PROBLEM DEFINITION AND DESIGN THINKING

OBJECTIVE

OBJECTIVES ARE OFTEN ASSOCIATED WITH THE “SMART” CRITERIA, WHICH STANDS FOR SPECIFIC, MEASURABLE, ACHIEVABLE, RELEVANT, AND TIME-BOUND. THIS FRAMEWORK ENSURES THAT OBJECTIVES ARE WELL-DEFINED AND CAN BE REALISTICALLY ACCOMPLISHED WITHIN A SET TIMEFRAME.

FOR EXAMPLE, IN A BUSINESS CONTEXT, AN OBJECTIVE MIGHT BE TO “INCREASE ANNUAL REVENUE BY 10% WITHIN THE NEXT FISCAL YEAR.” THIS OBJECTIVE IS SPECIFIC (INCREASE REVENUE), MEASURABLE (BY 10%), ACHIEVABLE (IF THE NECESSARY STEPS ARE TAKEN), RELEVANT (TO THE COMPANY’S GOALS), AND TIME-BOUND (WITHIN THE NEXT FISCAL YEAR).

OBJECTIVES ARE CRUCIAL IN PROVIDING DIRECTION, MOTIVATION, AND A MEANS TO EVALUATE SUCCESS IN VARIOUS ASPECTS OF LIFE AND WORK, WHETHER IT’S PERSONAL DEVELOPMENT, PROJECT MANAGEMENT, OR ORGANIZATIONAL STRATEGY.

PLATFORM INTEGRATION

- DATA SHARING: INTEGRATION ALLOWS PLATFORMS TO SHARE DATA IN REAL-TIME. FOR EXAMPLE, AN E-COMMERCE WEBSITE MAY INTEGRATE WITH A PAYMENT GATEWAY TO PROCESS TRANSACTIONS AND WITH A CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SYSTEM TO MANAGE CUSTOMER INFORMATION.
- FUNCTIONALITY SHARING: IT ENABLES PLATFORMS TO SHARE FUNCTIONALITY. FOR INSTANCE, A MOBILE APP MIGHT INTEGRATE WITH A SOCIAL MEDIA PLATFORM TO ALLOW USERS TO LOG IN USING THEIR SOCIAL MEDIA CREDENTIALS.
- WORKFLOW AUTOMATION: INTEGRATION CAN AUTOMATE WORKFLOWS. FOR EXAMPLE, AN E-COMMERCE PLATFORM CAN INTEGRATE WITH A SHIPPING CARRIER'S SYSTEM TO AUTOMATE THE PROCESS OF GENERATING SHIPPING LABELS AND TRACKING ORDERS.
- IMPROVED DECISION-MAKING: BY INTEGRATING VARIOUS DATA SOURCES, PLATFORMS CAN PROVIDE A MORE COMPREHENSIVE VIEW OF INFORMATION, AIDING BETTER DECISION-MAKING. BUSINESS INTELLIGENCE AND ANALYTICS TOOLS OFTEN RELY ON INTEGRATED DATA SOURCES.
- COST AND TIME SAVINGS: INTEGRATION CAN REDUCE MANUAL DATA ENTRY AND MINIMIZE THE NEED FOR DUPLICATE DATA STORAGE, SAVING BOTH TIME AND MONEY.
- APIS AND MIDDLEWARE: APPLICATION PROGRAMMING INTERFACES (APIS) AND MIDDLEWARE ARE COMMONLY USED FOR PLATFORM INTEGRATION. APIS ALLOW DIFFERENT SOFTWARE APPLICATIONS TO COMMUNICATE, WHILE MIDDLEWARE ACTS AS A BRIDGE BETWEEN VARIOUS SYSTEMS.
- CHALLENGES: PLATFORM INTEGRATION CAN BE COMPLEX, INVOLVING DIFFERENT DATA FORMATS, SECURITY CONCERNS, AND COMPATIBILITY ISSUES. IT MAY REQUIRE CUSTOM DEVELOPMENT OR THIRD-PARTY INTEGRATION TOOLS.
- EXAMPLES: SOME COMMON EXAMPLES OF PLATFORM INTEGRATION INCLUDE INTEGRATING A WEBSITE WITH A PAYMENT GATEWAY, CONNECTING AN INVENTORY MANAGEMENT SYSTEM WITH AN E-COMMERCE PLATFORM, OR SYNCING A CUSTOMER SUPPORT SYSTEM WITH A KNOWLEDGE BASE.

