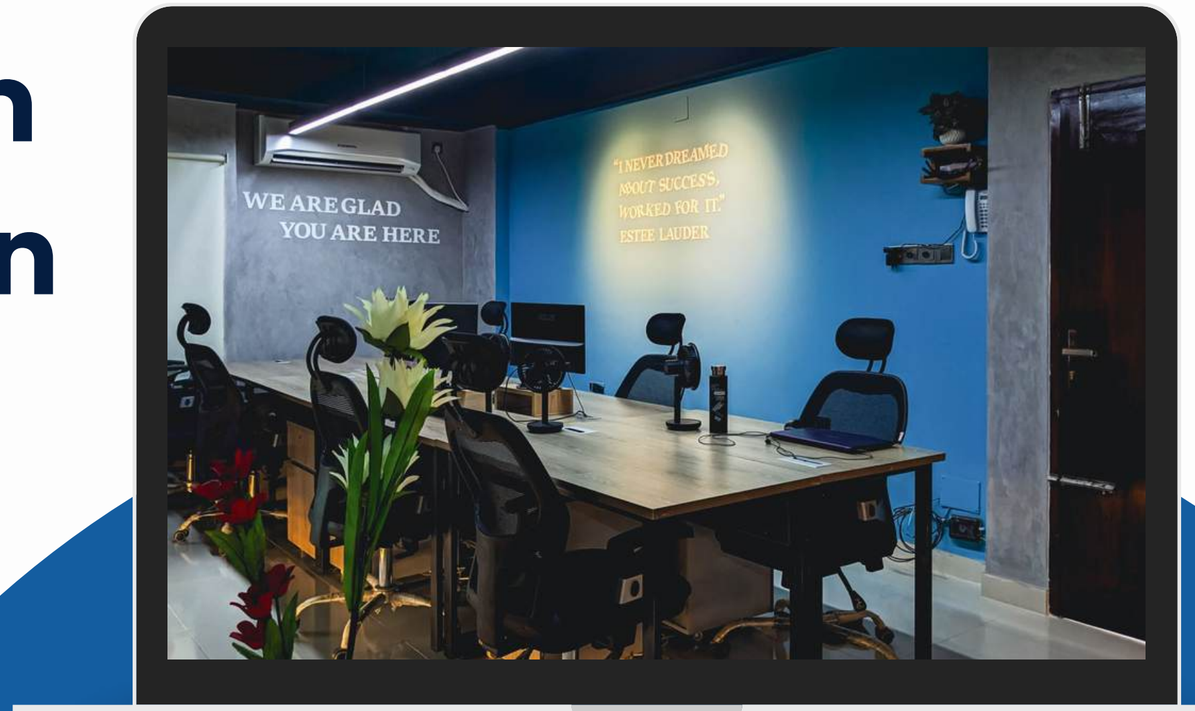
Information System Analysis and Design of Vivasoft



VIVASOFT

- **Intro:** A growing software development company in Bangladesh.
- **Founded:** in 2016 on a small rooftop.
- **Initial Mission:** To deliver innovative technology solutions that simplify life and support business growth.

Overview

- Operates from a 25,000-square-feet office in Dhaka.
- Expanded with a branch in Rajshahi
- A team of approximately 300 members providing diverse IT consulting and software development services.
- Works for global clients specializing in software outsourcing with a focus on innovative solutions.

Mission

- Deliver high-quality software to drive business success.
- Exceed client expectations with innovative solutions.
- Utilize cutting-edge technology for impactful results.
- Promote continuous improvement and development.
- Simplify everyday life with effective software solutions.

Vision

- Achieve Global Leadership.
- Commit to Quality.
- Foster Sustainable Growth.
- Cultivate a Great Workplace.

Services

- Scalable System Design
- Consultation Service
- Database Management
- Big Data & Data Science
- Embedded System Design
- Mobile Application Development
- UX Design
- SQA

Organizational Structure

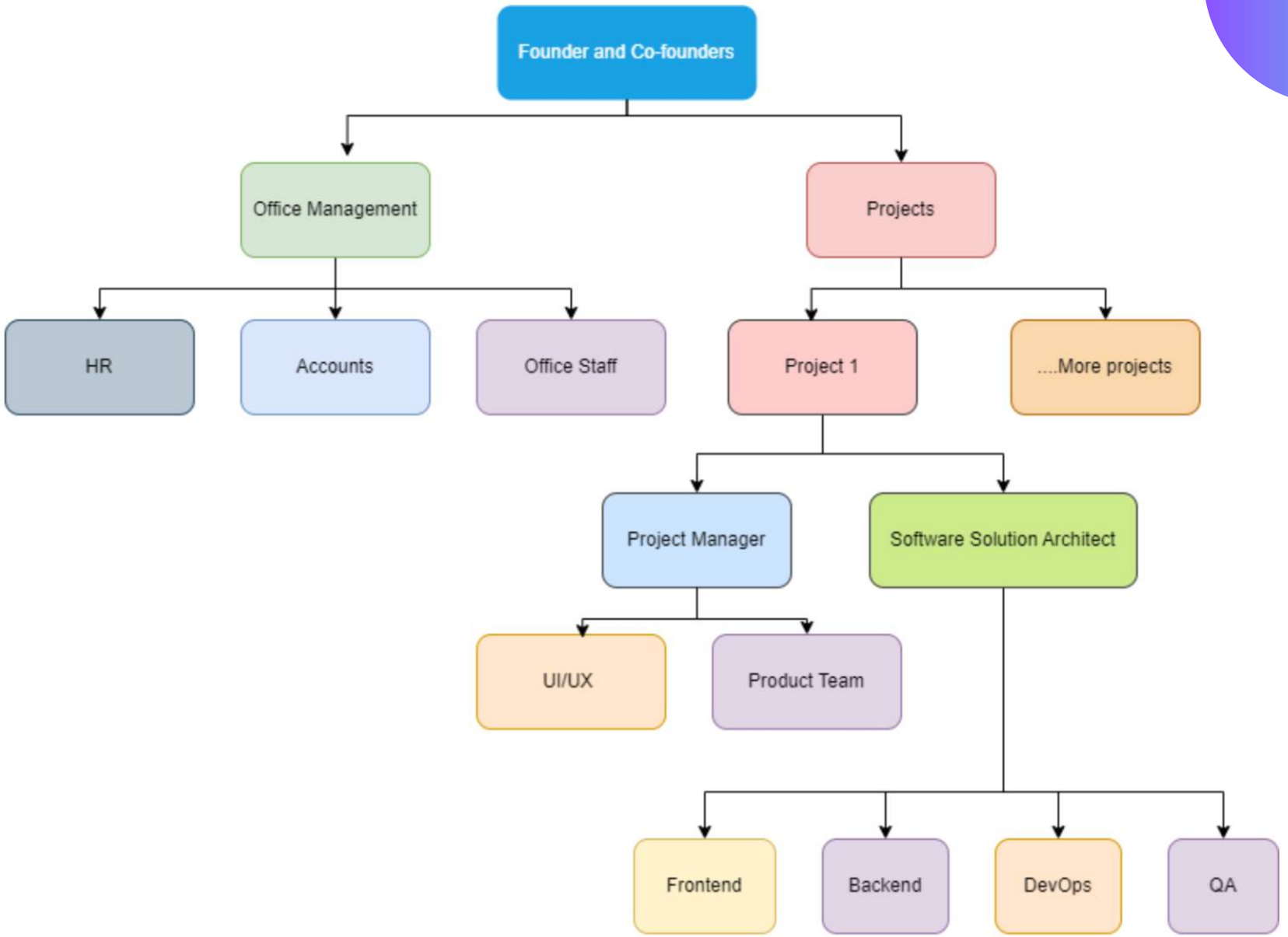


Fig 1.2.1: Hierarchy of Vivasoft Ltd.

Current Limitations:

- **Lack of Manpower:** Shortage of skilled personnel impacting project execution and quality.
- **Absence of System Analyst:** Challenges in translating business needs into technical solutions and identifying system inefficiencies.
- **Marketing Issues:** Ineffective strategies are leading to lower brand visibility and challenges in attracting new clients.

INFORMATION GATHERING

Here we will delve into each information gathering tool, exploring its significance and practical application in analyzing Vivasoft

Tools used for Information Gathering

01 Reviews of literature, Procedures & Forms

02 Interviews

03 Questionaries

04 Onsite observation

Review of Literature, Procedures & Forms

Previous Projects: Analyzed the scope, outcomes and client feedback of past projects.

Company Website: Reviewed the services, case studies and overall digital presence.

Social Media Handles: Evaluated engagement, marketing strategies and client interactions.

