

CZ3002 LAB PRESENTATION



MEET THE TEAM



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AGENDA



Introduction



Design for Maintainability



Software Quality Assurance



Project Management



Risk Management

1. Introduction



Problem Statement

General Target Audience

Student Budget

Closed Platform





An NTU initiative created by Team Zenith

**E-Commerce Platform for students and
staff of NTU to buy/sell their old textbook
and belongings**

OVERVIEW



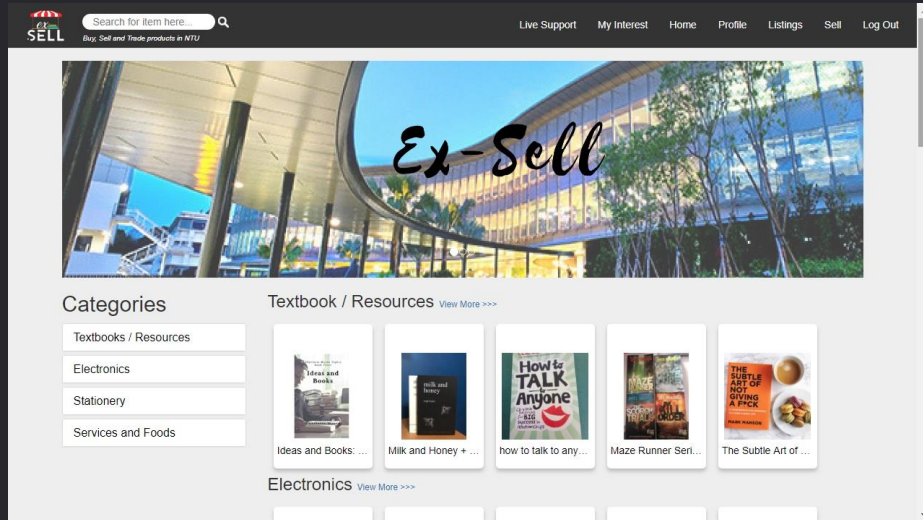
Account

Listing

Interest

Live Chat

Web Application



Create Product Listing