FUNCTIONALITY

- SOFTWARE FUNCTIONALITY: IN THE CONTEXT OF SOFTWARE, FUNCTIONALITY REFERS TO THE FEATURES AND OPERATIONS A PROGRAM CAN PERFORM. FOR EXAMPLE, IN A WORD PROCESSING SOFTWARE, FUNCTIONALITY MIGHT INCLUDE THE ABILITY TO CREATE, EDIT, AND FORMAT DOCUMENTS.
- PRODUCT FUNCTIONALITY: FOR PHYSICAL PRODUCTS, FUNCTIONALITY REFERS TO THE INTENDED AND PRACTICAL USES OF THE ITEM. FOR INSTANCE, THE FUNCTIONALITY OF A SMARTPHONE INCLUDES MAKING CALLS, TAKING PICTURES, AND RUNNING APPS.
- SYSTEM FUNCTIONALITY: IN COMPLEX SYSTEMS, SUCH AS COMPUTER NETWORKS OR INDUSTRIAL EQUIPMENT, FUNCTIONALITY ENCOMPASSES HOW VARIOUS COMPONENTS WORK TOGETHER TO ACHIEVE SPECIFIC GOALS. SYSTEM FUNCTIONALITY MIGHT INCLUDE DATA STORAGE, DATA PROCESSING, AND COMMUNICATION CAPABILITIES.
- WEBSITE FUNCTIONALITY: FOR WEBSITES, FUNCTIONALITY REFERS TO THE INTERACTIVE FEATURES AND SERVICES IT OFFERS, LIKE NAVIGATION, SEARCH, USER REGISTRATION, AND E-COMMERCE CAPABILITIES.
- MOBILE APP FUNCTIONALITY: MOBILE APPS HAVE THEIR OWN SET OF FUNCTIONALITY, WHICH INCLUDES USER INTERFACE, FUNCTIONS SPECIFIC TO THE APP'S PURPOSE (E.G., MESSAGING, GPS, GAMING), AND INTEGRATION WITH DEVICE HARDWARE.

DESIGN

- PROBLEM SOLVING: DESIGN OFTEN BEGINS WITH IDENTIFYING A PROBLEM OR A NEED. DESIGNERS AIM TO FIND CREATIVE AND EFFECTIVE SOLUTIONS TO ADDRESS THESE CHALLENGES. THIS PROBLEM-SOLVING ASPECT IS CRITICAL IN MANY DESIGN DISCIPLINES.
- AESTHETICS: AESTHETICS PLAY A SIGNIFICANT ROLE IN DESIGN. IT INVOLVES MAKING CHOICES ABOUT COLOR, SHAPE, TEXTURE, AND OTHER VISUAL ELEMENTS TO CREATE VISUALLY APPEALING AND ENGAGING OUTCOMES. GOOD DESIGN OFTEN COMBINES AESTHETICS WITH FUNCTIONALITY.
- FUNCTIONALITY: DESIGN SHOULD NOT ONLY LOOK GOOD BUT ALSO PERFORM ITS INTENDED FUNCTION EFFECTIVELY. THIS PRINCIPLE IS CRUCIAL IN INDUSTRIAL DESIGN AND USER EXPERIENCE DESIGN, WHERE USABILITY AND USER SATISFACTION ARE PARAMOUNT.
- USER-CENTERED: MANY FORMS OF DESIGN, SUCH AS UX DESIGN AND SERVICE DESIGN, PRIORITIZE THE NEEDS AND PREFERENCES OF THE END-USERS. A USER-CENTERED APPROACH INVOLVES UNDERSTANDING THE USERS, THEIR GOALS, AND DESIGNING TO MEET THEIR EXPECTATIONS.
- INNOVATION: DESIGN FREQUENTLY INVOLVES PUSHING THE BOUNDARIES OF CREATIVITY AND INNOVATION. IT SEEKS TO INTRODUCE NOVEL IDEAS, MATERIALS, AND TECHNIQUES TO CREATE SOMETHING NEW AND UNIQUE.
- ITERATIVE PROCESS: DESIGN IS OFTEN AN ITERATIVE PROCESS, INVOLVING MULTIPLE STAGES OF CONCEPTUALIZATION, PROTOTYPING, TESTING, AND REFINEMENT. THIS CYCLE HELPS DESIGNERS FINE-TUNE THEIR CREATIONS.
- COMMUNICATION: IN GRAPHIC DESIGN, COMMUNICATION DESIGN, AND OTHER RELATED FIELDS, DESIGN IS A MEANS OF CONVEYING INFORMATION, IDEAS, AND MESSAGES EFFECTIVELY. IT SHOULD BE ABLE TO COMMUNICATE ITS INTENDED MESSAGE CLEARLY.
- SUSTAINABILITY: MODERN DESIGN INCREASINGLY CONSIDERS SUSTAINABILITY AND ENVIRONMENTAL IMPACT. SUSTAINABLE DESIGN FOCUSES ON REDUCING WASTE, CONSERVING RESOURCES, AND MINIMIZING NEGATIVE ECOLOGICAL EFFECTS.
- ADAPTATION TO MEDIUM: DIFFERENT DESIGN DISCIPLINES REQUIRE AN UNDERSTANDING OF THE MEDIUM THEY WORK IN. FOR EXAMPLE, WEB DESIGN IS SPECIFIC TO DIGITAL INTERFACES, WHILE INDUSTRIAL DESIGN INVOLVES PHYSICAL PRODUCTS.
- CULTURAL AND SOCIAL CONSIDERATIONS: DESIGN OFTEN REFLECTS AND IS INFLUENCED BY CULTURAL AND SOCIETAL FACTORS. IT CAN CONVEY CULTURAL VALUES.

