozen times in the set up of a Mind Genomics study, the user this time created a more detailed briefing, by writing down both the relevant input for Idea Coach, but then additional, background information that was usually part of the thinking, but never submitted to the AI in Idea Coach. The AI was 'briefed' in a far more detailed way, with thoughts, requests, hypotheses, and so forth, again by accident, but an accident which proved remarkably productive as shown below.

Table 1 show the entire briefing. Table 1 is divided into two parts, shaded and unshaded, respectively. The shaded parts provide modest details, specifically the nature of the room (part of the flow, first room in a sequence of room), followed by a statement of 'fact', viz., that there are ten mind-sets. There is no supporting evidence given for the statement about ten mind-sets, however. The user could just have easily specified three mind-sets or 13 mind-sets. The second part of Table 1 shows the general instructions to the AI. These are to focus on the room itself, and afterwards on the reaction of people to this room. Again, Table 1 is far more extensive. We can contrast this extensive brief with the ordinary brief of that time, which would be something like: *'What are questions to ask about the nature of the patient's waiting room, if we think of the next decade, starting in 2030?'*

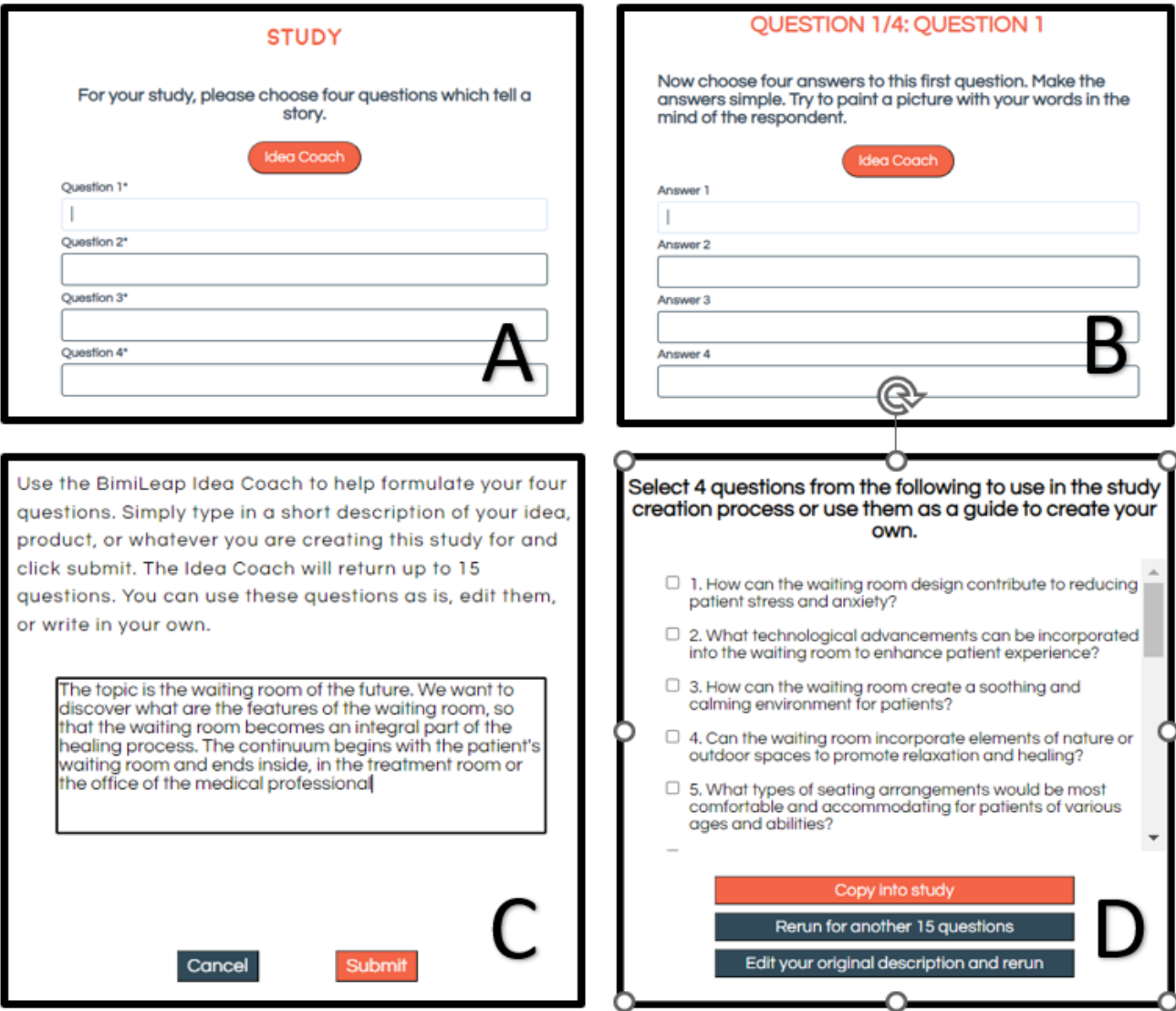


Figure 1: The original process in the set-up of a Mind Genomics study. Panel A shows the request for four questions which ‘tell a story’. Panel B shows one question, with the request to provide four answers. Panel C shows the background to the project and the desired results, the so-called ‘squire’, typed into the Idea Coach. Panel D shows 5 of the 15 questions provided by SCAS operating within Idea Coach.

<p>Table 1: The briefing given to AI about the waiting room outside the doctor’s office.</p> <p>Topic: In the future, the waiting room outside the doctor’s office will be more than just a room where people wait to be seen. Rather, the ‘waiting room’ will be a part of the flow, and just the first room in the sequence of rooms where the patient is seen and treated.</p> <p>With this in mind, give 10 different visions of what this room will be.</p> <p>Each vision should be in a separate paragraph.</p> <p>Start the paragraph with the name of the vision in capital letters. Then write the sentences about this vision. This vision will be about the room, and what happens there. It is not yet about the reactions of people to the room.</p> <p>Finally, for this vision, give me four more sentences telling me how people will feel, what people will say, what are the good things and what are the bad things.</p>

The actual creation of the AI briefing takes a few minutes. Once the AI is provided with the briefing, the AI is invoked through SCAS, the Socrates as a Service procedure, embedded in the Mind Genomics program. Within 10-20 seconds the AI returns with preliminary answers along with an additional set of 15 questions for consideration..

Table 2 presents the 10 visions of the patient’ waiting room, attempting to follow the request to discuss the room itself as an

integral part of the visit, and of the continuum from waiting room to examination room. Each of the 10 visions is labelled, followed by a description of the room itself, and then followed by the response of the patient in that room.

The important thing to keep in mind is that the AI was not given any information at all, other than this was to be a patient’s waiting room but was also going to be part of the spatial continuum, and thus an integral part of the ‘path’ for health and healing.

Table 2: The 10 visions for the patient’s waiting room as part of the continuum for health and healing. Each vision comprises a name, a description of the room, and then a description of the feelings of people towards that ‘now-evolved’ space.

