NIHD | Nursing Institute for Healthcare Design

GLOSSARY OF TERMS

DESIGN PHASES

MASTER PLANNING

A healthcare facility master plans support the strategic goals and objectives of health care providers by anticipating and preparing for the future, extending the useful life of buildings, and minimizing disruption from unforeseen industry change. This, in turn, provides a framework to judge and define upcoming project requests. The tasks involved include site assessment and zoning, facility assessment for useful life and operational capacity, existing and forecasting future patients and services, a gap analysis of existing capacity and scenario development to meet future needs. The clinical voice is very important to understand service line operational capacity and assess future service needs with implications for resource management.

PREDESIGN

The initial phase of the project process that that establishes the parameters for the project and fully defines the project's scope through the collection of data and information from stakeholders. This phase will inform subsequent phases and the eventual design. The functional program is completed in this phase.

CONCEPT DESIGN

Often considered part of "predesign" or "schematic design" but if distinguished as a separate phase, comes after all the information from predesign is taken into consideration. It is the "initial design idea" or concept that eventually gets further developed in the schematic design phase.

SCHEMATIC DESIGN

This phase shapes the conceptual ideas (including operational concepts) from earlier phases into real building forms as it refines the design intent of the project. Generally, the focus is on stacking, blocking and massing of the building with attention to external relationships between departments (i.e. Medical Imaging has immediate adjacency to Emergency Department) and room relationships within departments (medication rooms have an immediate adjacency to care team station). Studies are prepared (drawings and other documents) to illustrate the project requirements, scale and components representing these relationships. The conclusion of schematic design is a point in the project where the owner needs to give approval to proceed to a more detailed phase of design. A cost estimate may be completed at this point.

DESIGN DEVELOPMENT

Based on an approved schematic design, this phase includes completing detailed drawings and final design plans with correct sizes and layouts. Assuming that relationships between rooms and departments has been confirmed during schematic design, the design development focuses on the specifics of each room (i.e. headwall layouts, equipment details, plugs, switches and technical requirements), including a review of each wall elevation. A cost estimate is completed at the end of this phase.

CONSTRUCTION DOCUMENTS
The production of drawings, specifications and other bid documents that detail the requirements for the construction of the project.

CONSTRUCTION PHASE OR CONSTRUCTION ADMINISTRATION
Includes contractor bid, negotiation and award process. Continues with monitoring construction and planning for post-construction phase. Activation planning and education of the staff often occurs during this stage.

OCCUPANCY or POST CONSTRUCTION
May include commissioning, transitioning, activating, occupying, and evaluating the newly constructed project.

PLANS AND PROGRAMS

ACTIVATION
Sometimes referred to as "Go-Live" or first patient seen. This is the terminology associated with the public opening and/or delivering new patient care in the new environment of care. This phase begins six to eight months before the move and is the time during which the building is transformed from a construction project to a living space ready for occupancy. This includes acquisition of the facilities, equipment and human resources that will support the team, as well as delivery of any necessary training that must be imparted to the project team.

BENCHMARK DATA
Data collected from industry sources for the purpose of comparing performance and/or comparing area function with square feet allocation with similar types of facilities, e.g., discreet room sizes and functions, health care outcomes, energy consumption.

CLINICAL SERVICE DELIVERY PLAN
A current as well as future oriented plan that describes how a clinical service line or cluster of services is envisioned to operate to meet the patient care needs of those they serve. It includes population served and utilization, the model of care, performance indicators, and the "how and where work is carried out" including staff class mix, staffing patterns, hours of operation, etc. It is analogous to the JCAHO's requirement for a hospital plan for the provision of patient care.

EQUIPMENT PLAN OR PROGRAM
Equipment requirements associated for each room and location identified in the space plan.

FACILITY PLAN OR PROGRAM
Usually refers to the entire project and all phases from beginning to end. Strategic facilities planning refers to a top-down approach concerned with the mission, vision, and long-term goals for the organization.

FUNCTIONAL PLAN OR PROGRAM OR NARRATIVE

A record of the key environment of care considerations and facility functional and operational parameters that drive the space program for a project (FGI). The functional program is the foundation of the building design and often is the reference point for subsequent planning processes. It is not a design process. The functional program shall describe in detail:

- the purpose of the project
- the proposed demand or utilization
- operational concepts and descriptions
- staffing patterns and head counts of employees, volunteers, students and others
- supply and material flow
- component or departmental relationships
- space requirements
- functional requirements

The functional program may be referred to as an "operational plan" and erroneously used interchangeably with Space Plan.