View Product Listing



Express Interest



Request live support

2.Design for Maintainability



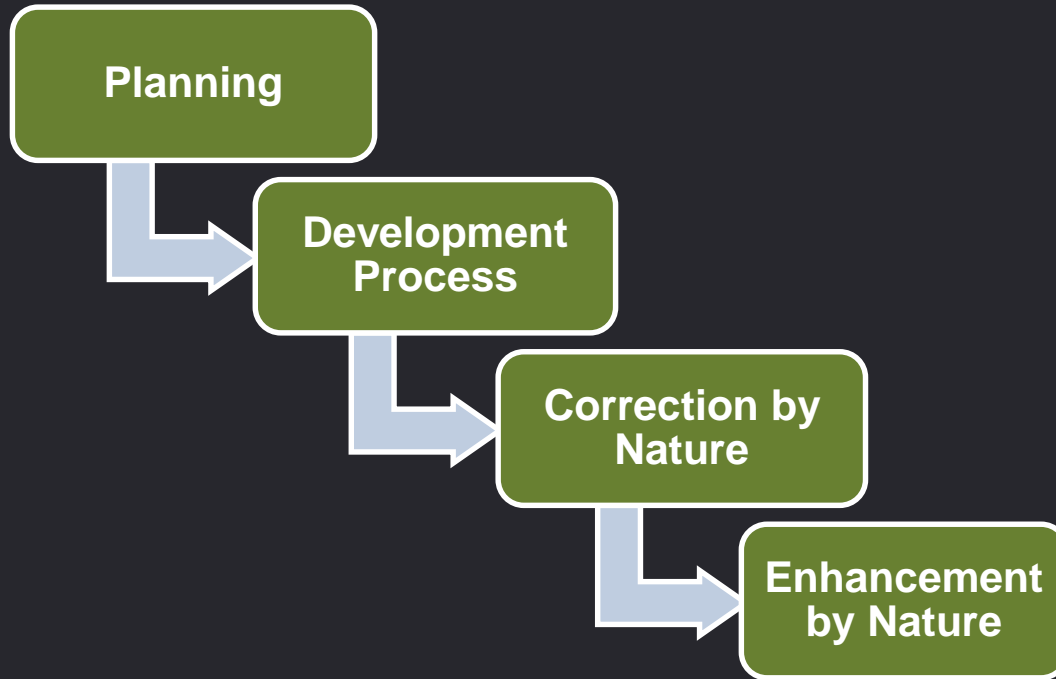
20% of effort is spent on development,

While effort spent on maintenance is

80%



DESIGN STRATEGIES



PLANNING

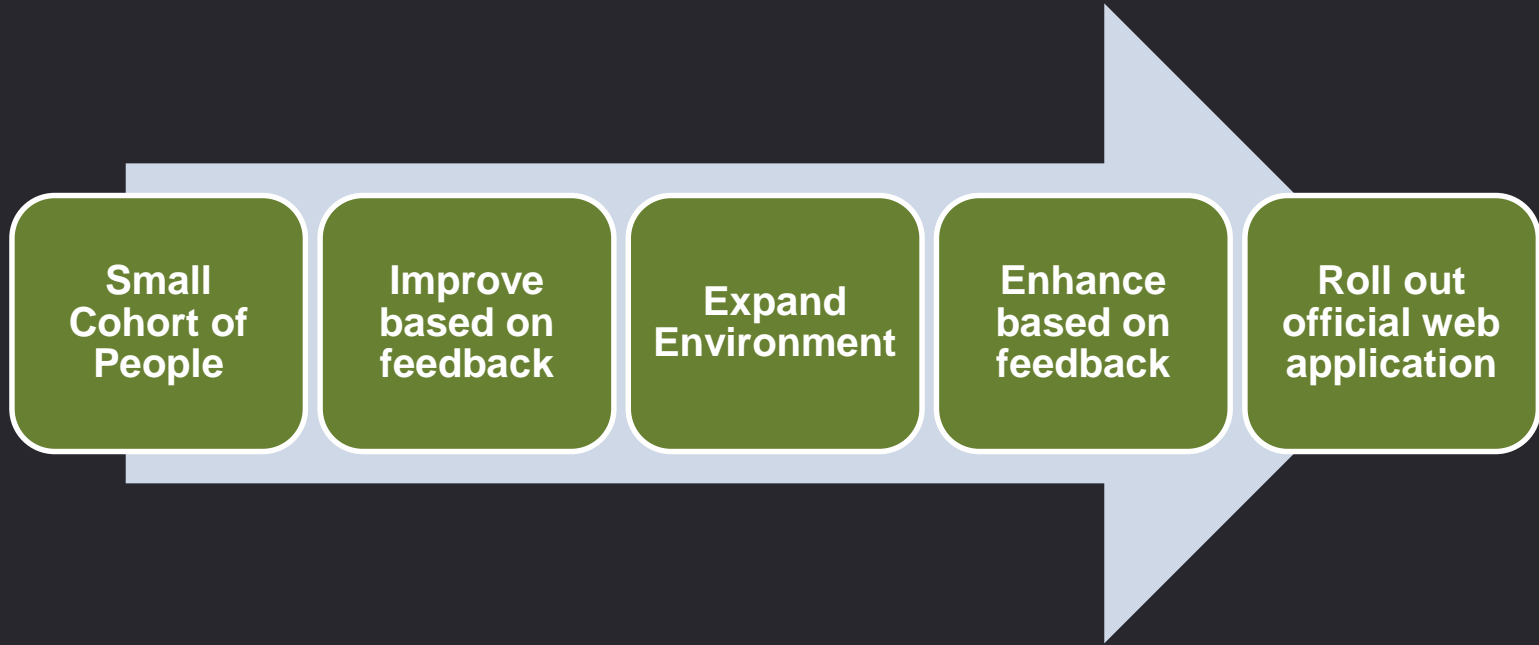
Scalability

**3 Layer
Architecture**

Security

DEVELOPMENT PROCESS

(Test-Driven Environment)



CORRECTION BY NATURE

Corrective Maintainability

Fault detection done through testing

Preventive Maintainability

Features implemented in atomic manner,
each feature tested independently, error
detected easily