Interviews

We conducted an interview with -

Udayan Ghosh,
Solution Architect, Vivasoft, Rajshahi Branch

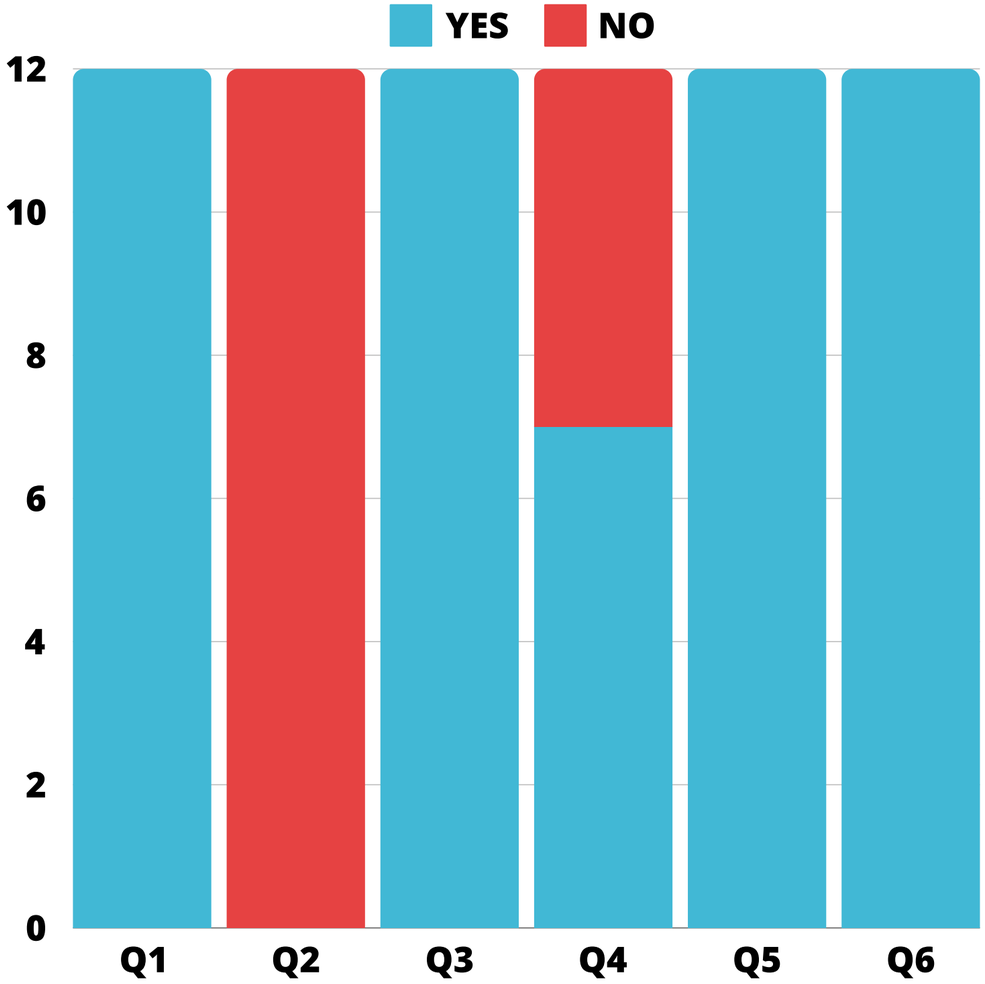
Key highlights of the Interview

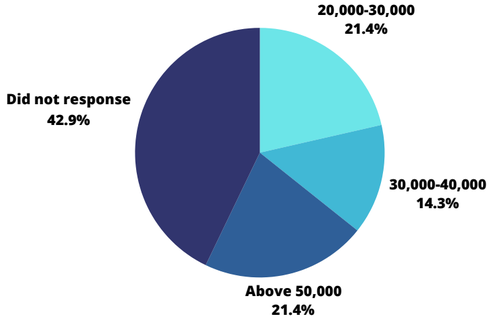
- Company Vision
- Organizational Structure
- Service Process
- Company Culture
- Recruitment Process
- Growth Plans

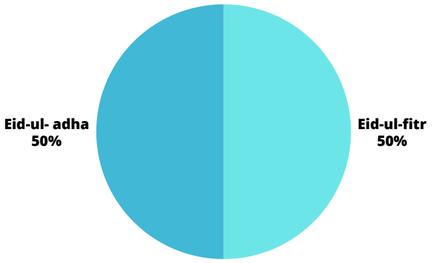
Questionnaires for Vivasoft Employees

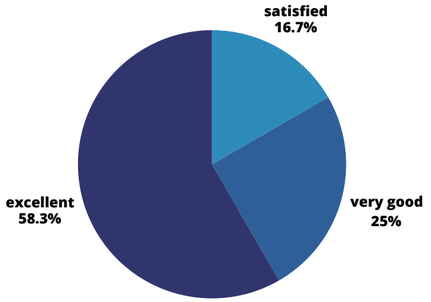
1. Are you satisfied with your work space’s environment?
2. Do you face any discrimination from your superiors?
3. Does your company provide lunch meals during working hours?
4. Do you think you system is sufficiently digitized?
5. Do you get easily adjusted for a newly installed system?
6. Do you get your salary in time?
7. What is your salary range?
8. For which festivals do you get a bonus?
9. How is your interpersonal relationships with other employees?
10. How will you rate the skills of the employee? (5 is highest and 1 is lowest)
11. Provide your opinion about current system by marking following qualitative measures
12. How frequently do you get rewarded for your performance?

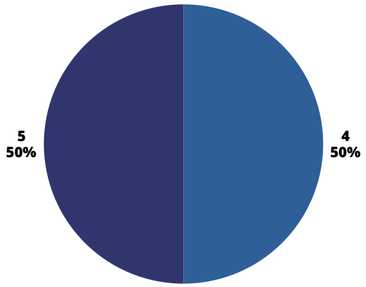
Results

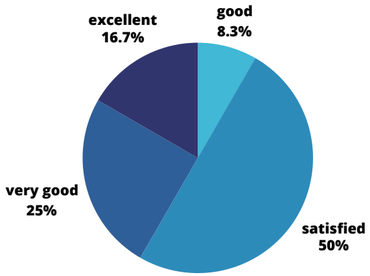

YES
NO
12
10
8
6
4
2
0
Q1
Q2
Q3
Q4
Q5
Q6

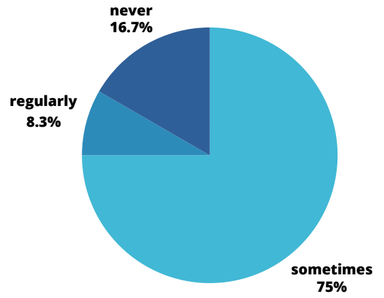

20,000-30,000
21.4%
Did not response
42.9%
30,000-40,000
14.3%
Above 50,000
21.4%


Eid-ul- adha
50%
Eid-ul-fitr
50%


satisfied
16.7%
excellent
58.3%
very good
25%


5
50%
4
50%


excellent
16.7%
good
8.3%
very good
25%
satisfied
50%


never
16.7%
regularly
8.3%
sometimes
75%

Important Outcomes of Questionaries

50%

Only 50% Employee is Satisfied with the current System

42%

42% Employee Find The System is Not Fully Digitized

43%

43% Employee Don’t Want to disclose their Salary

Onsite Observation

1 Employees have individual workstations with all necessary tools like computers and monitors.

2 Management, including Co-Founders and the manager, actively engages with employees, reflecting an approachable structure.

3 Meeting rooms are well- furnished with modern tech for discussions and presentations.

STRUCTURED ANALYSIS

Structured analysis is a methodology that uses techniques and graphical tools to clearly define system requirements and processes, enhancing communication and creating a logical system model before implementation.

Structured Analysis of Vivasoft

Data Flow Diagrams (DFD):

01

Visualize Vivasoft's current system, illustrating data flow and interactions between components.

Data Dictionary:

02

Provides clarity and consistency in data definitions, facilitating collaboration among analysts and developers.

Structured English:

03

Documents logic and sequence of actions clearly for system validation and compliance.