MASTER PLAN OR PROGRAM

A master plan shall specify how the functional objectives and space requirements can be achieved on an existing or new site based on the process of identifying current facility deficiencies and future requirements and space projections. This plan will articulate a very high-level vision of how to best allocate and develop space rationally and in response to the clinical needs over a short, medium and long term and may articulate high level development options, capital costs, and building strategy in schematic design form.

PROGRAMMING

The phrase programming, used by itself, may refer to functional, space, or other plans or activities that help determine the number, size, and configuration of rooms to support the described operation of the activities that will take place within that space. (paraphrased from AIA)

SCHEDULE OF ACCOMODATIONS

Itemized list of facilities and spaces, including operational, spatial and locational requirements, that are required by the end-user. Sometimes referred to as a space plan.

SPACE PLAN OR PROGRAM

A translation of the owner's operational needs into architectural and engineering requirements (FGI). Quantifies space requirements needed to support the future operational model, service volumes, staffing and physical adjacencies (NIHD). May use benchmarks, rules of thumb, best practices, standards or regulatory requirements to determine size and capacity. It includes room name, size, type, location, number of occupants, groupings or relationships, FFE requirements and environmental conditions. It also includes estimates of total area and required circulation space. In certain regions a space plan is synonymous with the term Schedule of Accommodations.

TRANSITION PLAN
Phase that includes preparatory work associated a successful organizational move; operationally, physically, and emotionally, from its present state to future state.

RESEARCH

BEFORE-AFTER STUDY (PRE AND POST OCCUPANCY STUDY)
A study that measures outcomes by comparing
data collected before a strategy with those collected after a strategy is put in place. By comparing data, researchers can tell whether the strategy is effective in improving outcomes.

BIG DATA
An evolving term that describes any voluminous amount of structured, semi-structured, and unstructured data that has the potential to be mined for information.

CASE STUDY
Involves in-depth investigation of one or several cases: individuals, units, or projects. In a case study, researchers use multiple quantitative or qualitative methods. Multiple methods are used to collect extensive data of one case or several cases.

CHI SQUARE
A statistical test used to determine the likelihood that an observed variation from the anticipated outcome occurs solely by chance.

CONFOUNDING VARIABLE
Extraneous variables not under the control of the experimenter that vary systematically from the independent variable, making it difficult to isolate cause and effect.

CORRELATION COEFFICIENT
Measures the direction and strength of the relationship between two variables. A positive value indicates positive correlation, and a negative number indicates a negative correlation. The values are between -1 and +1, and the closer the correlational coefficient is to the -1 or +1, the stronger the correlation.

CORRELATION STUDY
Two or more characteristics or variables of research subjects that are collected and examined to see if the differences in one variable are related to the differences in other variables.

CREDIBLE RESEARCH
The believable and convincing study of a subject or topic to discover new information and understanding through reliable and defendable sources.

DESCRIPTIVE STATISTICS
Numerical data summarized in meaningful ways. Various descriptive statistics can be used depending on the type of measurement scale.

EMPERICAL RESEARCH
The systematic investigation of the tangible facts (empirical data) aimed at gaining knowledge, making discoveries, testing or revising theories and applying the new knowledge.

ENVIRONMENTAL VARIABLES
The variables involved in the physical environment. Research focuses on one or two environmental variables that are easily quantifiable such as noise level, room size, patient bed distance, and lighting levels.

ETHNOGRAPHIC STUDY
An example of qualitative research; focuses on a group of people who share a common culture. It gathers in-depth data related to patterns of interpretation and is particularly helpful in understanding a complex work situation.

EXPERIMENTAL KNOWLEDGE
Knowledge gained through experience.

EXTERNAL VALIDITY
The generalizability of findings to other settings.

EVALUATION RESEARCH
Research that assesses how well a program, practice or policy works.

EVIDENCE INFORMED DESIGN
Using what is currently known (cumulative evidence) and applying it to the design and evaluating it.

HEALTH ENVIRONMENTS RESEARCH AND DESIGN (HERD) JOURNAL
Health Environments Research and Design Journal is a peer-reviewed journal that features evidence-based articles and research papers on the relationships among health and environmental design and organizational, provider, and patient outcomes.

HYPOTHESIS
A tentative assumption made in order to draw out and test its logical or empirical conclusions.