<p>The 'waiting room' will be a part of the flow, and just the first room in the sequence of rooms where the patient is seen and treated.</p> <p>VISION 1: THE NATURAL SANCTUARY</p> <p>In this vision, the waiting room is transformed into a natural sanctuary, adorned with lush green plants, trickling water features, and soft mood lighting. The room feels like stepping into a tranquil garden, providing a sense of calmness and relaxation. Patients are greeted by soothing nature sounds playing softly in the background, creating a serene atmosphere. Comfortable seating arrangements are strategically placed to offer privacy and a connection with nature. The room doubles as a therapy space, with meditation and mindfulness sessions available for patients who wish to alleviate their anxiety and stress levels.</p> <p>People will feel a sense of peace and tranquility as soon as they enter the natural sanctuary waiting room. They will say that it feels like a breath of fresh air amidst the often sterile and clinical environments of medical facilities. The good thing about this vision is that it helps to reduce anxiety and promote mental well-being through its soothing ambiance. The bad thing is that maintaining the natural elements may require extra care and attention, and some patients might not resonate with the concept.</p> <p>VISION 2: THE INTERACTIVE LEARNING HUB</p> <p>In this vision, the waiting room is transformed into an interactive learning hub, equipped with touchscreens, interactive displays, and educational resources. Patients can explore different health topics, access informative videos, and read engaging articles while waiting for their appointment. The room is designed to encourage self-learning and empower patients to take an active role in their health. Health professionals periodically present interactive workshops and discussions within the space, fostering a sense of community among patients.</p> <p>People will feel a sense of engagement and empowerment while exploring the interactive learning hub. They will say that it is refreshing to have access to valuable health information in a convenient and interactive format. The good thing about this vision is that patients can enhance their health literacy and make more informed decisions about their well-being. The drawback is that not everyone might be technologically inclined or comfortable with interactive platforms.</p> <p>VISION 3: THE WELLNESS CENTER</p> <p>In this vision, the waiting room evolves into a multi-purpose wellness center, offering a range of complementary therapies and services. Patients can enjoy relaxing massages, acupuncture sessions, or participate in stress-reducing yoga classes led by qualified professionals. The room is beautifully decorated with soothing colors and comfortable seating areas, creating a nurturing environment. There are designated spaces for health assessments, allowing patients to receive a holistic approach to their care.</p> <p>People will feel a sense of rejuvenation and healing in the wellness center waiting room. They will say that it is a refreshing departure from the usual clinical experience, offering opportunities for self-care and relaxation. The good thing about this vision is that patients can address not only their physical ailments but also their mental and emotional well-being. The downside is that incorporating additional services may increase waiting times or require additional costs.</p> <p>VISION 4: THE ART GALLERY</p> <p>In this vision, the waiting room transforms into an art gallery, showcasing various works of art from local artists. The walls are adorned with colorful paintings, photographs, and sculptures, creating an aesthetically pleasing and inspiring environment. Patients can appreciate the artwork while waiting, promoting relaxation and sparking creativity. The room occasionally hosts art therapy sessions, where patients can engage in therapeutic art activities.</p> <p>People will feel a sense of inspiration and creativity in the art gallery waiting room. They will say that it provides a refreshing visual experience and helps to distract from the anticipation of medical consultations. The good thing about this vision is that it supports local artists by providing an exhibition space for their artwork. The negative aspect is that not everyone may appreciate or resonate with certain art styles or themes.</p> <p>VISION 5: THE TECHNOLOGICAL HUB</p> <p>In this vision, the waiting room becomes a technological hub, with advanced devices and gadgets that enhance the patient experience. Patients can access their medical records and test results through user-friendly touchscreens, reducing the need for paper-based documents. Virtual reality headsets are available to immerse patients in calming environments or distraction therapy during longer wait times. Charging stations and high-speed Wi-Fi are also provided to ensure connectivity.