Decision Tree:

04

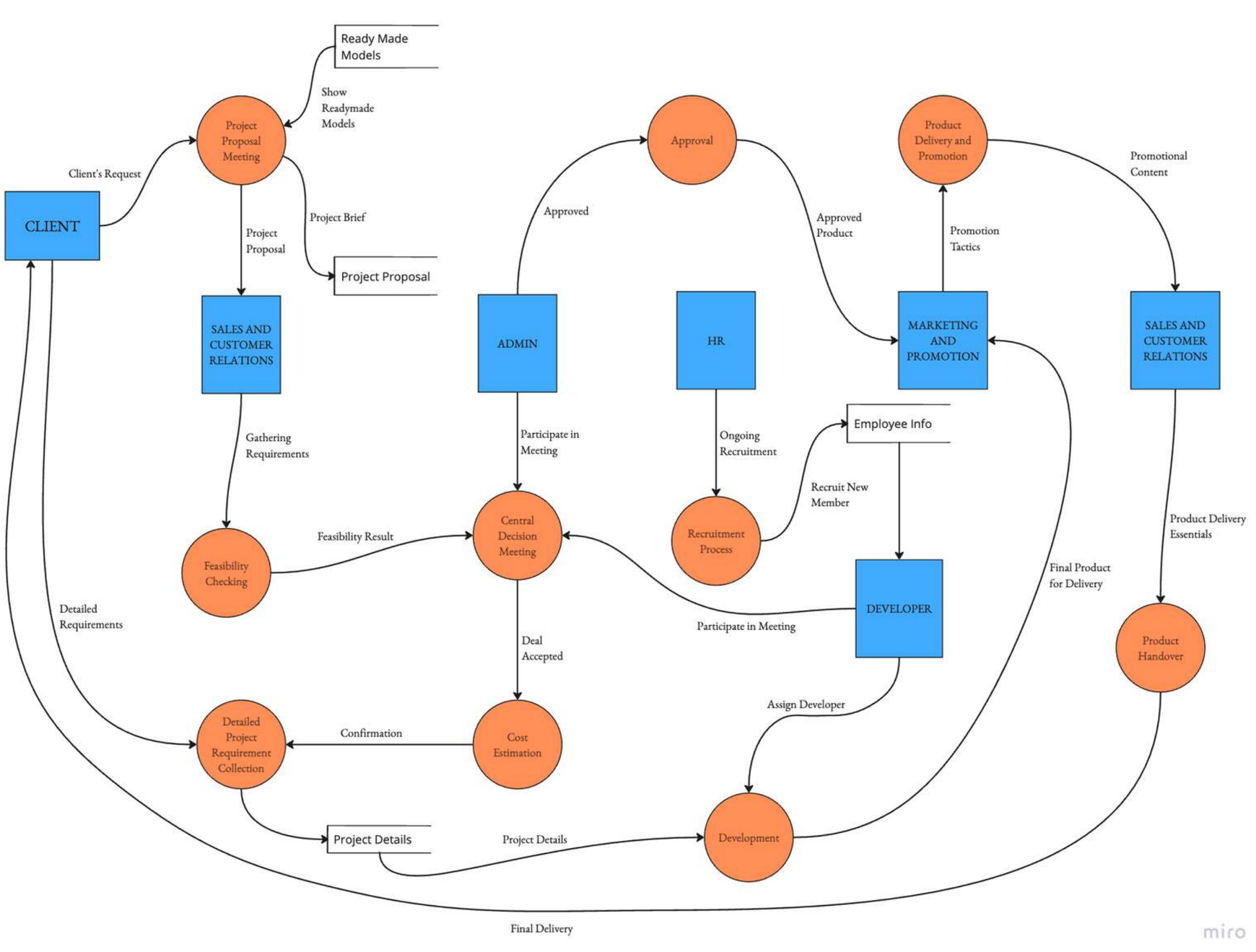
Systematically evaluates choices for system enhancements, aligning with operational goals.

Decision Table:

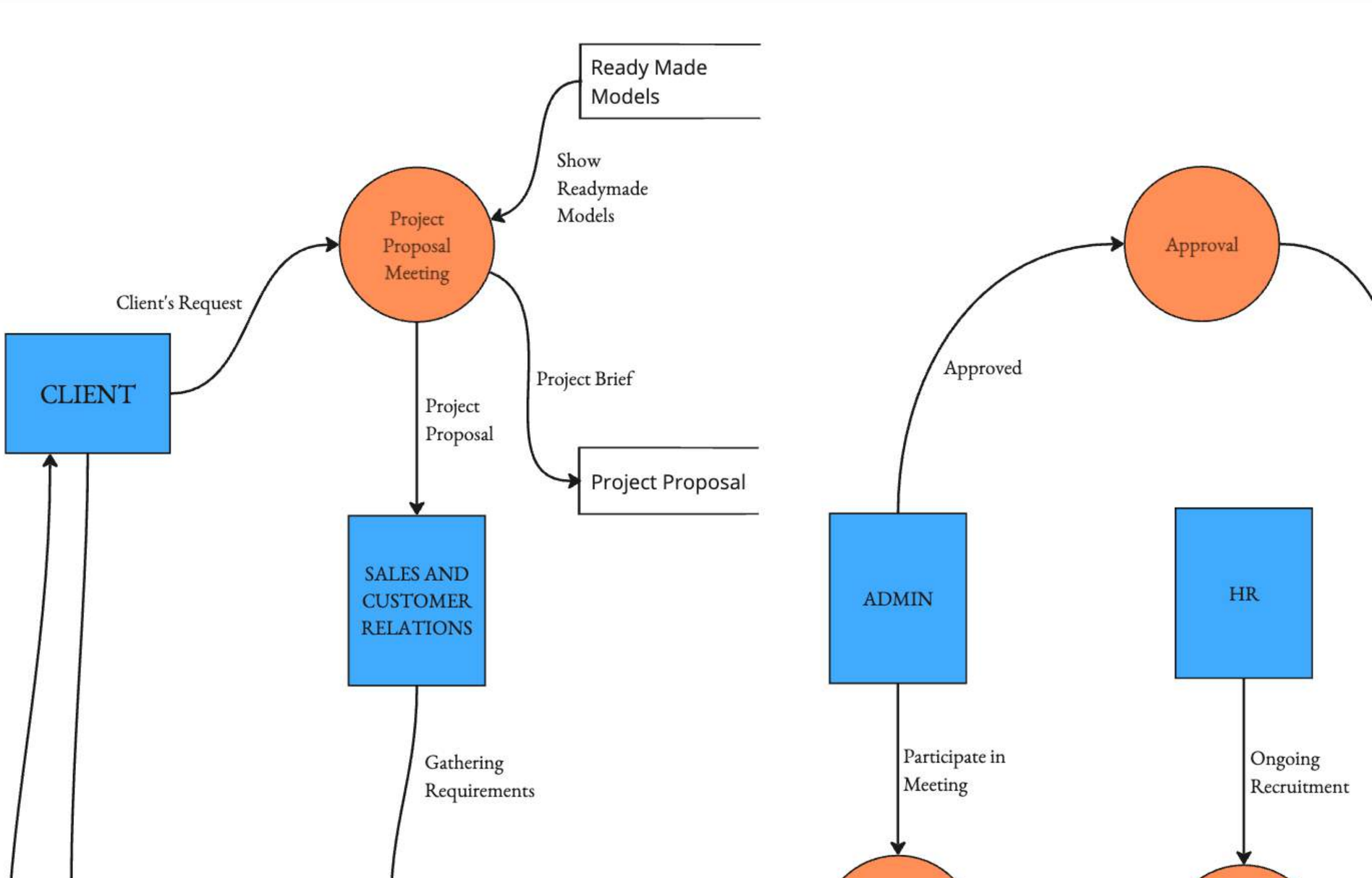
05

Standardizes decision-making and improves efficiency in the onboarding process.