ENHANCEMENT BY NATURE

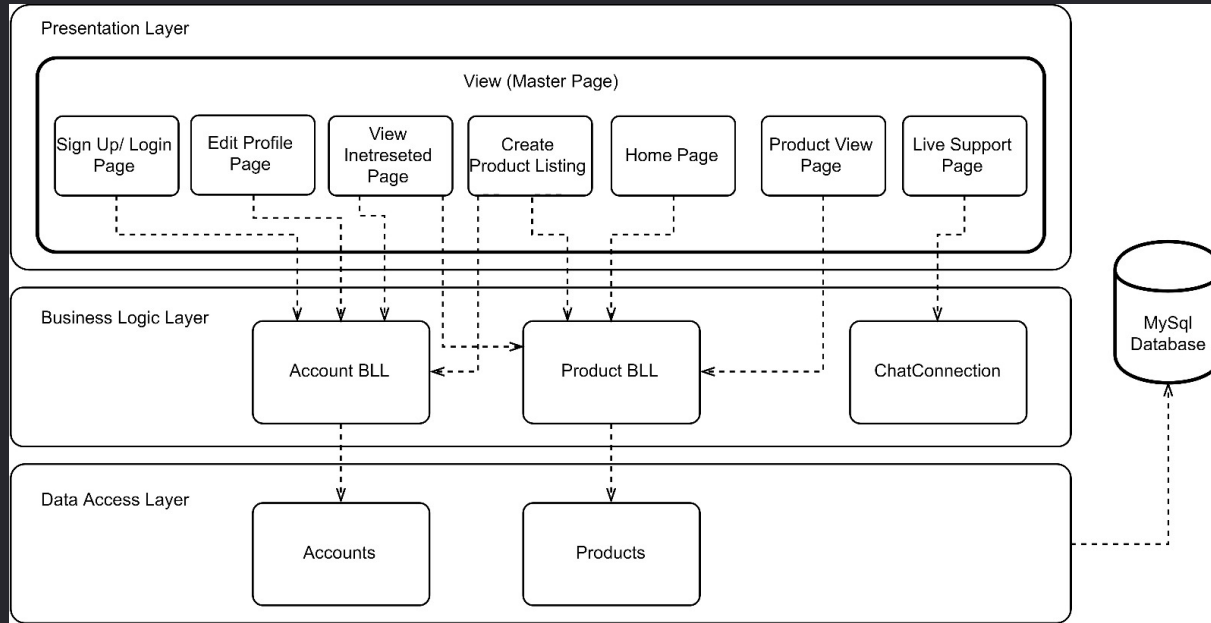
Adaptive Maintainability

Can be easily adapted to a new operational environment

Perfective Maintainability

After product delivery, quickly detect an error and correct it, reducing maintenance costs and time required

ARCHITECTURAL DESIGN PATTERN



SOFTWARE CONFIGURATION MANAGEMENT TOOLS



STANDARDS

The quality management system under which the Ex-Sell E-Commerce is created is based on the following standards:

- ❑ IEEE STD 730-2014

- ❑ ISO 25010

- ❑ ISO 12207

CMMI MODEL LEVEL 2

Software Configuration Management

Software Quality Assurance

Software Project Tracking &
Oversight

Software Project Planning

Requirements Management

3. Software Quality Assurance

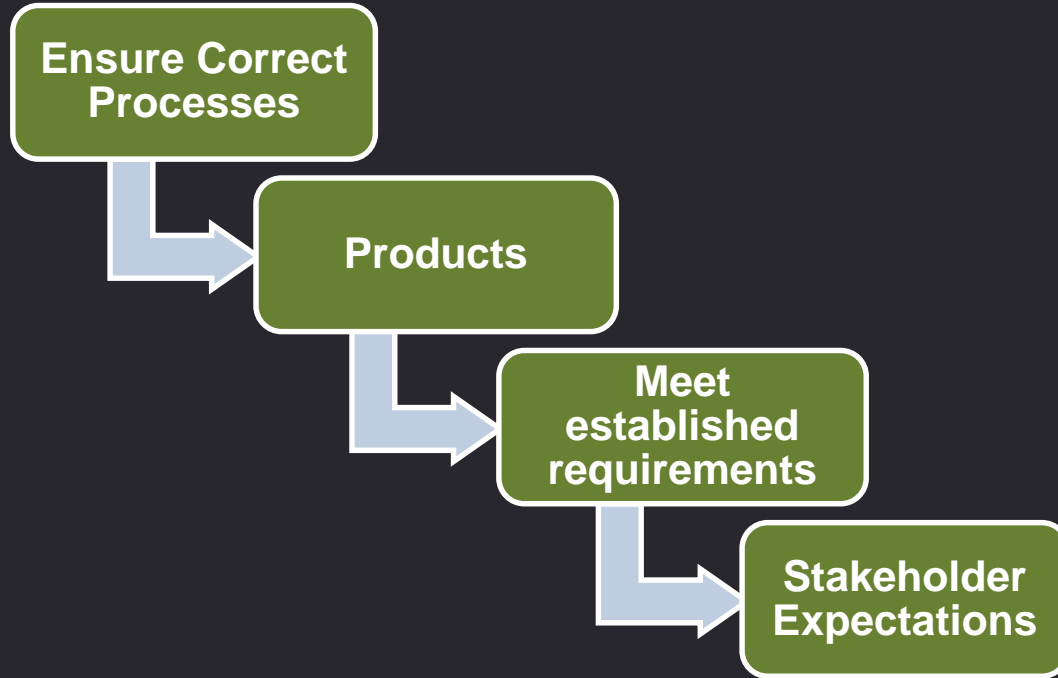


OBJECTIVE

Software Quality Assurance ensures that Ex-Sell meets and complies with defined or standardized quality specifications