</p> <p>People will feel a sense of convenience and connectivity in the technological hub waiting room. They will say that it is a step toward a more efficient and streamlined healthcare system. The positive aspect of this vision is that it reduces reliance on physical paperwork and provides access to information at patients' fingertips. The downside is that patients may feel overwhelmed or alienated by the emphasis on technology and prefer a more personal touch.</p> <p>VISION 6: THE COMMUNITY SPACE</p> <p>In this vision, the waiting room transitions into a dynamic community space, fostering connections and creating networks among patients. The room is equipped with comfortable seating arrangements designed for social interaction and conversations. Patients can participate in support groups, engage in wellness workshops, or even join book clubs focused on health-related literature.</p> <p>People will feel a sense of camaraderie and support in the community space waiting room. They will say that it provides an avenue to connect with others facing similar health challenges. The good thing about this vision is that it creates a sense of belonging and support, reducing feelings of isolation often associated with medical visits. The potential drawback is that some patients might prefer privacy or may not feel comfortable engaging in group activities.</p> <p>VISION 7: THE CAFÉ RETREAT</p> <p>In this vision, the waiting room transforms into a café retreat, offering a menu of healthy and refreshing food and beverages. Patients can indulge in freshly brewed coffee, herbal teas, and nourishing snacks while waiting for their appointment. The room is designed with cozy seating areas and natural lighting to create a comfortable and inviting atmosphere. Nutritionists and dietitians are available for dietary consultations and guidance.</p> <p>People will feel a sense of comfort and satisfaction in the café retreat waiting room. They will say that it elevates the waiting experience by providing delicious options for refreshments. The positive aspect of this vision is that it promotes a focus on dietary choices and healthy lifestyles while waiting. The potential downside is that incorporating a café may increase waiting times or introduce challenges associated with maintaining food safety standards.</p> <p>VISION 8: THE GAMES AND ACTIVITIES ZONE</p> <p>In this vision, the waiting room evolves into a games and activities zone, offering entertainment options to keep patients engaged and entertained. There are board games, puzzles, and interactive exhibits designed to stimulate the mind and promote social interaction. Patients can challenge themselves with brain-teasers or engage in friendly competitions while waiting for their turn.</p> <p>People will feel a sense of fun and amusement in the games and activities zone waiting room. They will say that it makes waiting more enjoyable and helps to pass the time quickly. The good thing about this vision is that it creates a light-hearted atmosphere and provides opportunities for social connection. The possible drawback is that noise levels and distractions may affect those who prefer a quieter and more serene waiting environment.</p> <p>VISION 9: THE HEALTHY LIFESTYLE SHOWCASE</p> <p>In this vision, the waiting room becomes a healthy lifestyle showcase, highlighting different aspects of wellness and prevention. The room is designed with interactive displays educating patients about exercise, nutrition, and stress management techniques. There are samples of healthy snacks, exercise equipment demonstrations, and information about local community wellness programs.</p> <p>People will feel a sense of motivation and inspiration in the healthy lifestyle showcase waiting room. They will say that it encourages them to prioritize their well-being and make positive lifestyle changes. The positive aspect of this vision is that it promotes health awareness and empowers patients to take proactive steps towards wellness. The challenge may lie in tailoring the content to suit diverse patient needs and interests.</p> <p>VISION 10: THE HEALING MUSIC RETREAT</p> <p>In this vision, the waiting room transitions into a healing music retreat, with soothing melodies filling the air. Patients are enveloped in calming music created specifically for relaxation and stress reduction. The room is thoughtfully designed with comfortable recliners, soundproofing, and gentle lighting to enhance the healing ambiance.</p> <p>People will feel a sense of ease and tranquility in the healing music retreat waiting room. They will say that it aids in creating a serene and calming environment, reducing anxiety and promoting relaxation. The positive aspect of this vision is that it offers a therapeutic experience through the power of music. The potential challenge is catering to individual preferences, as music preferences vary greatly among individuals.</p>
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As noted above, each iteration was accompanied by 15 questions to answer. These questions are based on the topic. The questions emerge automatically. The next step was to copy the 15 questions into a new run of Idea Coach. Table 3 shows the 15 questions (underlined), two answers to each question provided by SCAS and for each question an estimate of the difficulty of achieving that answer (Easy vs Difficult).