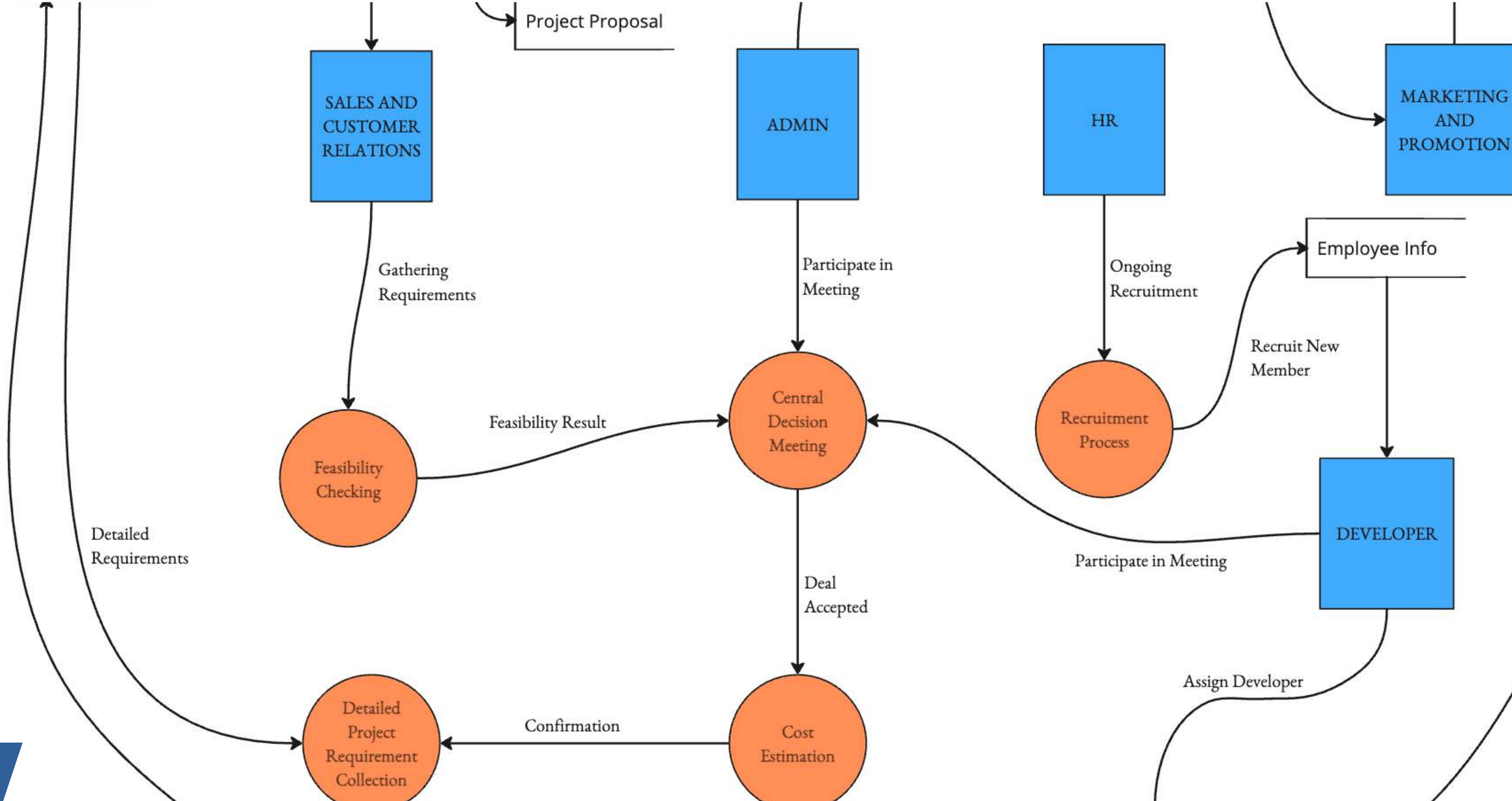
Data Flow Diagram on Overall System of Vivasoft