INFERENTIAL STATISTICS
Statistics that go beyond descriptive statistics and extend the conclusion to more general conditions and can be used to determine whether the differences or correlations found in a study represent true differences between groups or whether they happened by chance.

INFORMATIONAL REPOSITORY
A place to store current evidence and visioning that should be developed in the early stages to be used for reference throughout the project and into post- occupancy.

INSTITUTIONAL REVIEW BOARD (IRB)
A group that approves studies (such as clinical trials and nonclinical research studies) proposed by investigators involving human subjects. All clinical trials, by federal regulation, must be approved by an IRB prior to enrolling participants.

INTERNAL VALIDITY
Refers to or reflects the strength of casual relationships.

JOURNAL PUBLICATION
Periodical or individual articles within a publication dealing with matters of current interest or research.

KNOWLEDGE REPOSITORY
Designed as a living library, this repository provides a one-stop, complete source of healthcare EBD research that will continue to grow as healthcare design evolves. The repository allows users to search by types of publications, terms, design category, outcome category, environmental condition category or setting, and provides the number of references available for each defined category.

LIKERT SCALE
A research tool, a list of statements or items to which respondents indicate their extent of agreement or disagreement on several ordered levels or points.

LITERATURE REVIEW
A comprehensive survey of available information related to a particular line of research.

META-ANALYSIS
A quantitative, statistical analysis of experiments or studies that analyzes the collective data for statistical meaning.

METADATA HARVESTING
A technique used by the Open Archives Initiative; used to facilitate the understanding, use, and management of data.

MIXED METHODS APPROACH
Adopts methods from both qualitative and quantitative research methods in order to understand and research problems.

NOMINAL SCALES
Scales that classify data into mutually exclusive categories and arbitrarily assign a number to represent each category. The number does not indicate any quantity or value.

NULL HYPOTHESIS
Suggests that the differences and relationships found in the data are due to chance alone.

ORDINAL SCALES
Scales that classify data into several discrete ranks and assign values to the data according to the ranking order.

P VALUE
A statistical test result presented by computer software. The p value indicates how likely the test statistic would be as extreme as what is calculated from the collected data given that the null hypothesis is true.

PEER-REVIEWED JOURNAL
A scholarly periodical that requires each article submitted for publication be reviewed by an independent panel of experts.

POST OCCUPANCY EVALUATION (POE)
A systematic evaluation of an agreed upon scope of subjects done to determine if the project facility or space is fulfilling the design goals and objectives after the facility is fully operational for a period of time (generally one year).

PROSPECTIVE STUDY
A study that looks forward in time and usually includes a research plan before outcome data are collected. Most studies related to EBD are prospective studies.

QUALITATIVE APPROACH
The systematic investigation of properties and their relationships that cannot be measured quantitatively; also called the constructivist approach and emphasizes multiple participant views and theory generation. The goal of qualitative research is to understand the complexity of the topics under study.

QUALITY IMPROVEMENT (QI)
Systematic efforts to improve practices and processes, typically within a specific organization or patient group.

QUANTITATIVE APPROACH
The systematic, scientific investigation of measurable properties and phenomena and their relationships; also called the traditional or positive approach and emphasizes empirical measurements and theory verification. The goal of quantitative research is to explain and predict phenomena by examining the relationships between empirically measured variables and to generalize findings and contribute to theory in which significant efforts are given to justify cause- effect relationships.

QUASI EXPERIMENT
Refers to a kind of research similar to true experiments, but lacks the rigorous control usually found in true experiments.

RANDOMIZED CONTROL TRIALS (RCT)
Quantitative, comparative, controlled experiments in which researchers study two or more interventions in a group of persons who receive the interventions in a random order.

RANGE
The difference between the highest and lowest values in the data.

RELATIONAL DATABASES
A database that maintains a separate set of related files or tables, but combines them when necessary.

RELEVANCE
The applicability of research based upon a variety of factors, e.g. the date, scope and location of the study and the source of the information.

RELIABILITY
The degree to which a measurement tool produces consistent or similar results on the same phenomenon at different times or when used by different people.

RESEARCH
The systematic investigation and study of a topic or idea, based on empirical data, aimed at gaining knowledge, making discoveries, testing new theories, and applying the new knowledge.

RESEARCH DESIGNS
A plan for gathering and utilizing data to obtain desired information so that a hypothesis can be properly tested.