Summarizing and Expanding the Ideas; Themes and Perspectives

SCAS generates a great deal of information when it creates visions

(Table 2) and generates questions (Table 3). One of the benefits of AI is the ability to summarize the information in a succinct way. Table 4 shows two summarizations. The top of Table 4 shows the key ideas. The bottom of Table 4 shows the four themes identified by SCAS, followed by the good (plus), bad (minus) and novel (interesting) aspects of each theme. It is in Table 4 that we begin to see a secondary analysis by AI of the information generated by AI.

Table 5 moves the analysis to who would be interested in these ideas, and who would be opposed to them. Once again we see a deeper secondary analysis of the information provided by AI.

Table 3: The 15 questions generated by SCAS when it provided information about the vision, along with two answers to each question, and the estimated difficulty of implementing the answer. The questions were ‘answered’ by a separate run of SCAS, where the questions were inserted as part of the briefing to AI.

1 How can the waiting room be transformed into a natural sanctuary?
Answer: Incorporate natural elements such as plants, natural light, and calming colors to create a soothing environment. (Difficulty: Easy)
Answer: Incorporate natural elements such as plants, soft lighting, and soothing sounds. (Difficulty: Easy)
2 What measures need to be taken to maintain the natural elements in the room?
Answer: Regular maintenance of plants, ensuring proper lighting, and using sustainable materials for furniture and decor. (Difficulty: Moderate)
Answer: Regularly water and care for plants, ensure proper maintenance of lighting and sound systems. (Difficulty: Trivially Easy)
3 How can an interactive learning hub be incorporated into the waiting room?
Answer: Install interactive touchscreens or tablets with educational content and access to health-related resources. (Difficulty: Moderate)
Answer: Install interactive touch screens or tablets with educational content and programs. (Difficulty: Moderate)
4 What resources and educational materials should be made available in the interactive learning hub?
Answer: Medical literature, informative videos, health-related apps, and brochures about common conditions and treatments. (Difficulty: Easy)
Answer: Provide health-related educational videos, brochures, and online resources for patients to access. (Difficulty: Trivially Easy)
5 How can the waiting room double as a therapy space in the wellness center vision?
Answer: Create a designated area for therapy sessions, equipped with comfortable seating and privacy screens. (Difficulty: Easy)
Answer: Create a designated area for relaxing activities such as meditation, mindfulness exercises, or calming music. (Difficulty: Moderate)
6 What therapies and services should be offered in the wellness center waiting room?
Answer: Massage chairs, aromatherapy, light therapy, and soothing music to help patients relax and de-stress. (Difficulty: Easy)
Answer: Offer mini massage chairs, aromatherapy, or access to relaxation apps for stress relief. (Difficulty: Easy)
7 How can the waiting room be transformed into an art gallery?
Answer: Display local artists' works, rotate exhibitions periodically, and provide information about the artists and their inspiration. (Difficulty: Moderate)
Answer: Display local artwork on the walls, providing a rotating collection of paintings, photographs, or sculptures. (Difficulty: Easy)
8 How can exposure to art in the waiting room positively impact patients' wellbeing?
Answer: Studies show that art reduces stress, improves mood, and stimulates creativity, enhancing the overall healing experience. (Difficulty: Easy)
Answer: Art can reduce stress, enhance mood, and provide a sense of comfort and distraction. (Difficulty: Trivially Easy)
9 What technological advancements can be introduced in the waiting room to create a technological hub?
Answer: Install charging stations, Wi-Fi access, interactive screens for entertainment, and online appointment check-in systems. (Difficulty: Moderate)
Answer: Install charging stations, provide free Wi-Fi, and allow access to health-related apps and telemedicine services. (Difficulty: Easy)
10 How can patient privacy be maintained while incorporating advanced devices in the waiting room?
Answer: Provide discreet seating areas with high dividers or privacy screens, ensuring that screens are not visible to others. (Difficulty: Moderate)
Answer: Partition individual seating areas, provide privacy screens for confidential discussions, and maintain strict data security protocols. (Difficulty: Moderate)
11 How can the waiting room become a dynamic community space, fostering connections among patients?
Answer: Arrange seating areas in clusters or circles to encourage conversation, organize support groups, and host community events. (Difficulty: Moderate)
Answer: Arrange communal seating areas, organize themed social events, and encourage patients to engage in group activities or discussions. (Difficulty: Moderate)
12 What types of activities and workshops can be organized in the community space waiting room?