OBJECTIVE



ACTIVITIES



Quality Assurance

IEEE Std 730-2014,
ISO 25010 & 12207



Quality Planning

Setting Process &
Product Assurance
Standards, Practices,
Conventions and
Metrics



Quality Control

Weekly Meeting &
Monitoring/
Inspecting

REVIEW



Management Reviews

Monitor Progress, Status of Plan & Schedule, Requirement & System Allocation and Effectiveness Evaluation



Technical Reviews

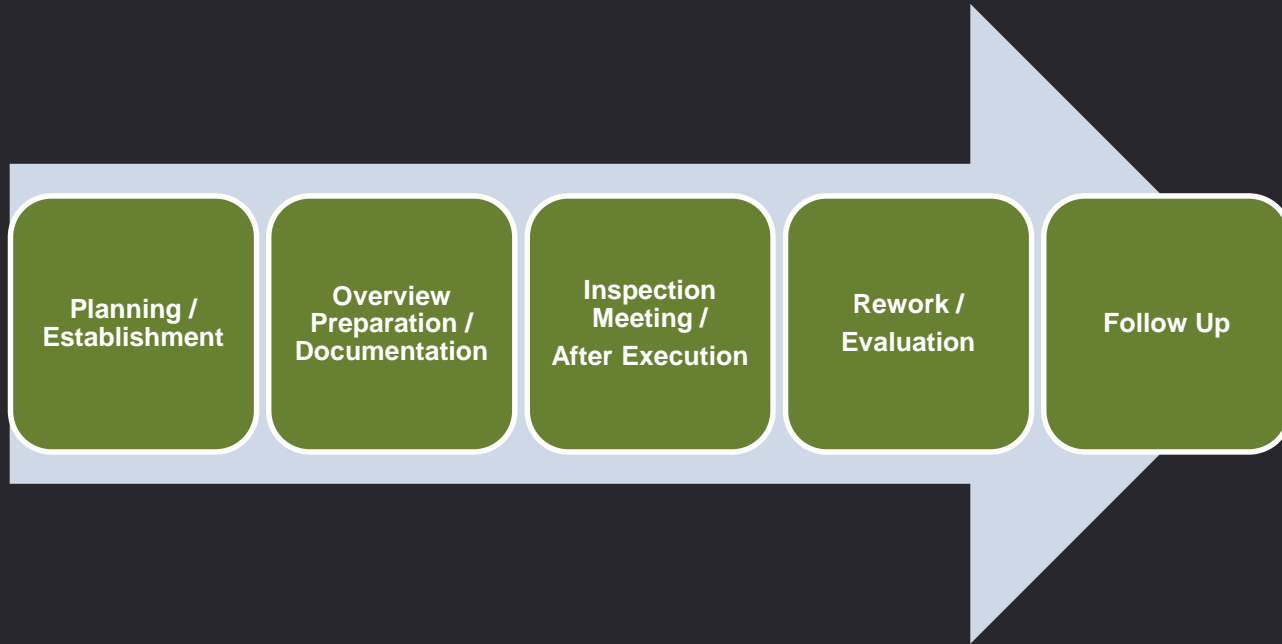
Determine suitability, identify discrepancies from approved specs and standards