RESEARCH PLAN
Delineates each aspect of the research study in detail and includes the primary documents required for approval by the research committee, funding agencies, or other authorities.

RESEARCH PROCESS
A sequence of components that should be adjusted to fit a particular situation.

RETROSPECTIVE STUDY
A retrospective study looks back in time and examines existing data to find the cause of certain outcomes.

SAS (STATISTICAL ANALYSIS SYSTEM)
A computer software program that works to access, manage, analyze, and report data.

SEMI-STRUCTURED INTERVIEW
A flexible set of questions that makes allowances for the responses of the interviewee. The interviewer will have a structure of themes to be addressed during the interview.

SPSS SOFTWARE
Statistical Package for the Social Sciences software used for statistical analysis.

STANDARD DEVIATION
A statistic that measures how data cluster around the mean. A high value of standard deviation indicates wide dispersion of data.

THEORY
A theory is a comprehensive framework of conceptual statements that describe, explain, and predict natural or social phenomena.

TRIANGULATION
The application and combination of several research methodologies in a study of the same topic.

T-TEST
Shows if a real difference occurs among treatments in controlled clinical trials.

TYPE 1 ERROR
The chance of accepting the research hypothesis when the null hypothesis is actually true (false positive).

USER EXPERIENTIAL KNOWLEDGE
Information acquired from the central user groups (such as patients, residents, families) on their experience.

VALIDITY
The extent to which a measurement tool measures what it is supposed to measure.

VARIABLES
A person, place, thing, or phenomenon that you are trying to measure in some way.

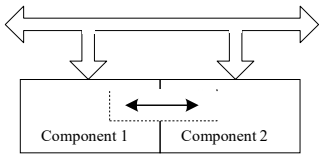
OTHER DEFINITIONS

CAPITAL PROJECT
Often used interchangeably for the term BUILDING PROJECT.

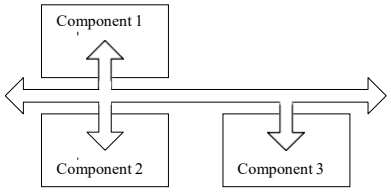
CIRCULATION
A functional program will describe the "type" of circulation that links departments that will inform the schematic design:

CIRCULATION (continued)

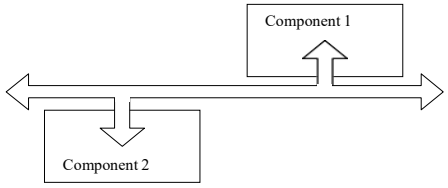
Direct Access by Internal Circulation
"Direct access by internal circulation" refers to components which are essentially horizontally contiguous or very close and linked internally. This form of access avoids movement through the public or general circulation system of the facility. An acceptable alternative to horizontal contiguity would be vertical contiguity by means of a dedicated elevator.



Direct Access by General Circulation
"Direct access by general circulation" refers to components linked by an important but minimal or moderate amount of horizontal and/or vertical general circulation. This is a direct travel route that would be accessible to the general public.



Convenient by General Circulation
"Convenient access by general circulation" refers to components which are linked by extended horizontal and/or vertical general circulation.



Direct by Virtual or Dedicated Mechanical Circulation
"Direct access by virtual or dedicated mechanical circulation" refers to components linked by direct supply/service systems including IT systems and/or mechanical systems (e.g., dedicated elevator from medical device reprocessing department to surgical sterile core; pneumatic tube).

COMMISSIONING
A quality assurance (QA) process that verifies and documents that the new building is performing according to objectives, specifications and criteria; often involves the HVAC systems.

COMPONENT and/or DEPARTMENT
An organizational unit with a defined role within the health care facility. (i.e. Neonatal Intensive Care Unit – NICU)

END USER ACCEPTANCE, TESTING OR VALIDATION
A process in the quality assurance or validation of the new space in which the clinical and/or operational staff of the new space physically validate, confirm, walk through the design and functional operation of the new space with all the intended furniture, technology, IT, medical equipment all in their place as if they were going to see patients or deliver patient care. This is done ideally several weeks, if not months, before true live patient care takes place.