Answer: Yoga or meditation classes, healthy cooking demonstrations, stress management workshops, and educational lectures. (Difficulty: Moderate)
Answer: Offer health-related workshops, support groups, or educational sessions led by medical professionals or guest speakers. (Difficulty: Easy)
13 How can the waiting room be transformed into a café retreat without compromising hygiene standards?
Answer: Install a separate café space with professional baristas, proper food handling protocols, and regular disinfection routines. (Difficulty: Moderate)
Answer: Install a separate, well-ventilated space with hygiene protocols for food preparation and consumption. (Difficulty: Moderate)
14 What healthy menu options should be available in the café retreat waiting room?
Answer: Freshly brewed herbal teas, a variety of fruit smoothies, nutritious salads, wholegrain sandwiches, and gluten free snacks. (Difficulty: Moderate)
Answer: Offer fresh fruits, vegetable snacks, salads, herbal teas, and gluten free or low sugar options. (Difficulty: Easy)
15 How can the waiting room accommodate a games and activities zone without causing disruption to other patients?
Answer: Create a designated area with soundproofing, offer low impact and quiet games, and establish clear rules for noise levels. (Difficulty: Moderate)
Answer: Set up a designated area with soundproofing, where patients can engage in quiet games or activities such as puzzles, chess, or reading. (Difficulty: Moderate)

Table 4: Key ideas, themes and perspectives.

Key Ideas The key ideas in the topic questions revolve around transforming the waiting room into different concepts such as a natural sanctuary, an interactive learning hub, a wellness center, an art gallery, a technological hub, a community space, a café retreat, a games and activities zone, a healthy lifestyle showcase, and a healing music retreat. These questions explore how each vision can be implemented, what elements or resources are needed, and how to address potential challenges or concerns.
Themes and Perspectives Theme 1: Transforming the waiting room into a natural sanctuary, wellness center, and healing music retreat. - Plus factors: Provides a calming and soothing environment for patients, promotes relaxation and stress reduction, incorporates natural elements like plants and greenery, offers healing music for a peaceful ambience. - Minus factors: Might require significant investment to create a wellness center or retreat vibe, may not appeal to all patients, limited space for activities or services, potential noise disturbances from the healing music. - Interesting factors: Can incorporate alternative therapies such as aromatherapy or guided meditation, may attract patients seeking holistic healing approaches, can provide educational resources on natural health practices. Theme 2: Transforming the waiting room into an interactive learning hub, a technological hub, and a community space. - Plus factors: Provides opportunities for patients to engage in learning activities while waiting, offers access to resources and information through technology, creates a sense of community among patients, can host workshops or seminars. - Minus factors: May not be suitable for patients who prefer a quiet and relaxing waiting environment, potential distractions from interactive technologies, possible issues with maintaining and updating the technology infrastructure. - Interesting factors: Can promote health literacy and patient empowerment, may attract patients interested in expanding their knowledge on healthcare topics, can facilitate connections and conversations among patients. Theme 3: Transforming the waiting room into an art gallery, a café retreat, and a healthy lifestyle showcase. - Plus factors: Provides a visually appealing and aesthetically pleasing waiting area, offers a variety of artwork to enhance the atmosphere, allows patients to enjoy a cup of coffee or healthy snacks, showcases products or information related to healthy lifestyle choices. - Minus factors: Requires regular maintenance of the art displays, potential conflicts in taste and preferences regarding the artwork, limited space or seating capacity for the café area. - Interesting factors: Can collaborate with local artists and promote their work, may attract patients interested in arts and culture, can showcase healthy recipes or exercise routines to promote overall wellness. Theme 4: Transforming the waiting room into a games and activities zone. - Plus factors: Provides entertainment and distractions for patients while waiting, creates a more dynamic and engaging waiting environment, offers opportunities for patients to interact with each other through games and activities. - Minus factors: Potential noise disturbances from games and activities, may not appeal to patients who prefer a quiet and peaceful waiting experience, limited space for large-scale games or activities. - Interesting factors: Can include educational games related to healthcare or healthy habits, may attract families with children who need medical attention, can foster a sense of camaraderie and fun among patients.