Audit

Provide independent evaluation

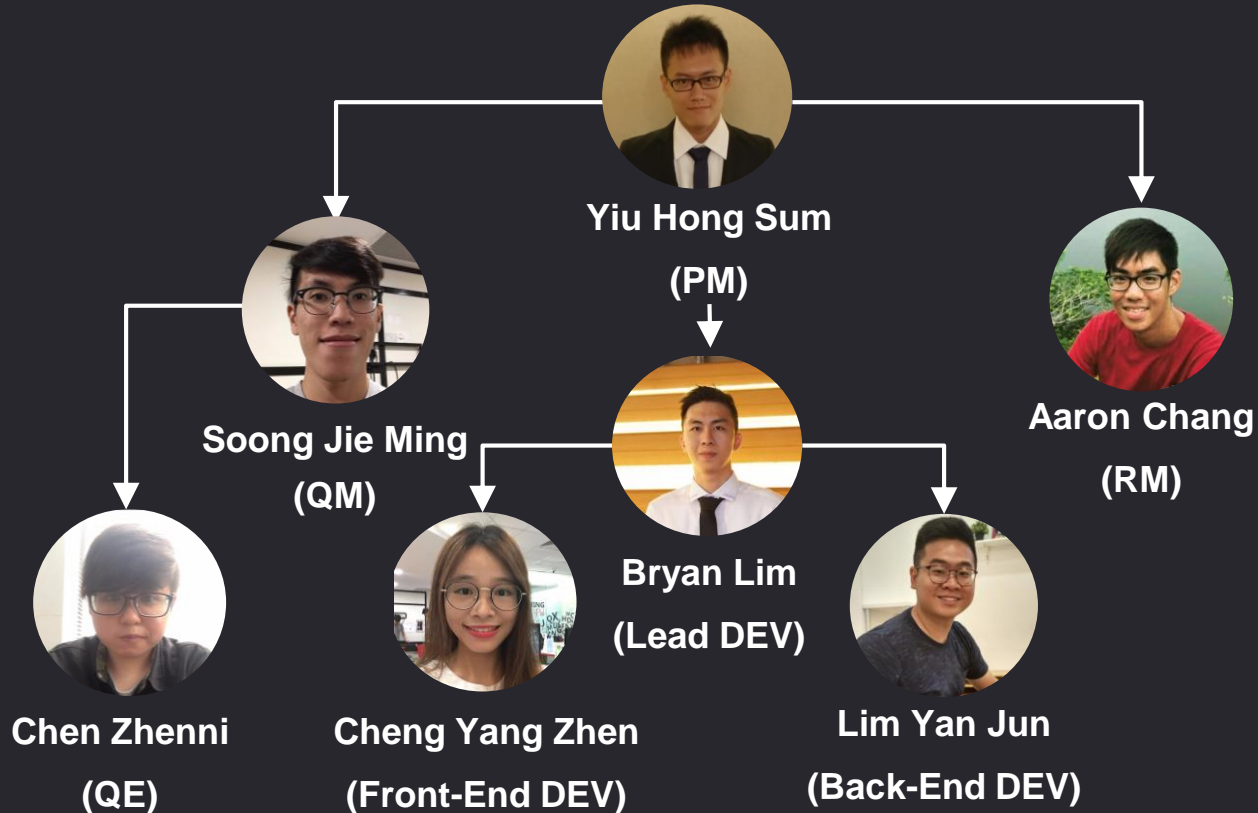
SQA PLAN FLOW



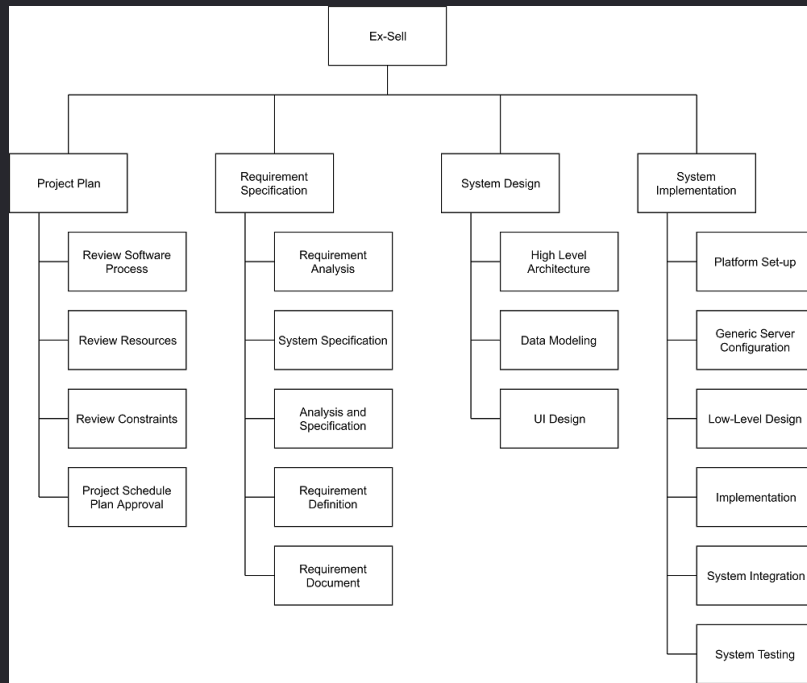
4. Project Management



PROJECT ORGANISATION



WORK BREAKDOWN STRUCTURE



PROJECT ESTIMATION

Unadjusted Function Point:

Characteristic	Low		Medium		High	
Inputs	3	× 3	3	× 4	0	× 6
Outputs	2	× 4	0	× 5	1	× 7
Inquiries	1	× 3	2	× 4	1	× 6
Logical Files	0	× 7	1	× 10	1	× 15
Interfaces	0	× 5	0	× 7	1	× 10
Unadjusted FP	20		30		38	
Total=L+M+H	88					

