Foreign Exchange Management System (FXMS)

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Chapter 1

System Request (FXMS)

1.1 Project Sponsor

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1.2 Business Need

The need for a project like the Foreign Exchange Management System (FXMS) is crucial for businesses operating internationally for several reasons:

- **Operating internationally:** Businesses engaged in importing and exporting goods and services will need a system like FXMS for currency conversion, enabling them to exchange their local currency for that of the country in which they wish to operate, thereby settling international transactions.

- **Managing cash flow:** Businesses operating overseas need to manage their cash across multiple currencies. FXMS will help them monitor and optimize their cash by converting currency at favorable rates and timings.

- **Softening the risk:** FXMS will provide businesses with tools to manage and mitigate the risks associated with fluctuations in currency prices. By using specific strategies, companies can lower the risk of exchange rate volatility and protect their profit margins.

1.3 Business Requirements

The functionality that the system should have includes:

- Ability to manage clients and accounts (insert, update, delete).

- Ability to manage trades (insert, update, and delete trades). Any trader can enter new trades while updating and deleting existing trades require specific privileges.

- Ability to manage traders and coverage groups by assigning a trader to a coverage group, moving a trader from one coverage group to another.

- Ability to manage currencies and rates including daily updates of rates available in the market. The system is assumed to be connected with another system (such as Tadawul) which provides daily updates for exchange rates between all currencies.

- The system will integrate with two systems: FX trading database and FX coverage group database. These two systems are the main data sources for the system.

1.4 Business Value

The Foreign Exchange Management System (FXMS) is expected to deliver significant gains:

- **Quicker and Better Decision Making:** Facilitated by the collection of multiple systems, enhancing competitive advantage in international markets.

- **Less Human Error:** The human factor is limited to tasks that require human interaction and not repetitive tasks that are error-prone.

- **More Money:** The efficient management of trades and currency conversions is expected to increase the organization's revenue.

- Headcount reduction by 10 traders per branch.

- 15% increase in market share.

1.5 Constraints

- The system should run on Windows 10.

- The system should be delivered by the end of the year 2028.

- Security and reliability must be considered during development.

Chapter 2

Feasibility Study

Overall, the risk in this project compared to the gains can be considered manageable.

2.1 Technical

The technical team is confident they can build it since they built a similar system before, the knowldege they gained during that experience lowers the risk.

- **Familiarity with application:** The team is familiar with building an FXMS.

- **Familiarity with technology:** Since the team members have a collective experience of over 50 years building complex software, we are confident they will be able to tackle the project.

- **Project Size:** Large project.

- **Compatibility:** The company wants a custom solution, so we will make sure it integrates well by analysing before we build anything and before we choose a platform.

The techincal team is confident they can build the system even though it is big. They have built a similar system before and they are familiar with the requirements and the technology.

2.2 Financial

2.2.1 Cost-Benefit Analysis

The cashflow analysis below in Figure 2.1 is a condensed versin of the 4 years (monthly based) version of the cashflow analysis. It gives an idea on the way the project will behave financially.

		Y1	Y2	Y3	Y4	total
	Cash Flow Analysis					
	0	1	2	3	4	total
cash out						
office furniture	(150,000.00)					(150,000.00)
laptops	(50,000.00)					(50,000.00)
office rent		(300,000.00)	(300,000.00)	(300,000.00)	(300,000.00)	(1,200,000.00)
moci		(5,000.00)	(5,000.00)	(5,000.00)	(5,000.00)	(20,000.00)
utility		(11,000.00)	(11,000.00)	(11,000.00)	(11,000.00)	(44,000.00)
marketing		(500,000.00)	(500,000.00)	(500,000.00)	(500,000.00)	(2,000,000.00)
maintenance		(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(200,000.00)
t&a		(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(200,000.00)
salary		(1,463,370.00)	(1,463,370.00)	(1,463,370.00)	(1,463,370.00)	(5,853,480.00)
total	(200,000.00)	(2,379,370.00)	(2,379,370.00)	(2,379,370.00)	(2,379,370.00)	(9,717,480.00)
cash in						
captial	2,000,000.00					2,000,000.00
increased sales			1,450,083.37	7,758,308.70	41,508,891.91	50,717,283.98
decreased salaries			3,207,642.57	-	-	3,207,642.57
total	2,000,000.00	-	4,657,725.93	7,758,308.70	41,508,891.91	55,924,926.54
net cashflow	1,800,000.00	(2,379,370.00)	2,278,355.93	5,378,938.70	39,129,521.91	46,207,446.54
cummulative net cashflow	1,800,000.00	(579,370.00)	1,698,985.93	7,077,924.63	46,207,446.54	

Figure 2.1: Cashflow Analysis of FXMS

2.2.2 ROI and BEP

We will move to the big numbers, the ROI and the BEP.

ROI	488%
BEP	36

Figure 2.2: ROI and BEP of FXMS

2.2.3 Conclusion

The project overall risk is medium. Although the team familiarity is high, the system's dependencies and huge footprint makes us consider the project as medium risk.

Chapter 3

Methodology

Now we will evaluate the methodologies we can use to build the system. We will follow a three step approach to help us choose the right methodology. The three steps are:

1. **Criteria:** We will list the criteria we will use to evaluate the methodologies and answer them according to our familiarity.

