

## Chapter 3

### RESEARCH METHODOLOGY

This chapter outlined the research methodology employed in the study. It detailed the data sources, specific methodologies used, tools for data analysis, and equipment utilized for data collection. The proponent adopted a descriptive research approach.

#### **System Design**

Rapid application development is a term that's gaining a lot of attention among the IT crowd. RAD methodology is a way to create software quickly and efficiently, without having to resort to development models like the waterfall model, which is inflexible, making it difficult to change functions and features once you've built the software. The concept, as radical as it may seem, isn't something that popped up overnight. It's been in the industry for decades. It's gaining traction now because of the rapid explosion in software development requirements (Kissflow, n. d).

The key benefit of RAD methodology is fast project turnaround, making it an attractive choice for developers working in a fast-paced environment like software development. This rapid pace is made possible by RAD's focus on minimizing the planning stage and maximizing prototype development. By reducing planning time and emphasizing prototype iterations, RAD allows project managers and stakeholders to accurately measure progress and communicate in real time on evolving issues or changes. This results in greater efficiency, faster development, and effective communication (Lucidchart, n. d.).

---

The proponent used Rapid application development methodology as a strategy to clarify and ensure that users comprehend what the proponent built up their own system.

Figure 2 below shows the illustration of the process of RAD Methodology.

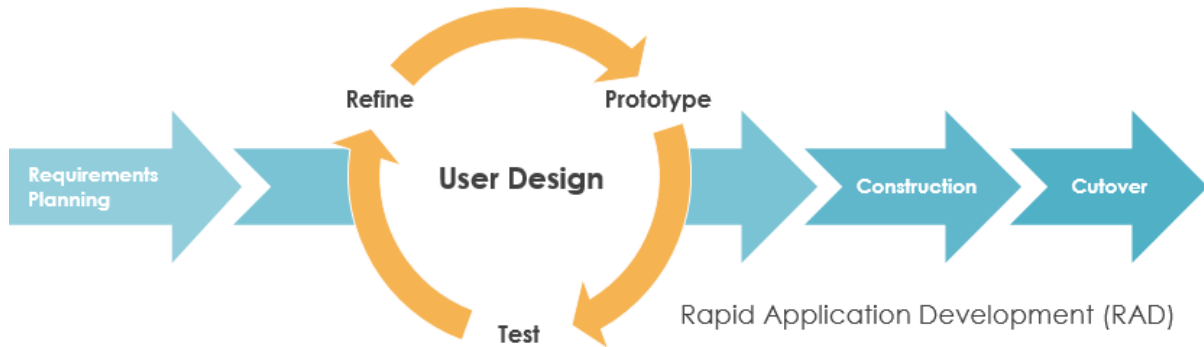


Figure 2. Illustration of RAD Methodology Process.

Phase 1: Requirements planning. This phase is equivalent to a project scoping meeting. Although the planning phase is condensed compared to other project management methodologies, this is a critical step for the ultimate success of the project (Lucidchart, n. d.).

The proponent gathered and defined the project requirements, identified the key objectives, and outlined the scope of the project. This step was crucial for laying the foundation of the project's success.

Phase 2: Code. During this phase, clients work hand-in-hand with developers to ensure their needs are met at every step in the design process. It's almost like customizable software development where the users can test each prototype of the product, at each stage, to ensure it meets their expectations (Lucidchart, n. d.).

The proponent worked closely with clients to develop customizable software solutions. They utilized iterative development, creating prototypes for user testing

and feedback, ensuring the final product met client expectations.

Phase 3: Rapid Construction: This phase takes the prototypes and beta systems from the design phase and converts them into the working model (Lucidchart, n. d.).

The proponent then took the prototypes and beta systems developed in the previous design phase and transformed them into a fully functioning working model. The emphasis was on rapid development to deliver a functional system quickly, utilizing the feedback gathered during the design phase to make necessary adjustments and improvements.

Phase 3: Cutover: This is the implementation phase, where the finished product goes to launch. It includes data conversion, testing, and changeover to the new system, as well as user training (Lucidchart, n. d.).

The proponent executed data conversion, conducted testing to validate the new system's functionality, managed the smooth transition from the old system to the new one, and provided user training to ensure effective utilization of the finished product during its launch.

### **Sources of Data**

The primary source of this study in the Hotel Le Duc as they are the client of the proposed study.

The secondary sources of data are, internet research, observation, and online survey.

### **Instrumentation and Data Collection**

For data collection, the proponent used the following tools such as:

Document Analysis. Document analysis is a qualitative research technique used by researchers. The process involves evaluating electronic and physical

---

documents to interpret them, gain an understanding of their meaning and develop upon the information they provide (Indeed, 2023).

The proponent conducted document analysis to provide a context within the research.

Internet Research. Internet research is the practice of using Internet information, especially free information on the World Wide Web, or Internet-based resources (like Internet discussion forum) in research. Internet research has had a profound impact on the way ideas are formed and knowledge is created. Common applications of Internet research include personal research on a particular subject (something mentioned on the news, a health problem, etc.), students doing research for academic projects and papers, and journalists and other writers researching stories (DBpedia, n.d.).