PROJECT ESTIMATION

Adjusted Function Point:

Influence Factors	Score
Data Communications	4
Distributed Functions	4
Performance	3
Heavily used	0
Transaction rate	3
On-line data entry	4
End-user efficiency	3
On-line data update	3
Complex processing	0
Reusability	4
Installation Ease	4
Operational Ease	1
Multiple sites	0
Facilitate change	3
Total score	36

Influence Multiplier

$$\begin{aligned}\text{Total score} \times 0.01 + 0.65 &= 36 \times 0.01 + 0.65 \\ &= 1.01\end{aligned}$$

Adjusted FP

$$\begin{aligned}\text{Unadjusted FP} \times \text{Influence Multiplier} &= 88 \times 1.01 \\ &= 88.88\end{aligned}$$

Lines of Code

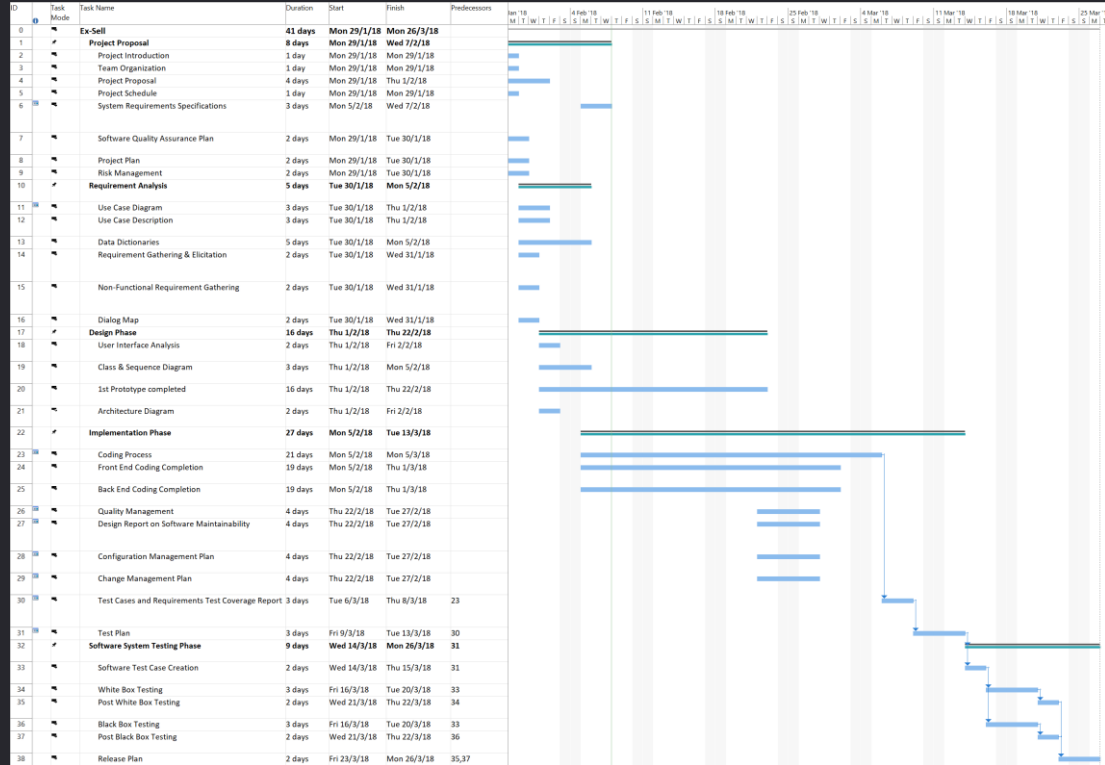
$$\begin{aligned}88.88 \text{ FP} \times 57 \text{ LOC/FP} \\ &= \mathbf{5066 \text{ LOC}}\end{aligned}$$

PROJECT ESTIMATION

Distribution of Effort:

1990's Industry Data	Work Package	Distribution	Top-Down Estimates	Bottom-Up Estimates
Preliminary Design 18 %	Project Plan	9%	11.88	12.6
	Requirement Specification	9%	11.88	12.6
Detailed Design 25 %	User Interface	7%	9.24	9.8
	Technical Architecture	11%	14.52	15.4
	Data Modelling	7%	9.24	9.8
Code & Unit Testing 26 %	Code & Unit testing	26%	34.32	36.4
Integration & Test 31 %	Integration & Quality Assurance	31%	40.92	43.4
	Extrapolated total effort		132	140
	2% for project management		2.64	2.8
	3% for contingency		3.96	4.2
	Total effort		138.6	147