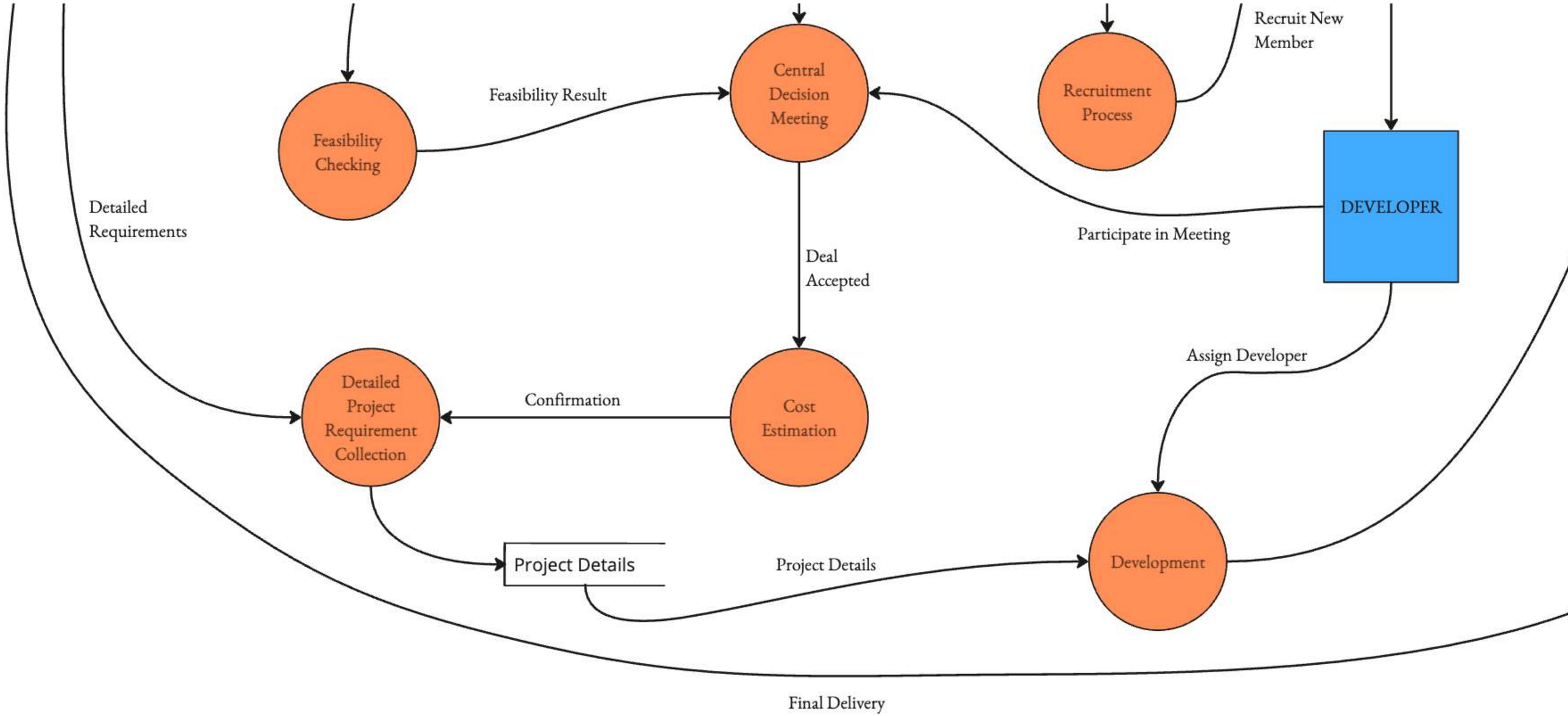
Closer Look into the DFD



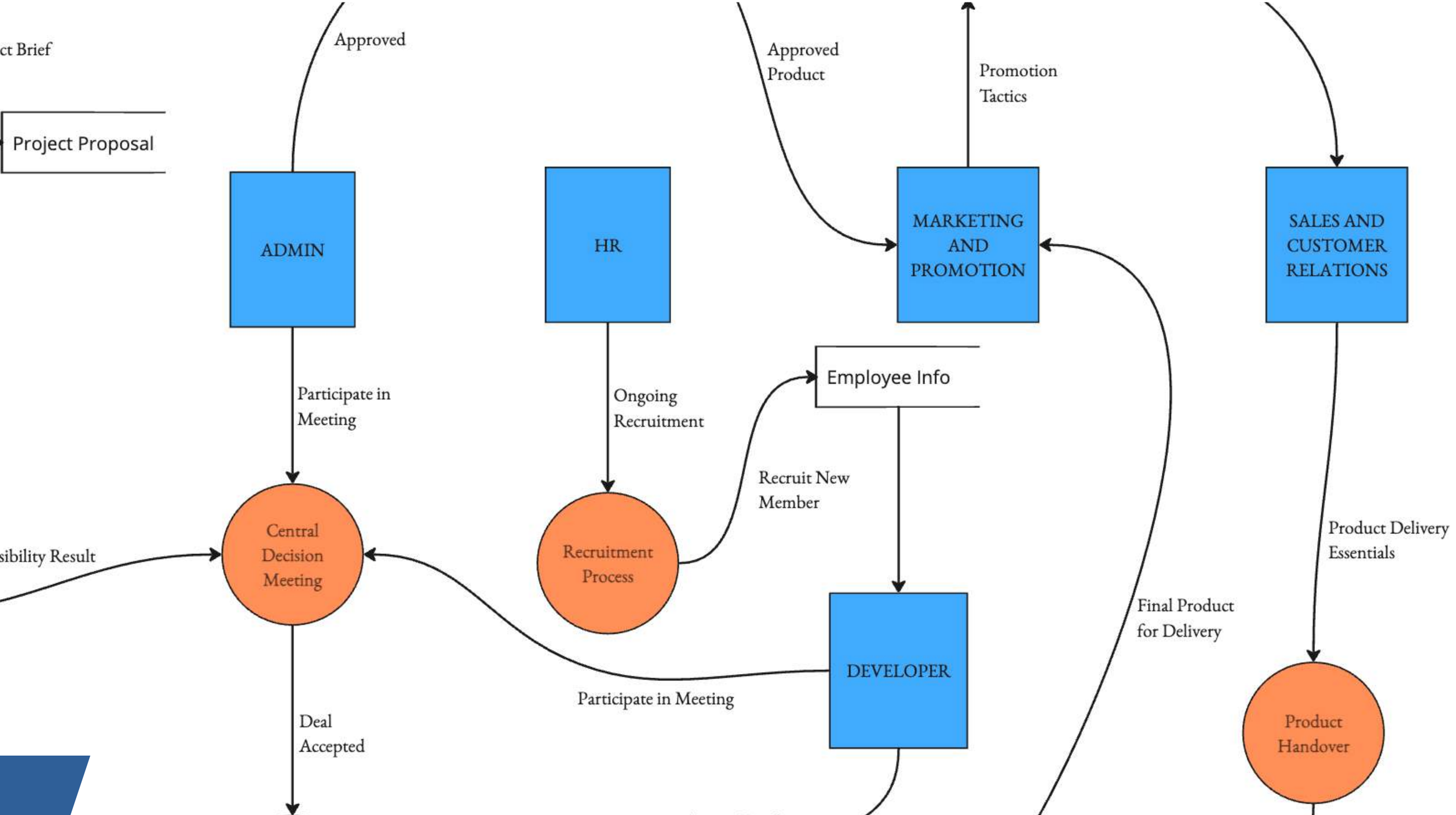
Closer Look into the DFD



Closer Look into the DFD

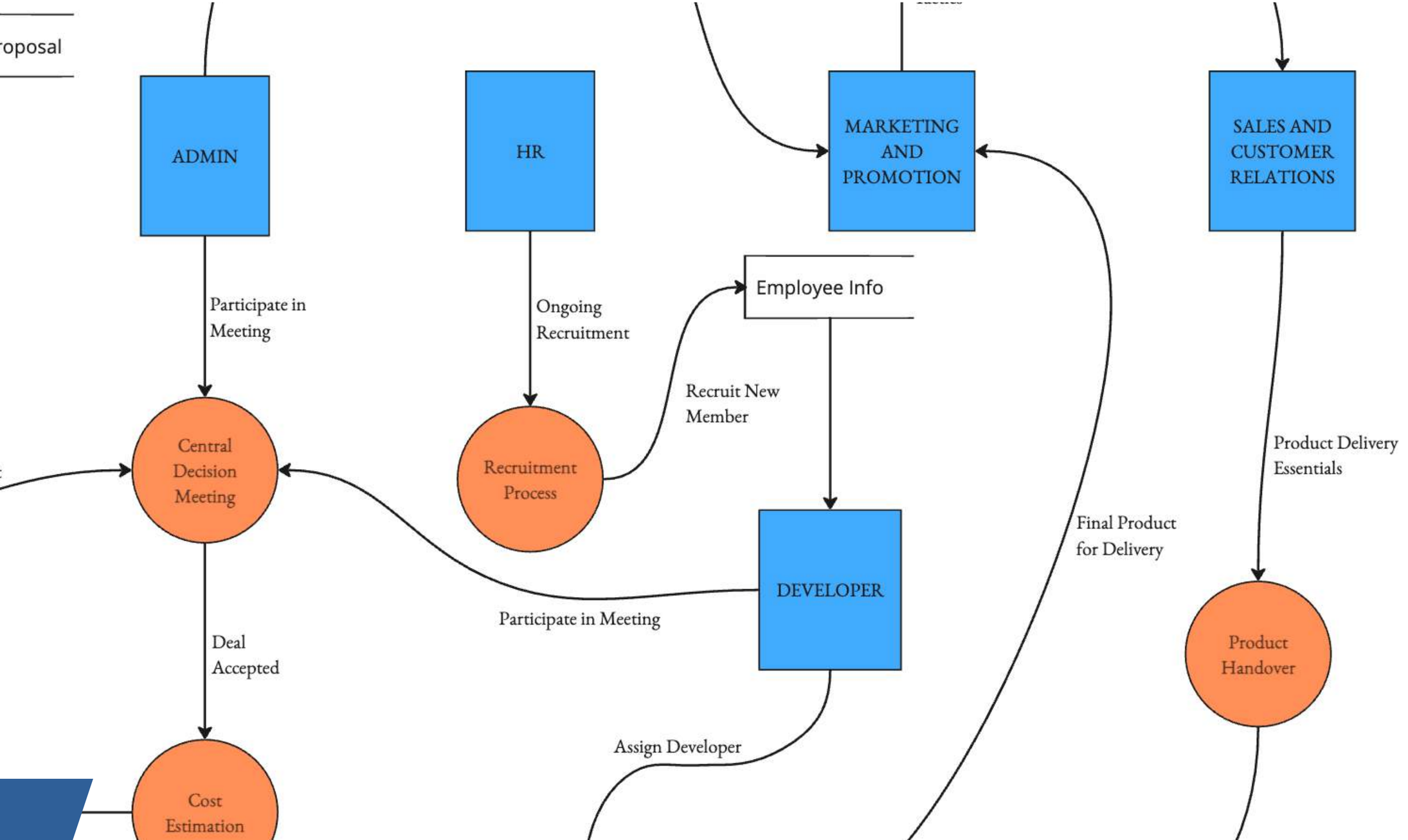


Closer Look into the DFD

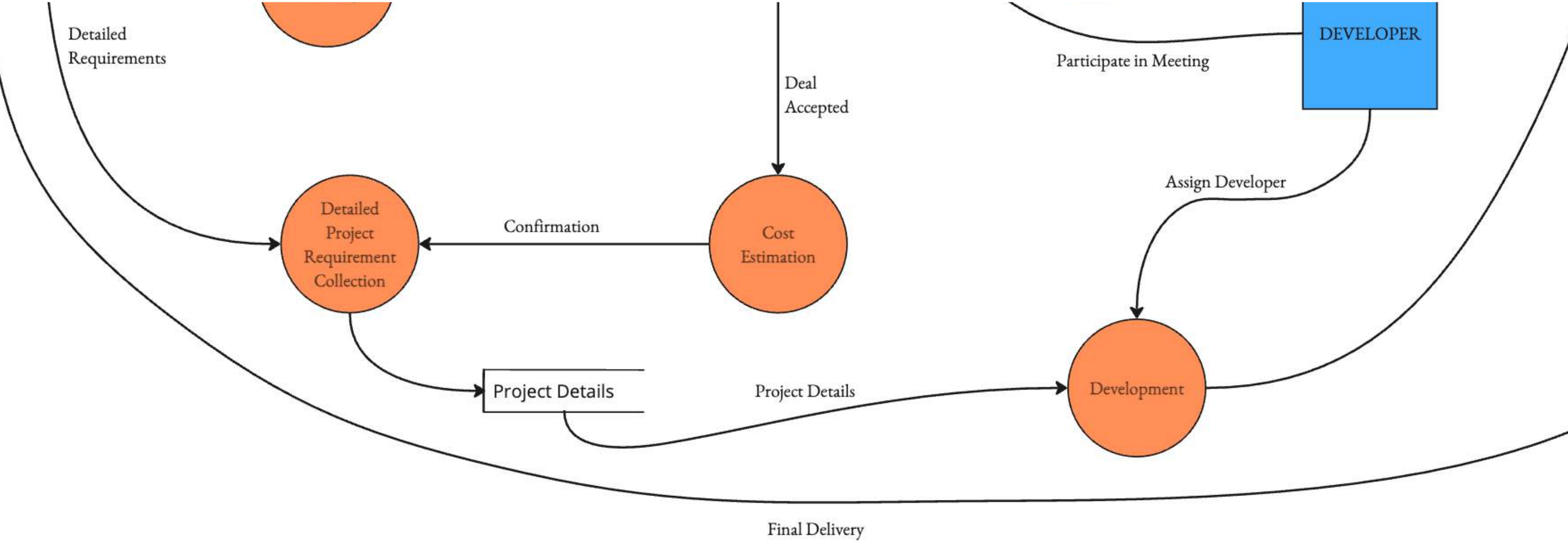


Closer Look into the DFD

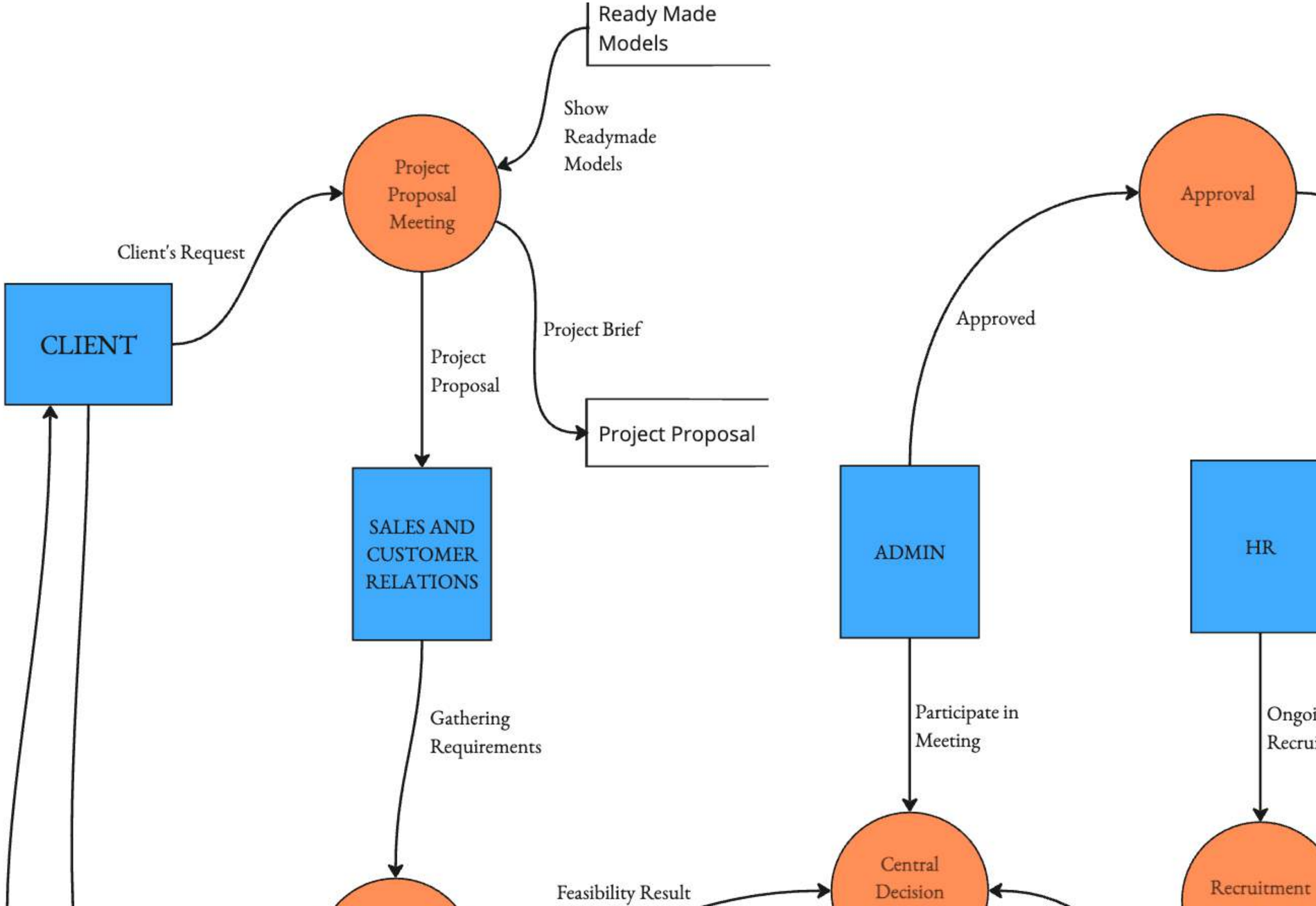
Closer Look into the DFD



Closer Look into the DFD



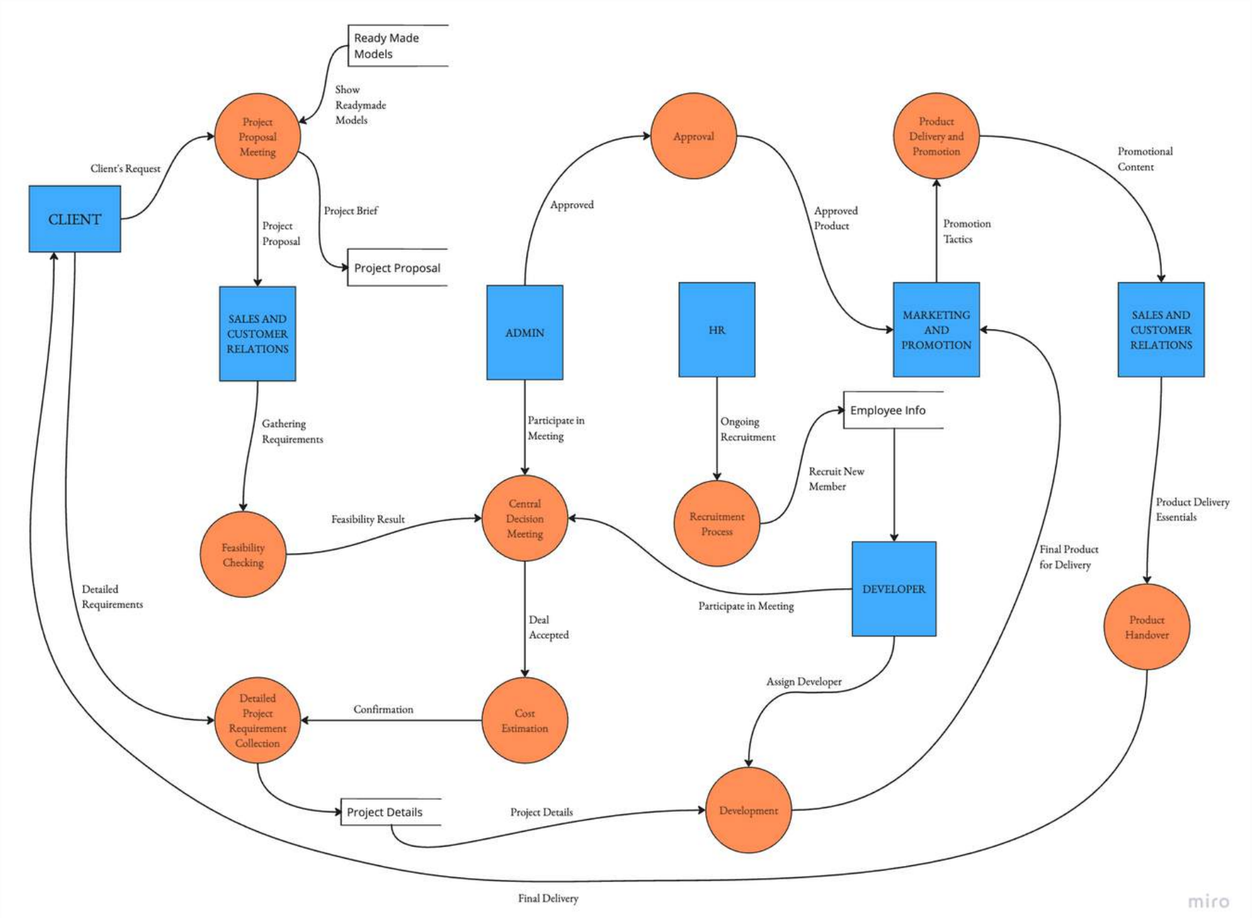
Closer Look into the DFD



Data Dictionary From the Analyzed DFD

A data dictionary is a centralized repository that defines data elements, ensuring consistency and clarity in system design, development and management. The Data Dictionary Tables for the 4 databases in Vivasoft's system-

1. Employee Info
2. Project Proposal
3. Project Details
4. Feedbacks



Data Dictionary from the analyzed DFD

Employee Info Database

Field Name	Data Type	Length	Description	Constraints
EmployeeID	Integer	10	Unique identifier for each employee	Primary key, auto-increment
EmployeeName	String	100	Name of the employee	Not null
Role	String	50	Role of the employee in the project	Not null
Department	String	50	Department where the employee works	Not null
Email	String	15	Email address of the employee	Must be unique, Not null

Data Dictionary from the analyzed DFD

Project Proposal Database

Field Name	Data Type	Length	Description	Constraints
ProposalID	Integer	10	Unique identifier for each Proposal	Primary key, auto-increment
ProjectName	String	100	Name of the proposed project	Not null
Description	Text	-	Detailed description of the proposal	Nullable
ProposedBy	Integer	10	ID of the employee who proposed it	Foreign key referencing EmployeeID
DateSubmitted	Date	-	Date when the proposal was submitted	Not null
Status	String	20	Current status of the proposal	Not null

Data Dictionary from the analyzed DFD

Project Details

Field Name	Data Type	Length	Description	Constraints
ProjectID	Integer	10	Unique identifier for each Proposal	Primary key, auto-increment
ProjectName	String	100	Name of the proposed project	Not null
StartDate	Date	-	Start date of the project	Not null
EndDate	Date	-	End date of the project	Nullable
Budget	Decimal	15, 2	Budget allocated for the project	Not null
ProjectManagerID	Integer	10	ID of the project manager	Foreign key referencing EmployeeID
Status	String	20	Current status of the project	Not null

Structured English on Data Security Checking Process

Ensure appropriate security measures based on project risk, compliance, and data sensitivity to safeguard information and maintain regulatory compliance.