ENVIRONMENT OF CARE
The reference to "Environment of care" and "environment of care standards" have a multiple of sources from both the healthcare field and the design industry including The Joint Commission, ASHE, FGI, APIC, the American Nurses Association, among many others. In general, the concept includes: design, construction and renovation; equipment and environmental services' needs; utility maintenance and use; emergency management; fire prevention, security and safety requirements; waste management; and, infection prevention and control. It is often abbreviated as "EOC." FGI states that EOC is "those physical environment features in a healthcare facility that are created, constructed, and maintained to support and enhance the delivery of healthcare." EOC components include:

- Delivery of care model (concepts)
- Facility and service users (people)

- Systems design
- Layout and operational planning
- Physical environment
- Design process and implementation

GOVERNING BODY or BOARD OF TRUSTEES or HEALTH AUTHORITY HAVING JURISDICTION (AHJ)
Ultimate decision making and approval body. Governing body is responsible for having a functional program developed, documented, and updated.

GROSSING FACTORS BUILDING AND DEPARTMENT/COMPONENT
Generally, a multiplier is added to both the department/component and building totals to accommodate additional space for circulation (hallways and elevators), walls (interior and exterior), building structure and mechanical/electrical components. The more technically complex the space is the higher the grossing factor will be (i.e. a surgical floor will have a higher grossing factor than administrative space).

INTEGRATION TESTING
This is a process in the quality assurance testing of systems/technology/EMR/medical equipment reliant or required to interact with each other. For example, if nurse call/call system events go directly to the assigned caregivers' mobile phone all the systems/technologies must be setup and configured correctly for the workflow to be successful. This would require the EMR to have the correct admission of the patient to the room, the caregiver is correctly assigned to that patient in the call system and subsequently the caregiver is also assigned to the correct mobile phone and that mobile phone is assigned to that patient/room. Multiple systems/technologies need to be setup correctly by either IT/Facilities/Clinical Engineering and validated to ensure successful clinical workflow. They are all integrated rather than a single technology.

INTERDISCIPLINARY TEAM OR APPROACH
Composed of various disciplines and stakeholders as a strategy to get diverse expertise involved that will benefit the project outcome.

LEAN
A method to design and build facilities that identifies, locates and removes operational process waste.

LOCATION RELATIONSHIPS
The word "location" and associated terminology takes on important meaning in the field of design, engineering and architect. How near or far various departments or functions should be in relation to each other within a space or building is articulated within the functional program.

FGI clarifies these spatial relationships by defining a variety of terms in their glossary with this table:

TERM	DEFINITION
In	Located within the identified area or room
Directly accessible	Connected to the identified area or room through a doorway, pass-through, or other opening without going through an intervening room or public space
Adjacent	Located next to but not necessarily connected to the identified area or room
Immediately accessible	Available either in or adjacent to the identified area or room
Readily accessible	Available on the same floor or in the same clinic as the identified area or room
In the same building	Available in the same building or an adjoining building as the identified area or room, but not necessarily on the same floor

LIFE-CYCLE
The project from beginning to end.

PHYSICAL ENVIRONMENT
External tangible surroundings.

RETURN ON INVESTMENT (ROI)
An analysis that calculates the "payback" time and cost of a project or investment to inform financial decisions in terms of revenue and expenses. Also stated as the return ratio that compares the net benefit of a project versus its total cost.

SAFETY RISK ASSESSMENT (SRA)
An assessment of the potential risks to a patient inherent in each space and building component of the healthcare project being planned. Every functional plan should include a SRA. This requirement is referenced in the Facility Guideline Institute (FGI) *Guidelines for Design and Construction.*

STAKEHOLDERS / USERS / OWNERS
Often used interchangeable but not quite synonymous. Owners may or may not be users and vice versa. Stakeholders means those who have a vested interest (i.e., something to gain or lose) in the project.

TEST-FIT
A floor plan used to confirm that the stated needs and requirements can be accommodated with a specific space.

UGM
User group meeting.

VALUE ENGINEERING (VE)
A process by which project value can be increased by either improving the function or reducing the cost. The process assumes basic functions are preserved and vital project requirements are not compromised as a consequence of value improvements. If not executed properly it could be merely "cutting the program to meet the budget." Good functional programing guards against value engineering.

VALUE or VALUE EQUATION
Value is not defined as a single number or single category of data, rather it's composed of a variety of different types of data, often collected within different time frames and representing both qualitative and quantitative data.

Value = Quality/Payment
Where quality is a composition of outcomes, safety, experiences, etc. and payment is the cost to all purchasers such as the hospital, the government, the client, etc.

VISIONING
The process of developing, identifying and documenting the values of an organization or project.

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