PROJECT TIMELINE



TEAM COMMUNICATION

Weekly
Meetings

Video
Conferences



Project Documents
are updated on
Wiki

Source code
is tracked on Git

5. Risk Management



PURPOSE

*Risk Management provides the Ex-Sell
E-Commerce a consistent method to
manage risks
to ensure **SUCCESS***



PROCESS



**Risk
Identification**



**Risk
Analysis**

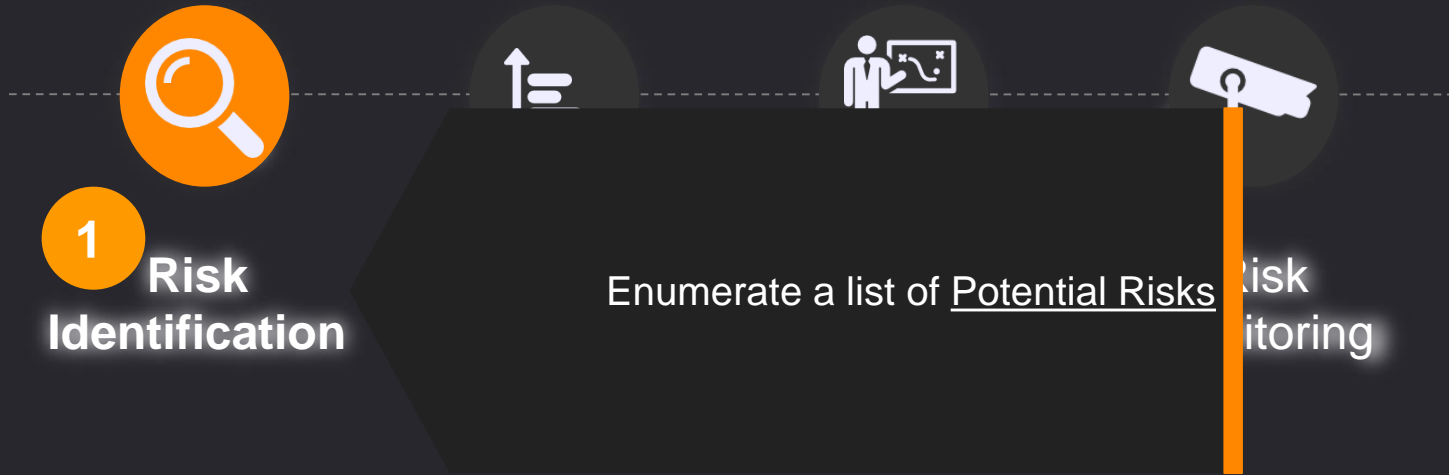


**Risk
Planning**



**Risk
Monitoring**

PROCESS



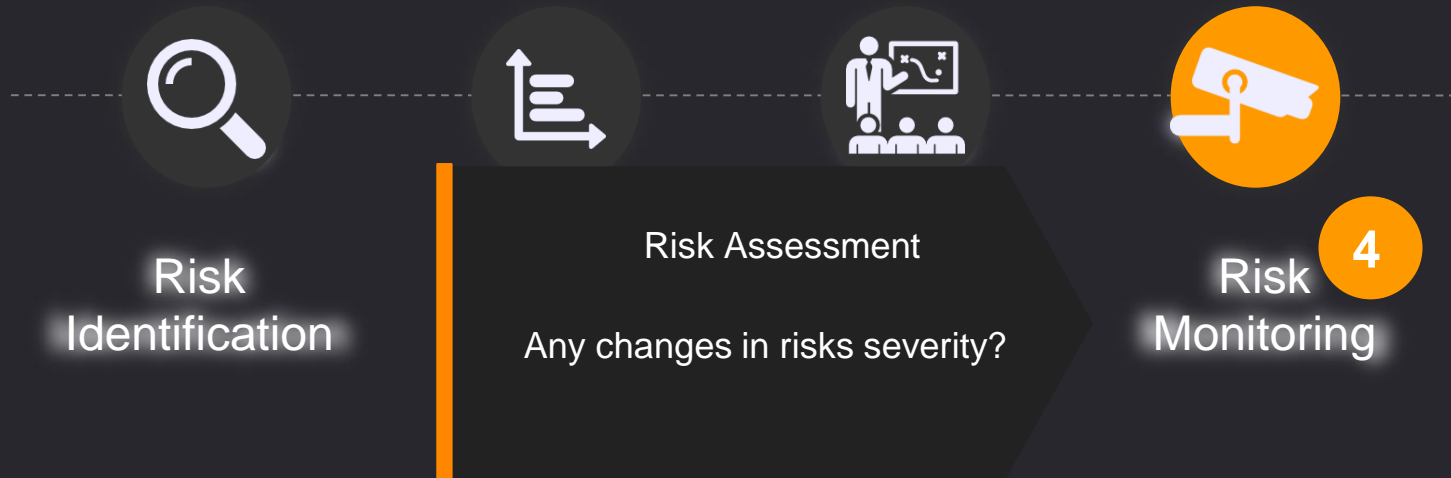
PROCESS



PROCESS



PROCESS



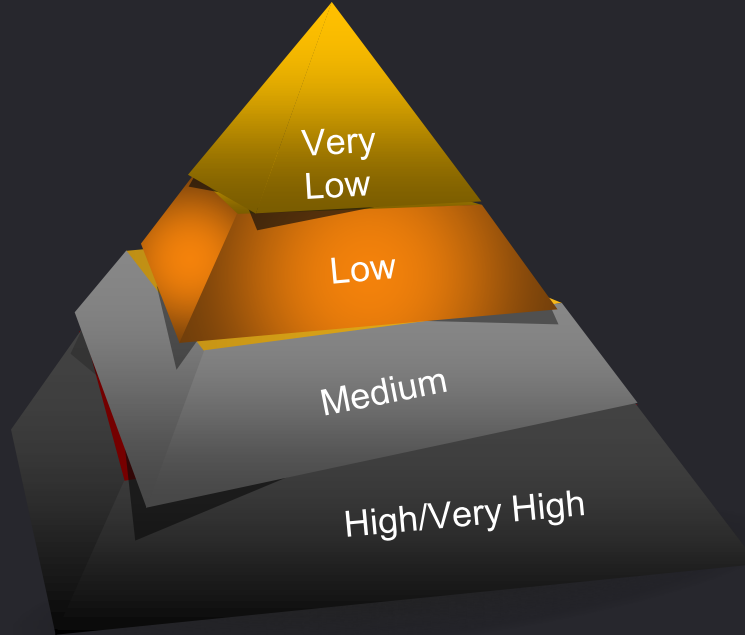
PROCESS



RISK IDENTIFICATION

- ❑ **Identify risks** that may affect project outcome, document them in the Risk Register
- ❑ The **Risk Register** includes the following:
 - ❑ **Unique identifier** for each risk
 - ❑ **Type** of each potential risk
 - ❑ **Description** of each potential risk event
 - ❑ Assessment of the **likelihood of occurrence** and the **severity of impact**
 - ❑ **Strategies** proposed for dealing with the risk

RISK ANALYSIS



RISK ANALYSIS



RISK MANAGEMENT MATRIX				
Severity Probability	Catastrophic	Serious	Tolerable	Insignificant
Almost Certain	EXTREME	EXTREME	HIGH	MEDIUM
Likely	EXTREME	EXTREME	HIGH	MEDIUM
Moderate	EXTREME	HIGH	MEDIUM	LOW
Unlikely	HIGH	MEDIUM	MEDIUM	LOW
Rare	MEDIUM	MEDIUM	MEDIUM	LOW

RISK PLANNING



1

Develop appropriate options and action plans to reduce the threats of specific risks to project objectives

2

Conduct reviews to develop strategies for responding to risks

3

