SEARCHING FOR DESIGN CONCEPTS pdf

1: Idea Searching for Design: How to Research and Develop Design Concepts by David Bramston

The product design involves the development of specifications for a product that become functionally sound, have a good appearance and provide satisfactory performance for an adequate life span.

View of the buildings across from Alamo Plaza where the new Alamo Museum is to be located. The Alamo Museum is a component of a broad master plan intended to redevelop the original grounds where the battle took place between a Mexican army and a rebel Texian force. The Mission San Antonio de Valero where the battle took place was constructed in Several historically significant buildings exist on the site where the museum is to be located. The Management Committee expects the museum to engage, inspire and educate visitors. The facility will include approximately 30, sq. In addition to gallery spaces, the building program will have an entry with ticketing and a security checkpoint for the historic site. It will have facilities for a large-scale media based experience. The building or buildings will include a rooftop terrace with restaurant overlooking the entire Alamo grounds. The RFQ solicitation is specific to the design of the Museum Building, and shall include space planning, interior design of guest spaces and exterior facade design. The starting point for this design effort shall be the Agreed Vision and Guiding Principles, the Master Plan previously approved by the City Council and the GLO, and the Comprehensive Interpretive Plan that is currently in the final stages of development. An initial program of spaces, anticipated visitor flow, and initial building massing will be provided as a deliverable of the Comprehensive Interpretive Plan, the RFQ states. At that future time, the Alamo Master Plan Management Committee will be issuing an RFQ inviting finalists for this Solicitation for Museum Design Firms to team with finalists for the Architect of Record in order to respond with a comprehensive proposal for an integrated comprehensive team. The future RFQ will include a request for local engineering firms to be included. The Management Committee will award the contract. However, the contract will be between the GLO and the design firm. The deadline for submittal of RFQ responses is Aug. Interviews will follow and a contract award and execution will take place between Oct. The notice to proceed will occur Nov. Schematic designs will be worked out through the rest of and into early The bidding process has been entered for a similar time periodâ€”Feb. Construction is to begin June and be substantially complete by December The museum opens March

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2: Product Concept Generation | Electrical and Computer Engineering Design Handbook

searching for design concepts Search iOS Developer Library.C-K design theory or concept-knowledge theory is both a design theory and a. Concepts can be partitioned or included, but not searched nor explored.

Research[edit] Various stages of the design process and even earlier can involve a significant amount of time spent on locating information and research. Reverse engineering can be an effective technique if other solutions are available on the market. The design requirements control the design of the product or process being developed, throughout the engineering design process. These include basic things like the functions, attributes, and specifications - determined after assessing user needs. Some design requirements include hardware and software parameters, maintainability , availability , and testability. The feasibility study is an evaluation and analysis of the potential of a proposed project to support the process of decision making. It outlines and analyses alternatives or methods of achieving the desired outcome. The feasibility study helps to narrow the scope of the project to identify the best scenario. A feasibility report is generated following which Post Feasibility Review is performed. This is based on two criteria: It is important to have engineers with experience and good judgment to be involved in this portion of the feasibility study. This stage of a project is done to minimize the likelihood of error, manage costs, assess risks , and evaluate the potential success of the intended project. In any event, once an engineering issue or problem is defined, potential solutions must be identified. These solutions can be found by using ideation , the mental process by which ideas are generated. In fact, this step is often termed Ideation or "Concept Generation. Normally, a preliminary sketch and short report accompany the morphological chart. The vital aspects of the conceptualization step is synthesis. Synthesis is the process of taking the element of the concept and arranging them in the proper way. Synthesis creative process is present in every design. Preliminary design[edit] The preliminary design, or high-level design includes also called FEED , often bridges a gap between design conception and detailed design, particularly in cases where the level of conceptualization achieved during ideation is not sufficient for full evaluation. So in this task, the overall system configuration is defined, and schematics , diagrams , and layouts of the project may provide early project configuration. This notably varies a lot by field, industry, and product. During detailed design and optimization, the parameters of the part being created will change, but the preliminary design focuses on creating the general framework to build the project on. Fabrycky describe it as: Design for manufacturability[edit] Design for manufacturability DFM is the general engineering art of designing products in such a way that they are easy to manufacture. Operating parameters Operating and nonoperating environmental stimuli Test requirements.

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3: Modern House Plans - www.enganchecubano.com

Developing a design concept is something of an individual process. There's no one right way to generate an idea and what works for one won't necessarily work for another. There's no one right way to generate an idea and what works for one won't necessarily work for another.