Structured English Process:

1. Project Risk Level: High Risk & Low Risk
2. Compliance Requirements: Critical & Normal
3. Data Sensitivity: Low & High

This structured approach ensures effective, tailored security for each project.

Structured English

IF: Project Risk Level is HIGH

AND IF Compliance Requirements are CRITICAL

THEN Prioritize Risk Mitigation Strategies

ELSE: Compliance Requirements are NORMAL

SO Focus on Standard Risk Management Practices

ELSE

IF: Data Sensitivity is LOW

THEN: Use Routine Data Protection Measures

ELSE: Data Sensitivity is HIGH

SO: Perform Comprehensive Risk Audits and Implement Safeguards

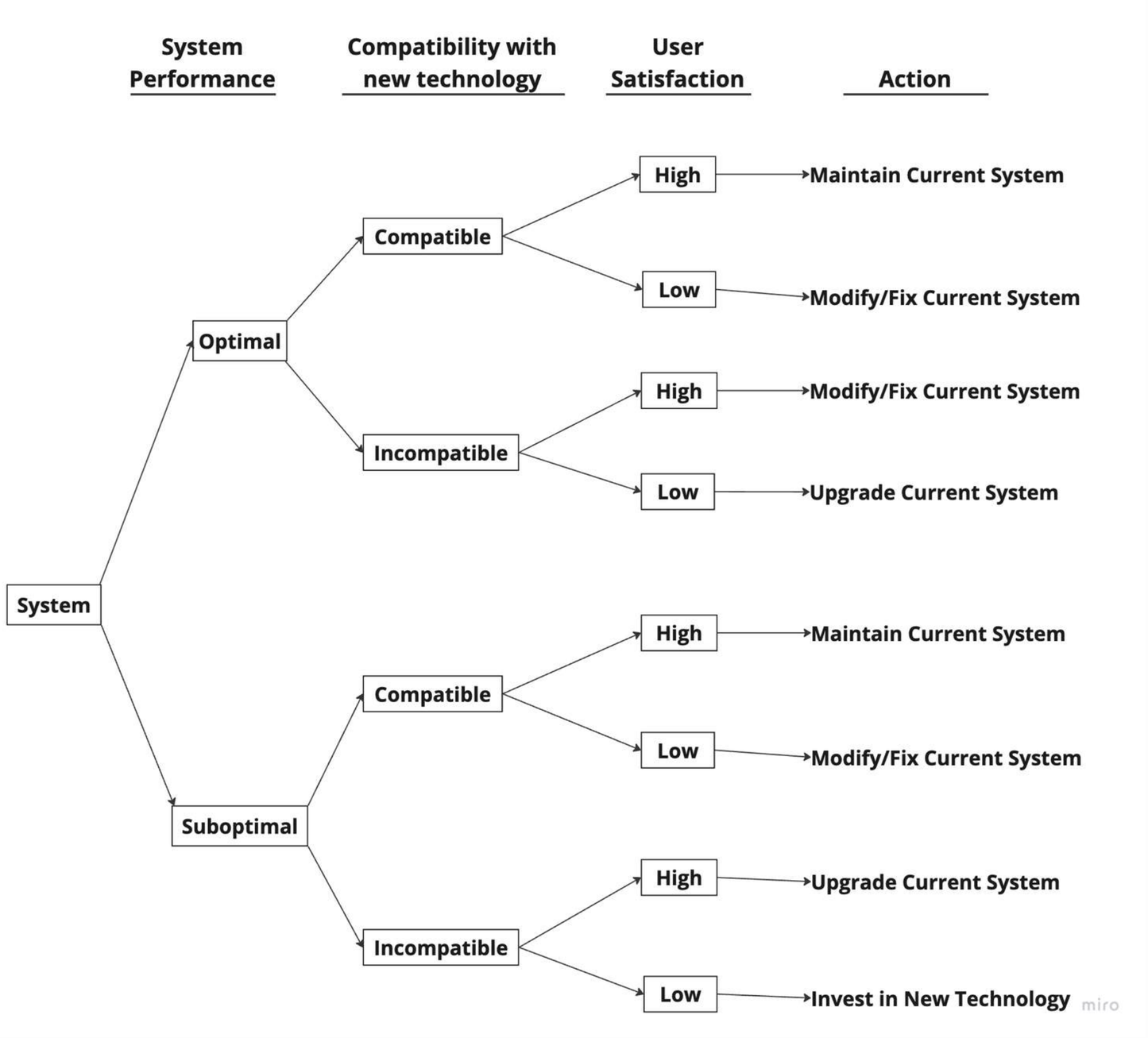
System Upgrade Decision Tree Analysis

Outcomes:
Maintain, Modify/Fix and Upgrade Current System or Invest in New Technology based on evaluations.

Decision Tree

1. When the system is **optimal** but **slightly incompatible** we need to **upgrade the current system**

2. When the system is **suboptimal** and **highly incompatible** we need to **invest in new technology**



FEASIBILITY STUDY

Feasibility Study of Vivasoft

01

Feasibility Consideration

Visualize Vivasoft's current system, illustrating data flow and interactions between components.

02

Steps in Feasibility Analysis

Provides clarity and consistency in data definitions, facilitating collaboration among analysts and developers.

03

Characteristics of Candidate System

Systematically evaluates choices for system enhancements, aligning with operational goals.

04

DFD for the Candidate System

Documents logic and sequence of actions clearly for system validation and compliance.

Why we do Feasibility study?

👉 **Help us evaluate potential solutions**

👉 **Ensure alignment with budget and strategic objectives**

👉 **Guide system development**

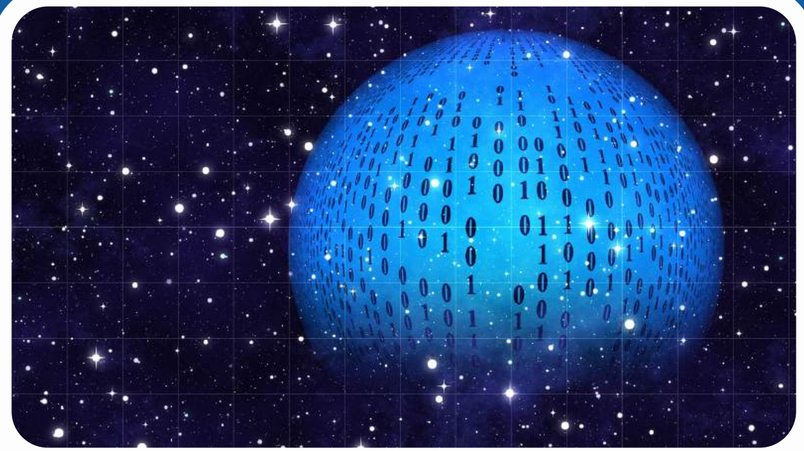
Feasibility Consideration

Economic Feasibility

Determines if the benefits of the system outweigh the costs. If benefits > costs, the system is approved; otherwise, alternatives are explored.

Technical Feasibility

Assesses if existing hardware and software can handle the new system. If additional resources are needed, this can strain budgets, making the system unfeasible.



Behavioral Feasibility

Evaluates user resistance to change. Effective staff training and support are necessary to ensure a smooth transition to the new system.