CONFIGURATION

- SOFTWARE CONFIGURATION: THIS INVOLVES SETTING UP SOFTWARE APPLICATIONS BY DEFINING PARAMETERS, OPTIONS, AND PREFERENCES. FOR EXAMPLE, CONFIGURING EMAIL SETTINGS, ADJUSTING DISPLAY PREFERENCES, OR SPECIFYING SECURITY SETTINGS IN AN OPERATING SYSTEM.
- HARDWARE CONFIGURATION: THIS REFERS TO SETTING UP AND ARRANGING THE PHYSICAL COMPONENTS OF A SYSTEM. IT INCLUDES TASKS LIKE CONNECTING PERIPHERALS, ADJUSTING HARDWARE SETTINGS, AND ENSURING COMPONENTS WORK TOGETHER CORRECTLY.
- NETWORK CONFIGURATION: IN THE CONTEXT OF COMPUTER NETWORKS, CONFIGURATION INVOLVES DEFINING HOW DEVICES ARE CONNECTED, ASSIGNING IP ADDRESSES, CONFIGURING ROUTERS, FIREWALLS, AND OTHER NETWORK DEVICES TO ENSURE PROPER COMMUNICATION.
- SERVER CONFIGURATION: THIS PERTAINS TO SETTING UP AND MAINTAINING SERVERS BY SPECIFYING THEIR ROLES, SECURITY SETTINGS, NETWORK CONFIGURATIONS, AND RESOURCE ALLOCATION.
- SYSTEM CONFIGURATION: THIS ENCOMPASSES THE OVERALL SETUP AND COORDINATION OF SOFTWARE, HARDWARE, AND NETWORK ELEMENTS IN A SYSTEM TO ACHIEVE A SPECIFIC PURPOSE OR FUNCTIONALITY.

INTEGRATION

INDEFINITE INTEGRATION:ALSO KNOWN AS ANTIDERIVATIVE, IT INVOLVES FINDING A FUNCTION, TYPICALLY DENOTED AS F(X), WHOSE DERIVATIVE IS EQUAL TO A GIVEN FUNCTION F(X). THIS PROCESS IS REPRESENTED BY ∫F(X) DX, WHERE ∫ REPRESENTS INTEGRATION, F(X) IS THE FUNCTION TO BE INTEGRATED, AND DX SIGNIFIES THE VARIABLE WITH RESPECT TO WHICH INTEGRATION IS PERFORMED.

DEFINITE INTEGRATION:DEFINITE INTEGRATION INVOLVES FINDING THE ACCUMULATED QUANTITY OF A FUNCTION OVER A SPECIFIED INTERVAL. IT CALCULATES THE NET AREA UNDER A CURVE BETWEEN TWO POINTS ON THE X-AXIS. THIS PROCESS IS REPRESENTED AS ∫[A, B] F(X) DX, WHERE A AND B ARE THE LOWER AND UPPER LIMITS OF INTEGRATION, RESPECTIVELY.

THANK YOU