By Mical Nobel Abstract Concept generation, getting the ideas, is the most critical step in the engineering design process. Starting with a set of customer needs and target specifications, the process concludes with an array of product alternatives from which a final design is selected. There are multiple steps involved in the generic concept generation process, as well as various approaches. This article reviews and critiques these different perspectives within the context of successfully developing an electronic medical product that is innovative in design and customer appeal. Introduction Concept generation, which is when a product development team comes up with the ideas, is the most critical step in the engineering design process â€" without it, there is no design. Concept generation is a procedure that begins with a set of customer needs and target specifications and results in an array of product concept design alternatives from which a final design will be selected. This step requires a more abstract style of thinking than perhaps most engineers are used to. To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science. The invention of the light bulb highlights the importance of the concept generation process. I see a worthwhile need to be met and I make trial after trial until it comes. Edison understood that trying a large quantity of ideas was extremely important, because failure is inevitable. Before finding a stable material for the first successful light bulb, his lab tried and failed with thousands of different filaments Zenios, et al. Obviously, the concept that was settled on stuck, because well over years later, commercially available light bulbs are omnipresent. The Yellow Team , the Tufts ECE senior design group that served as a case study for this article, faced the added complexities and challenges involved in designing a medical device for their project, which was to digitize an outdated device utilized in assessing glaucoma. Invention is a very intricate process, perhaps more so in the design of medical devices than in most other fields because there are so many factors that must be considered. Some upstream issues include: Some downstream concerns are: Successful concept generation is critical for building a reliable product that will be able to satisfy many multi-faceted requirements. There are two components in the concept generation stage: Each component comes with its own set of rules and guidelines. Yet we can combine and break down the whole stage into a generic five step process. Clarify and Deconstruct the Problem Before coming up with any possible solutions, familiarization with some background information may be necessary. Perhaps the most important in a situation where people are looking to develop a solution to needs, the needs specification and problem deconstruction forms the foundation of this background information. For example, the Yellow Team found it important to have an overview of existing treatment options and a basic understanding of electronics and sensors in order to facilitate their flow of ideas and discussion. It is also really critical to decompose a complex problem into simpler sub-problems. One can look at a product in development as a system. Many transactions occur relating to this system â€" what are the inputs being given from the user to the product, and what are the outputs being received? This analysis is important to understand the dependencies and the risks involved with the product, and help determine what needs to happen in between. Systems engineering is a means to enable the realization of successful systems. It focuses on defining customer requirements and necessary functionality before proceeding with design synthesis and system validation while considering the complete problem. Figure 2 System Engineering Tasks. A system engineering diagram can help one look at the big picture, identify the modes of failure, and ultimately optimize the performance of the system. It helps clarify, for the designer, what the system specifications are. It also helps clarify for the designer which features, functionality, and requirements are unnecessary and can be eliminated. This, in effect, means reduced total development costs and cycle time, as well as overall functional reliability. Ferrentino at al Once the problem has been defined and effectively broken down, initial efforts should be focused on critical sub-problems. Search for Solutions Searching for Solutions Externally An external search is an