Table 5: Interested versus opposing audience to the topic ideas.

Interested Audiences 1 Healthcare administrators and facility managers would be interested in the topic questions as they are responsible for making decisions about the design and layout of waiting rooms. They would be particularly interested in questions about transforming the waiting room into different environments, incorporating therapy spaces, and maintaining hygiene standards. 2. Patients and healthcare consumers would also be interested in the topic questions as they are the ones who experience the waiting room environment. They would be interested in questions about the different visions for the waiting room and how they can enhance their experience while waiting for their appointments. 3. Artists and local art communities would be interested in the topic questions related to transforming the waiting room into an art gallery. They would be interested in questions about the benefits of exposure to art in healthcare settings and the types of artworks that could be featured in the waiting room. 4. Technology professionals and innovators would be interested in the topic questions about creating a technological hub in the waiting room. They would be interested in questions about the different technological advancements that could be introduced and how patient privacy can be maintained with the use of advanced devices. 5. Mental health professionals and therapists would be interested in the topic questions related to transforming the waiting room into a therapy space or wellness center. They would be interested in questions about the different therapies and services that could be offered and how the waiting room can contribute to patients’ mental and emotional well-being. 6. Nutritionists and dieticians would be interested in the topic questions about creating a café retreat in the waiting room. They would be interested in questions about the healthy menu options that should be available and how to maintain hygiene standards while serving food. 7. Social workers and patient advocates would be interested in the topic questions about creating a community space in the waiting room. They would be interested in questions about the types of activities and workshops that can be organized to foster connections among patients and support their social well-being.
Opposing Audiences Some potential audiences that might oppose these visions include: 1. Traditionalists: Those who prefer a more traditional and clinically-focused waiting room environment may oppose the visions that incorporate elements like natural sanctuaries, interactive learning hubs, or art galleries. They may prefer a more sterile and clinical environment that they associate with professionalism and medical expertise. 2. Technophobes: Individuals who are uncomfortable or unfamiliar with technology may oppose the vision of a technological hub. They may prefer a more human-centered and personal approach to healthcare and may feel overwhelmed or alienated by the emphasis on advanced devices and gadgets. 3. Introverts: Some patients who prefer privacy and solitude may not resonate with the visions that create community spaces or encourage social interaction. They may feel uncomfortable engaging in group activities or conversations and may prefer a more peaceful and quiet waiting environment. 4. Budget-conscious individuals: Patients who are cost-conscious or have limited financial resources may oppose the visions that involve additional services or amenities, such as wellness centers or café retreats. These individuals may prioritize the affordability of healthcare services and may perceive these added features as unnecessary expenses that could potentially increase the overall cost of care. 5. Patients with specific dietary restrictions: In the vision of a café retreat, patients who have dietary restrictions or food allergies may oppose this idea if their specific needs are not accommodated. They may be concerned about the availability of suitable options and the potential risk of cross-contamination or food-related allergies. 6. Noise-sensitive individuals: Patients who are particularly sensitive to noise or have sensory processing issues may oppose the vision of a games and activities zone. They may find the noise levels and potential distractions in the waiting room to be overwhelming and stressful and may prefer a quieter and more tranquil environment.

Driving Towards Innovation

Table 6 shows the final analysis provided by AI, comprising three sets of analyses/questions which drive towards innovation. The first comprises a set of 10 questions about what is missing. This first set

is meant to challenge the user. The second comprises a set of 16 alternative viewpoints, contrasting answers to a question. The third focuses on innovations, comprising a set of four general categories or topics, each with several suggestions.