Update the Risk Register with specification of proposed response plan for the occurrence of each risk event

RISK MONITORING



Weekly Meeting to
Update on Status



Review
&
Reprioritize Risk



Perform Regular
Test Run



Default First-
Response Actions
List



Proper
Documentation

RISK REGISTER

ID	Risk	Risk Category	Potential Cause(s)	Potential Response(s)	Probability of Occurring	Impact on Objectives	Grade	Risk Response Strategy
1	Cost Overrun	Financial	Purchasing Servers with more storage	Remove unnecessary expenses	Medium, as the database BWR currently has may not support the sheer data required to be stored for the implementation of the project.	Medium, the budget may prove to be more than sufficient in covering the costs of the extra purchases.	High	Mitigate Remove unnecessary expenses
2	Hardware not up to standard	Hardware	Vendor supplies faulty hardware	Get a replacement from the vendor	High, the hardware is bought from an external vendor, so we are unable to check the quality till hardware is received	High, it may lead to schedule overrun as hardware cannot be used.	High	Accept Get a replacement from the vendor in the fastest available timeframe
3	System not meeting the requirements	Communication	Requirements not fully understood	Re-clarify the requirements	Medium, there may be misinterpretation of the requirements	High, it will lead to schedule overrun if it is found out at a later stage (Eg. User Testing)	High	Mitigate Re-clarify the requirements

6. DEMO



THANK
YOU