Steps of Feasibility Analysis

1. Form a Project Team

Montasir Mahmud
1903109

(Project Leader)

Md. Rasel Rahman
1903093

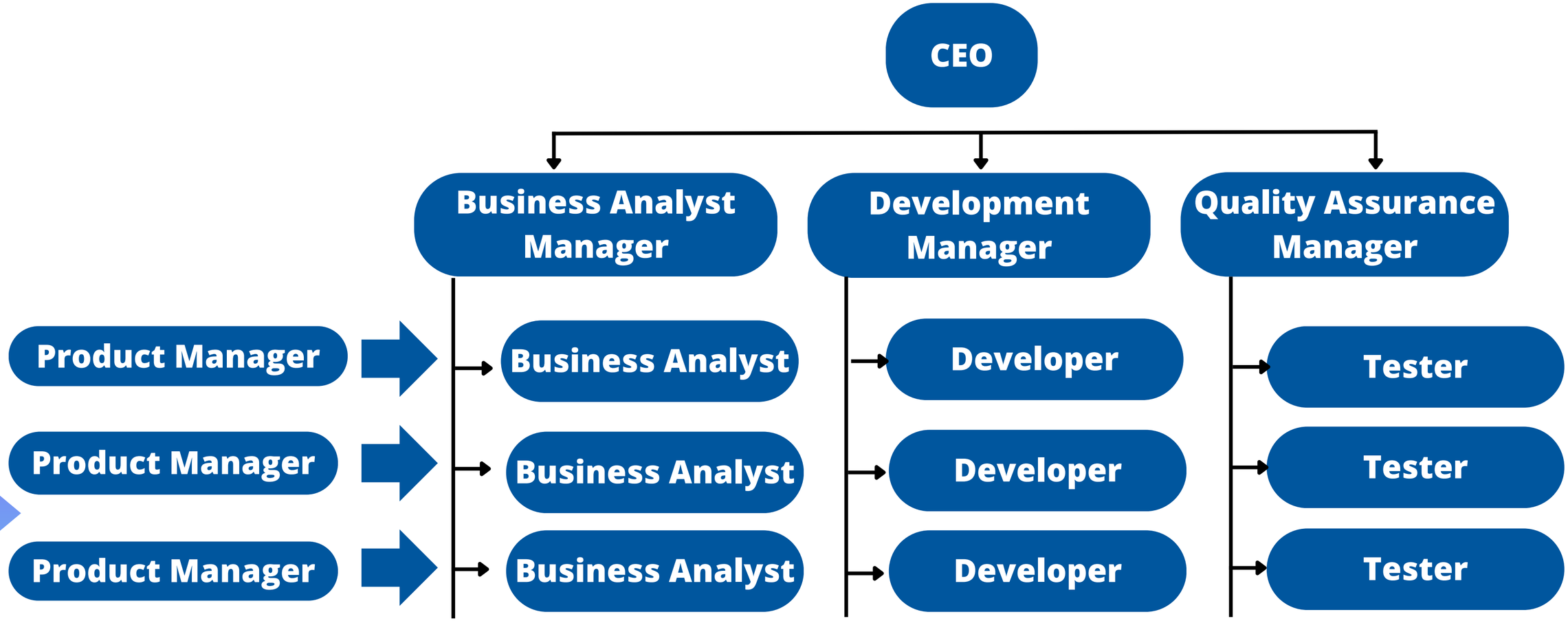
Sinthia Akter
1903097

Faria Afrin
1903092

Steps of Feasibility Analysis

2. Prepare System Flowchart

We have created a generalized flowcharts for the system based on the information charts and DFDs prepared during the initial investigation stage.



Steps of Feasibility Analysis

3. Enumerate Potential Candidate Systems

We have identified two potential candidate systems that promise to deliver enhanced performance based on our thorough analysis of VIvasoft’s current system.

Candidate System I

Candidate System II

Steps of Feasibility Analysis

Candidate System I

1. **Next Generation Firewalls(NGFW)**

   Examples: Fortinet Fortigate, Cisco Firepower
   Purpose: To address security concerns related to the system network.

2. Automated Follow-up Mails and Chatbot System

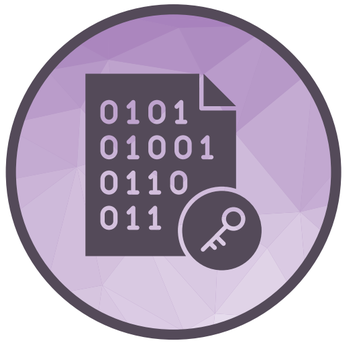
Examples: Drift, HubSpot CRM, Zoho CRM
Purpose: To improve client relationship management (CRM) and provide a convenient customer support system.

3. Enterprise Resource Planning (ERP) System

Examples: Oracle, NetSuite, Microsoft Dynamics 365
Purpose: To address the manual process of communication and data entry, as well as data management and scalability issue

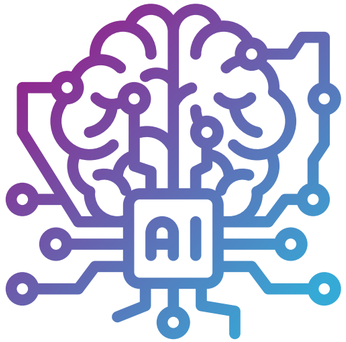
Steps of Feasibility Analysis

Candidate System II



1.Encryption Solutions

Examples: BitLocker, VeraCrypt, PGP (Pretty Good Privacy)



2. AI-driven Analytics

Examples: Dynamic 365
Purpose: To improve client relationship management (CRM) and provide insights for enhancing customer support.

3. Document Management System

Examples: SharePoint, Database, M-Files
Purpose: To address the manual process of communication and data entry, as well as data management and scalability issues.

Steps of Feasibility Analysis

Comparison of Systems

Criteria	Candidate System I	Candidate System II
Cost	**Low**	**High**
Customization	**Limited**	**High**
Scalability	**High**	**High**
Deployment time	**Quick**	**Long**

Steps of Feasibility Analysis

4. Describe and Identify Characteristics of Candidate Systems

We conducted a preliminary evaluation of the two candidate systems by comparing their key features to determine which best aligns with the project's objectives.

Steps of Feasibility Analysis

Characteristics	Candidate System I	Candidate System II
Data Entry	Microsoft Dynamics 365	Database
Communication Process	Emails (NetSuite)	Team Site (SharePoint)
Customer Support	Chatbot (Drift)	Dynamic 365
Organizational Structure	Well structured and organized	Well structured and organized
Data Management	Oracle Cloud Storage	M-Files Document Management
Scalability	Easily Scalable	Fairly Scalable
Client Relationship Management	CRM Applications (HubSpot CRM)	AI-driven Analytics (Dynamic 365)
Security Concern	Firewall Protection (Fortinet Fortigate)	Network Encryption (VeraCrypt)

Steps of Feasibility Analysis

5. Determine and Evaluate Performance and Cost Effectiveness of Each Candidate System

We evaluated each candidate system's performance and costeffectiveness against established requirements, using criteria such as :

- Security
- Scalability
- CRM
- Organizational Structure
- Data Management
- Employee Skill
- Customer Support
- User Friendly
- Communication Medium

Steps of Feasibility Analysis

Evaluation Criteria	Candidate System I	Candidate System II
Security	Excellent	Good
Scalability	Good	Fair
CRM	Fair	Excellent
Organizational Structure	Excellent	Excellent
Data Management	Excellent	Good
Employee Skill	Good	Good
Customer Support	Fair	Excellent
User Friendly	Excellent	Good
Communication Medium	Excellent	Excellent

Steps of Feasibility Analysis

Performance/Cost Evaluation Matrix

Evaluation Criteria	Candidate System I	Candidate System II
Security	80% - 90%	70% - 80%
Scalability	70% - 80%	60% - 70%
CRM	60% - 70%	80% - 90%
Organizational Structure	80% - 90%	80% - 90%
Data Management	80% - 90%	70% - 80%
Employee Skill	70% - 80%	70% - 80%
Customer Support	60% - 70%	80% - 90%
User Friendly	80% - 90%	70% - 80%
Communication Medium	80% - 90%	80% - 90%

Steps of Feasibility Analysis

6. Weight System Performance and Cost Data

We created a weighted evaluation matrix, assigning significance to each criterion, rated them on a 1-5 scale and calculated total scores to determine the most efficient candidate system based on performance and cost.

Steps of Feasibility Analysis

Weighted Candidate Evaluation Matrix

Evaluation Criteria	Weighted Factor	Candidate System I		Candidate System II	
		Rating	Score	Rating	Score
Security	5	5	25	4	20
Scalability	4	4	16	3	16
CRM	3	3	9	5	15
Organizational Structure	4	5	20	5	20
Data Management	5	5	25	4	20
Employee Skill	4	4	16	4	16
Customer Support	4	3	12	5	16
User Friendly	3	5	15	4	12
Communication Medium	2	5	10	5	8

Total weighted score = 148 Total weighted score= 153

Steps of Feasibility Analysis

7. Select the Best Candidate System

Assuming the evaluation ratings and weighting factors are fair, Candidate System II, with the highest score of 153 in the Weighted Candidate Evaluation Matrix, has been selected for design and implementation, surpassing Candidate Systems I (148).

Steps of Feasibility Analysis

8. Prepare and Report Final Project Directive to Management

The feasibility study concludes with a formal report for management, summarizing findings and recommendations to guide informed decision-making on the proposed system changes. The illustration of the newly selected Data Flow Diagram is also attached in this section

Steps of Feasibility Analysis

Conclusion

Implement Candidate System II having highest CRM, excellent organization structure and excellent Customer Support.

Our Team

Faria Efa
1903092

MD Rasel Rahman
1903093

Sinthia Akter
1903097

Montasir Mahmud
1903109

THANK YOU