information-gathering process. It should be performed to find existing concepts relating to both the overall problem and to the sub-problems identified during the problem clarification step. Implementing an existing solution can be easier, cheaper, and much faster than developing a new solution. Another option is to optimize a pre-existing solution, or to apply it as-is to one sub-problem and pair it with an original concept for another sub-problem, combined to yield a novel and improved overall design. Ferrentino et al As the Yellow Team learned the hard way, it is much more efficient to proceed with this search by first broadly gathering information that might be related to the problem and then focus the scope of the search by exploring more directed details. An imbalanced approach renders an inefficient external search. Some examples of good resources are the following: Searching for Solutions Internally Searching internally for solutions, also known as brainstorming, is an enormous part of successful concept generation. One important thing to keep in mind during this step is to be patient. These opinions are not new. Osborn , the alleged founder of brainstorming, claimed the following four tenets of brainstorming: The term was popularized by Osborn in his book, Applied Imagination, which launched the study of creativity in business development. The principles Osborn proposed over half a century ago hold just as true today: It can be quite difficult for people in science fields, who are so accustomed to producing quick, correct solutions, to restrain from making snap judgments on new ideas. This is one of the many reasons why forming a multidisciplinary team and seeking unique, interdisciplinary perspectives for a group brainstorming session is extremely important. Concept generation is enormously enabled by including a group of participants with diverse backgrounds, expertise, and perspectives. Establishing a multidisciplinary perspective is particularly paramount in developing medical devices, as opportunities for adapting technologies and approaches from one area to another arise so frequently in the medical technology sector: Group sessions can also be useful by allowing any participant to build on the ideas of others. There are some matters to consider when it comes to picking participants for a brainstorming session, especially when dealing with medical devices. For one, the deeply ingrained value of avoiding damage to patients makes physicians and engineers alike particularly conservative when it comes to pre-screening ideas, along with all their other knowledge and experience based biases. A second important action is to consider all of the areas that potentially will come into play in designing and developing a medical device solution. Find people who understand the field of interest and existing technologies, but also have the ability to see past their own knowledge so as not to bias the group toward a particular type of solution. For the Yellow Team, this was the ophthalmologist who acted as both their project sponsor and lead user. The Yellow Team and its project exemplify the inevitable interdisciplinary nature of such a product. The project required the efforts of all five team members, from a number of educational backgrounds. The electronics required knowledge of biomedical engineering and electrical, specifically signal processing and processing sensor data. The two electrical engineers and the biomedical engineering double-major on the team were responsible for this section of the project work. Human computer interaction, specifically the user interface is critical to communicating the test results and making the device intuitive for use by trained medical staff. A human factors engineer and a computer engineer worked together to design a graphical user interface that provides functionality for ease of use. Systematically Explore the Solutions Brainstorming may result in tens or hundreds of ideas that need to be screened, sorted, and then evaluated before any single idea can be chosen. Being selective about which concepts to pursue form the pile generated during the ideation phase is of the utmost importance. Concept screening involves organizing and analyzing all of the ideas. It is critical to understand how to cluster and organize the output of a brainstorming session so it can be presented and analyzed in a meaningful way. Grouping ideas can reveal potential gaps or biases in the proposed solutions, as well as opportunities to combine ideas into unique, synergistic ones that ultimately yield more optimal, cohesive, and complete solutions that better address the need than any individual concept. It is also crucial to learn how to objectively compare all of the possibilities against the defined need specification to determine which course to pursue based on how well each option satisfies the need. Effectively organizing data before beginning concept screening primarily boils down to two activities: The first step to clustering is to identify the primary organizing principle on which the clustering pattern is based. This can be quite challenging, as there are always multiple factors that have significance and benefits in different ways. Table 1 Organizing

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Principles prior to concept screening. Von Hippel page ,

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4: Searching For Design Concepts | Fundamentals of Design and Manufacturing - Wiki-How

The second edition of Idea Searching examines methods of generating and identifying ideas, and teaches you to understand what is being observed and recorded.

Searching for the Best Design Last Revised: There has been and will be a lot of research done on optimization theory. It is not the intent of this text to give a thorough review of the available techniques. The effort here is focused on strategies that an entry level engineer can use to find the best solution to structural component design. In most civil engineering structures, members are selected from a set of available shapes. This is certainly true for steel, timber, and masonry structures. To a less extent, it is true for concrete structures as standard multiples of dimensions are frequently used. This fixed set of available choices is convenient because it limits the extent of the search for the best solution. It appears that search strategies used by practicing engineers fall into several broad categories. Brute Force Method This method involves applying the constraints to all available sections. Spreadsheets and a database of available shapes make this relatively easy. The method can get tedious of member connections are considered in the selection as often a different connector arrangement must be considered for each choice. Random Initial Selection Method In this method, you randomly select a member, design the end connection and compute the constraints. From examining the results of the constraints, you choose a new member that has hope of satisfying the constraints and resulting in a section that is better than the last. You never consider a section that would result in a worse objective than your current best feasible choice, thus paring down the list of possible selections. One variation on this method is to pick a subset of the available shapes then determine the best section in that category. You then examine other subsets in turn to see if there is a better choice in those subsets. The best solution is the one that returns the section with the best objective function value. Rational Use of Constraints This is generally the best method to use for hand solutions. It this case, you guess which constraint is likely to control then solve that constraint for a section property that you can use to search the section tables. For example, with a tension member you could solve either the limit state of tensile strength for a required Ag or slenderness for a required r or both: Once you select a section that satisfies these criteria, if you have a bolted end connection then: If you cannot determine a layout that satisfies fastener based limitations then you may need to select another section one that still satisfies tensile strength and slenderness using the random selection method and try again. In selecting design variables it is helpful to look at the limiting equations that use the variables to decided which variables are the most sensitive and focus on changing those.

5: Interior design vocabulary, Interior design word list - www.enganchecubano.com

Search for solution concept design. Solution concept, idea and service, business solutions, innovation strategy, development and information, analytics data, office marketing illustration.

6: Idea Searching for Design | School of Art + Art History + Design | University of Washington

L.A. Design Concepts can provide you with our "Letter of Introduction" to shop your local design center. Our letter will provide you with a higher level of customer service when the showrooms recognize you are represented by an industry known firm.

7: Engineering design process - Wikipedia

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