Table 6: Steps toward innovation, comprising 'what is missing,' alternative viewpoints, and then categories or topics with several suggestions each.

What is missing
1 What are the benefits of transforming the waiting room into a specific type of space (e.g., natural sanctuary, interactive learning hub, wellness center)?
2 How can the waiting room design and layout be optimized to enhance the desired atmosphere and experience?
3 How can patient feedback and preferences be taken into account when deciding on the transformation of the waiting room?
4 What are the potential costs and budget considerations associated with implementing the vision for the waiting room?
5 How can the waiting room transformation align with the overall mission and values of the healthcare facility or organization?
6 What strategies can be employed to ensure a smooth transition and implementation of the new waiting room vision?
7 How can the waiting room transformation positively impact patient satisfaction and overall patient experience?
8 How can staff and healthcare professionals be involved and trained to support the new vision for the waiting room?
9 How can the waiting room transformation be marketed and communicated to patients and the broader community?
10 Are there any potential legal or regulatory considerations that need to be considered when implementing the waiting room transformation?
Alternative Viewpoints
1. How can the waiting room be transformed into a natural sanctuary?
- Can the use of artificial plants provide a similar calming effect?
- What other natural elements, such as natural light or water features, can be incorporated?
2. What measures need to be taken to maintain the natural elements in the room?
- How often do the plants need to be watered and cared for?
- Are there any concerns regarding allergies or sensitivities to certain plants?
3. How can an interactive learning hub be incorporated into the waiting room?
- Are there enough space and resources available to install touchscreens or interactive displays?
- How can the interactive learning hub be made user-friendly for patients of all ages and technological abilities?
4. What resources and educational materials should be made available in the interactive learning hub?
- What topics should be covered to provide the most valuable information to patients?
- Should the resources be tailored to specific medical conditions or provide general health information?
5. How can the waiting room double as a therapy space in the wellness center vision?
- How can privacy be maintained for therapy sessions within the shared waiting room space?
- Are there any challenges in creating a serene atmosphere while other patients are waiting?
6. What therapies and services should be offered in the wellness center waiting room?
- How can the waiting room accommodate different types of therapies, such as massage or acupuncture?
- Are there any limitations or legal requirements for providing certain therapies within a medical facility?
7. How can the waiting room be transformed into an art gallery?
- What methods can be used to display artwork without damaging the walls?
- Should the artwork be regularly rotated or changed to keep it fresh for patients?
8. How can exposure to art in the waiting room positively impact patients' well-being?
- Are there studies or research that supports the therapeutic benefits of art in medical settings?

- What types of art, such as abstract or nature-themed, are most appealing to patients?
9. What technological advancements can be introduced in the waiting room to create a technological hub?
- What devices or gadgets would be most beneficial for patients in terms of accessing medical information?
- How can technological advancements enhance the overall patient experience in the waiting room?
10. How can patient privacy be maintained while incorporating advanced devices in the waiting room?
- Should there be separate areas or partitions for patients using touchscreens or virtual reality headsets?
- Is there a need for data protection measures to ensure patient confidentiality?
11. How can the waiting room become a dynamic community space, fostering connections among patients?
- What strategies can be implemented to encourage patients to engage in social interactions while respecting privacy?
- How can the waiting room accommodate different needs and preferences for social interaction?
12. What types of activities and workshops can be organized in the community space waiting room?
- Should the activities and workshops focus on specific health conditions or be more general in nature?
- How can external professionals or organizations be involved in facilitating these activities?
13. How can the waiting room be transformed into a café retreat without compromising hygiene standards?
- What measures can be taken to ensure food safety and cleanliness in the café area?
- Should there be designated areas for eating and separate seating areas for those not consuming food?
14. What healthy menu options should be available in the café retreat waiting room?
- Should the menu cater to specific dietary restrictions or allergies?
- How can the café menu promote a balanced and nutritious diet?
15. How can the waiting room accommodate a games and activities zone without causing disruption to other patients?
- Should there be designated areas or time slots for games and activities to minimize disturbance?
- What types of games and activities are most suitable for a medical waiting room environment?
16. Alternative viewpoints may include:
- Some patients may prefer a more traditional, quiet waiting room without any additional features or distractions.
- Incorporating natural elements may not be feasible due to maintenance costs or space limitations.
- Technology in the waiting room may be seen as impersonal and take away from the human connection between
Innovations
1. Transforming the waiting room into a natural sanctuary, wellness center, and healing music retreat could suggest:
- Installing calming nature sound machines or providing noise-canceling headphones for patients to relax and destress.
- Offering complimentary aromatherapy diffusers with essential oils known for their calming properties.
- Introducing relaxation techniques such as guided meditation or breathing exercises through personalized audio guides.
- Providing comfortable seating arrangements with ergonomic furniture, plush cushions, and warm lighting to create a cozy atmosphere.
- Offering holistic health services like acupuncture, massage therapy, or yoga classes within the waiting room area.
- Collaborating with local musicians or artists to perform live soothing music during peak waiting times.
2. Transforming the waiting room into an interactive learning hub, a technological hub, and a community space may suggest:
- Providing interactive touch screens or tablets with educational content related to health, wellness, and medical conditions to engage patients while they wait.
- Offering virtual reality experiences that allow patients to explore different environments or learn about their medical condition in an immersive way.
- Connecting the waiting room to an online community platform where patients can share their stories, seek advice, or connect with others facing similar health challenges.