The proponent gathered pertinent data on the suggested system via the Internet.

Interview. An interview is a procedure designed to obtain information from a person through oral responses to oral inquiries (iEduNote, n.d.).

The proponent chose a few details to improve suggested system be better.

Observation. Observation is a primary research method. Primary research involves personally collecting the data or information being studied. This is the opposite of the secondary research method, where researchers choose to study data that has already been collected before their study begins (Study Smarter, n.d.).

The proponent gathered a variety of current systems to examine the procedures, methods, and tools used. This analysis enhanced the understanding of

---

these existing mechanisms and ultimately improved the proposed study.

Online Survey. An online survey is a structured questionnaire that your target audience completes over the internet generally through a filling out a form. Online surveys can vary in length and format. The data is stored in a database and the survey tool generally provides some level of analysis of the data in addition to review by a trained expert (Usability, n.d.).

The proponent conducted an online survey for a wider range of users.

### **Tools for Data Analysis**

In this study, the following instruments will use to analyze data:

Database Schema. A database schema represents the logical configuration of all or part of a relational database. It can exist both as a visual representation and as a set of formulas known as integrity constraints that govern a database. These formulas are expressed in a data definition language, such as SQL. As part of a data dictionary, a database schema indicates how the entities that make up the database relate to one another, including tables, views, stored procedures, and more. (Lucidchart, n.d.).

The proponent utilized a database schema that shows how the database works.

Entity Relationship Diagram (ERD). An entity-relationship diagram (ERD) is a data modeling technique that graphically illustrates an information system's entities and the relationships between those entities. An ERD is a conceptual and representational model of data used to represent the entity framework infrastructure (Rouse, 2017).

---

The proponent used an Entity-Relationship Diagram (ERD) to identify and map the relationships between entities in the proposed system. This facilitated the creation of an initial design for the system's database.

Gantt Chart. A Gantt chart is a commonly used graphical depiction of a project schedule. It's a type of bar chart showing the start and finish dates of a project's elements such as resources, planning, and dependencies (Grant, 2022).

The proponent used Gantt chart for the scheduling of the system.

Ishikawa Diagram. An Ishikawa diagram is a diagram that shows the causes of an event and is often used in manufacturing and product development to outline the different steps in a process, demonstrate where quality control issues might arise, and determine which resources are required at specific times (Hayes, 2023).

The proponent employed an Ishikawa Diagram to identify the various root causes of potential issues with the suggested system.

Likert Scale. A Likert Scale is a type of scale used in survey research that measures respondents' attitudes towards a certain subject. Likert scale questions are single-choice, closed-ended questions, and the primary benefit of using a Likert scale is that it provides more granular information on people's attitudes towards a subject than a simple yes/no question type. By using a Likert scale, researchers can assess varying levels of agreement, importance, quality, and other factors (Elliot, 2021).

The proponent utilized Likert scales and user satisfaction surveys to gauge customer knowledge of the system.

Swimlane Diagram. A swimlane diagram is a type of flowchart that outlines

---

who does what in a given process. Based on the analogy of lanes in a pool, a swimlane diagram places process steps within the horizontal or vertical “swimlanes” of a particular department, work group or employee, thus ensuring clarity and accountability. Highlighting connections and communications between these lanes, it can serve as an indicator of waste, redundancy, and inefficiency in a process (Office Timeline, n.d.).

The proponent utilized a swimlane diagram to illustrate the entire process of the proposed system, from start to finish.

Use- Case Diagram. Use-case diagrams illustrate and define the context and requirements of either an entire system or the important parts of the system. You can model a complex system with a single use-case diagram, or create many use-case diagrams to model the components of the system. You would typically develop use-case diagrams in the early phases of a project and refer to them throughout the development process (IBM, 2021).

The proponent leveraged a use-case diagram to define and organize the functional requirements of the proposed system framework. This approach helped identify the system's boundaries and establish a basic event flow model, including how the system would interact with individuals and groups.

Weighted Mean. The weighted mean involves multiplying each data point in a set by a value which is determined by some characteristic of whatever contributed to the data point (Clark-Carter, 2010).

The proponent employed a weighted mean approach to evaluate the usability of the proposed system.

---

A description of the weighted mean scoring is provided below. The scale being the rate, the statistical limitations corresponding to the descriptive rating and its equivalent descriptive interpretation. The formula will be used  $\text{Mean} = \sum x / n$ , Where: Mean = Average,  $\sum x$  = Summation of results, n = Number of respondents.

Scale	Statistical Limits	Description Rating (DR)	Descriptive Interpretation
4	3.25 – 4.00	Strongly Agree (A)	Condition/Provision is very extensive and functioning very well.
3	2.50 – 3.24	Agree (A)	Condition/Provision adequate and functioning is fairly.
2	1.75 – 2.49	Disagree (D)	Condition is limited and functioning properly.
1	1.0 – 1.74	Strongly Disagree (SD)	Condition is need by meaning.

Table 2. Weighted Mean of Scoring