2. **Evaluation:** We will evaluate the methodologies based on the criteria answers above. This will help us in choosing the right methodology.

3. **Selection:** We will choose the methodology that fits the use case. It might not be a 100% fit, it would be the most suitable one.

3.1   Criteria

The criteria we will use to evaluate the methodologies are shown and answered in Table 3.1.

Table 3.1: Criteria Answers for System Development Methodologies

Criteria	Answer
Are the requiremnts unclear?	Yes
Are we unfamiliar with the technology?	No
Are the requirements complex?	Yes
Should the system be reliable?	Yes
Is time allocated for building the system short?	No
Do we have schedule visibility?	No

3.2   Evaluation

We will evaluate the methodologies based on the criteria answers above. The following table, 3.2, shows each criteria and the methodology that fits it based on our answer from the previous section in Table 3.1.

Table 3.2: Criteria Evaluation for System Development Methodologies

Criteria	Fit Methodology
Requirements are clear	All
Team is familiar with techonology	All
Requirments are complex	Throwaway Prototyping
System should be relable	V-Model & Throwaway Prototyping
Time allocated for building is not short	All
We don't have schedule visibility	All

3.3 Selection

Based on the evaluation above, we will choose the methodology that fits the use case. The methodology that fits the use case is the "Throwaway Prototyping" methodology. This methodology fits the use case because the requirements are complex and the system should be reliable. And since other criterions are not a problem, we can choose this methodology.

Chapter 4

Project Workplan

The project workplan is shown in Figure 4.1. The project is divided into 7 main phases after the "Kick off meeting". The phases are:

- **Requirements Gathering:** This phase will be done by Nawaf.

- **Business Case:** This phase will be done by Mohammed.

- **System Design:** This phase will be done by Yazeed.

- **Analysis:** This phase will be done by Nawaf.

- **Design:** This phase will be done by Mohammed.

- **Development:** This phase will be done by Yazeed.

- **Quality Assurance:** This phase will be done by Nawaf.
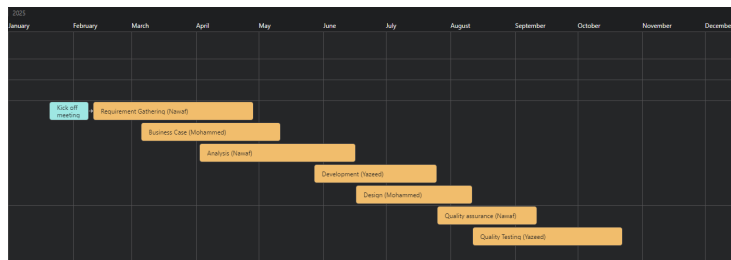
- **Testing:** This phase will be done by Yazeed.

Figure 4.1: Workplan Breadown Structure (WBS) of FXMS

Chapter 5

Gathering/Elicitation Techniques

- **Type of information:** A mix between as-is (existing data sources) and to-be (our new system). The techniques that appeal are:
  - Interviews
  - Joint Application Design (JAD)

- **Depth of information:** High depth of information is required since the system is complex and deals with financial information, we can't affoed losses because of aasumptions. Hence, the techniques that appeal are:
  - Interviews
  - Joint Application Design (JAD)

- **Breadth of information:** Medium breadth of information is required. The techniques that appeal are:
  - Joint Application Design (JAD)

- **Integration of information:** We need to integrate data from different stakeholders, so high integration is required. The techniques that appeal are:
  - Joint Application Design (JAD)

- **User Involvement:** High involvement is required. The techniques that appeal are:
  - Joint Application Design (JAD)

- **Cost:** Since the time required to do the project is short, money shouldn't be a problem. All techniques are low to medium so all of the apply here.

Based on the facts stated below for each criterion, we have concluded that the most suitable techniques:

- Interviews

- Joint Application Design (JAD)

Chapter 6

Requirements Analysis

TODO

Chapter 7

List of Stakeholders

Based on the information provided, the following stakeholders can be identified:

- Traders

- Clients (Organizations and Companies)

- Coverage Groups

- Investment Bank (Business User/Sponsor)

Chapter 8

System Boundary

TODO

Chapter 9

Functional Requirements

Based on the information provided, the following functional requirements can be identified:

- The system shall allow managing accounts (insert, update, delete)

- The system shall allow managing trades (insert, update, delete)

- The system shall allow managing traders and coverage groups (assign traders to groups, move traders between groups)

- The system shall support different types of FX trades (spot, forward, swap, options)

- The system shall allow managing currencies and rates with a daily update of rates.

- The system shall calculate profit and loss for each trade

- The FXMS shall be able to search and retrieve specific trades using customizable filters (currencies, exchange rates, regions, dates).

- The FXMS shall be able to generate different types of reports (PnL, trade history, ...).

Chapter 10

Non-Functional Requirements

- Deployment: The system shall be deployed on Windows 10.

- Delivery Time: The system shall be delivered by the end of the current year.

- Performance: The system shall be able to execute a trade in a short time (50 trades per second).

- Availability: The system shall be available between 6am to 6pm. Bugs shall be resolved within 30 minutes maxmimum in those hours.

- Security: The system shall have role-based access control to manage users access to data (such as identity of customers, PnL, ...) and there should be strict access control to the system.

- Reliability: The system shall be reliable and available 99.9% of the time.

- Usability: The system shall be easy to use and user friendly.