- Providing charging stations or loaner devices for patients who may need access to technology during their wait.
- Offering informational sessions or workshops on topics like nutrition, exercise, or stress management within the waiting room.
- Collaborating with local universities or technology companies to showcase innovative healthcare advancements through interactive displays or exhibits.
3. Transforming the waiting room into an art gallery, a café retreat, and a healthy lifestyle showcase could suggest:
- Displaying artwork from local artists that promote tranquility, healing, or positivity.
- Partnering with a local café or health-focused eatery to provide a variety of healthy snacks and beverages.
- Offering cooking demonstrations or taste testing’s of nutritious recipes to inspire patients towards healthier eating habits.
- Creating designated areas within the waiting room for yoga or stretching exercises, equipped with exercise mats and instructional videos.
- Collaborating with local health and wellness practitioners to host workshops or seminars on topics like mindfulness, self-care, and healthy living.
- Incorporating natural elements such as indoor plants or a living wall to improve air quality and create a visually pleasing environment.
4. Transforming the waiting room into a games and activities zone may suggest:
- Installing gaming consoles or interactive gaming systems that allow patients to play educational games or puzzles.
- Offering board games, playing cards, or books to encourage social interaction and engagement among patients.
- Providing designated areas with age-appropriate toys, play zones for children, or coloring stations to keep young patients entertained and reduce stress.
- Collaborating with local gaming or toy companies to donate or sponsor new and exciting games or toys.
- Introducing group activities like trivia quizzes or puzzle challenges to encourage patients to interact with one another.
- Offering a loyalty program or rewards system where patients can earn points or prizes by participating in games or activities while waiting.

Discussion and Conclusions

The focus of this paper is to present an approach to solving specific problems, once these problems are specified and provided to AI in a useful manner. The AI approach used here, SCAS, Socrates as a Service, was developed to help critical thinking, and to focus attention on potential answers. Rather than focusing the time on elaborating the question, SCAS builds on the richness of AI, especially in the world of design. The effort shown here revolves around the desire to structure a development effort, or perhaps even a research effort.

As we consider what has been presented here, it should be kept in mind that the work presented here belongs to the world of philosophy of science, specifically the topic of ‘hard to define’ problems [6]. [7] presented the issue which summarizes the thrust of this paper. In their words: “*The formulation of a problem is often more essential than its solution’....To raise new questions, new possibilities, to regard old problems from a new angle, requires imagination’ Yet, how the creative process unfolds in framing ill-defined problems remains an open question. Indeed, untangling the interrelation between problem framing and the creative process in its lower-level aspects can inform scholars.. Problem framing entails building mental representations that simplify the problem..*”

At this point, once the results of the effort have been presented, it may well be productive to contrast what has gone on in this paper versus the standard scientific or brainstorming effort which characterizes current research. Conventional research begins with observations, a hypothesis, and then establishes the validity or the falseness of that hypothesis through one or more experiments. The objective of science is to amass many hypotheses that have been shown to be correct, or more precisely, have not been falsified from experiments. The current research follows a different approach, one which ‘explores’ rather than

confirms. The term ‘cartography’ is appropriate here. The approach here is ‘mapping’ the topic, almost as an explorer maps an area that is unknown. Knowledge becomes the accretion of these cartographies, and human advancement may end up through the application of these cartographies, the applications showing up in changes in the worlds of the material and of experience, respectively.

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Citation:

Moskowitz H, Rappaport S, Cooper R, DiLorenzo A, Saharan S, et al. (2024) Evolving the Doctor’s Waiting Room: Applying AI to Visioning the Future, a Cartographic Approach. *Internal Med Res Open J* Volume 9(1): 1-9.