UNIVERSITY OF KwaZulu-Natal

DEPARTMENT OF INFORMATION TECHNOLOGY (IT)
SCHOOL OF MANAGEMENT, INFORMATION TECHNOLOGY & GOVERNANCE

Applied Systems Analysis (ISTN3AS)
MILESTONE 2 (M2) – SYSTEMS IMPLEMENTATION

M2 Specification Contents

1. ASSESSMENT

Overall Contribution of M2 to ISTN3AS: **30%**
Note: A sub-minimum of 50% is required in M2 in order to obtain a pass for ISTN3AS

Milestone 2 Mark Breakdown	
User Story Application	20%
Final Presentation	20%
"Live" System Demonstration	60%

2. DUE DATES

Milestone 2 Due Dates	
Submission of physical M2 document (handed in to secretary)	**Wednesday, 8th May** – at the latest by **9h00**
Submission of M2 system and all system related documentation for the entire semester into Group Mapped Drive	**Wednesday, 8th May by 8h30** (Access to Mapped drives and Sql Server will be closed at 8h45)
Presentation of M2 System	**Wednesday, 8th May** onwards (starting at 9h00)

3. GENERAL INSTRUCTIONS

This document contains the recommended requirements and minimum expectations for M2. It is in every group's interests to analyse these requirements and expectations as set out in this document.

M2 is all about implementation of requirements that have been negotiated with the client. While these requirements form a basic understanding of the system objectives, it is quite acceptable to make minor changes to the established requirements, in case there has been a misunderstanding with the client. The idea is that each group should try and complete as much of the system coding as possible so that as many features as possible can be demonstrated to the client. **In many cases, the client may not be available for constant interaction with the group. In such cases, the group's mentor will play the role of the system client. There should be at least 2 demonstrations of the evolving system to the client/mentor prior to the final system presentation**. These demonstrations provide the client with an opportunity to interact with the system and provide feedback regarding any possible modifications.

Assessment of the implementation component of the system will be conducted by a panel of staff members as well as the external moderator for the course.

The actual code is NOT marked. Each group should therefore present and demonstrate their project to the panel in a coherent and logical manner that best showcases the system's functionality, usability, performance and reliability.

4. DEVLOPMENT ENVIRONMENT

All systems will have to be developed as **Front-End** systems using the following technological infra-structure:

- Development language : Visual Basic.Net; C#
- Development IDE : Visual Studio 2015
- Database Server : Sql Server 2014 (IS&T server at UKZN)
- Database Client : Sql Server 2014 Management Studio

Note: This final system has to be developed using a client-server network and the main database underpinning the Major Project (MP) system must reside on one of the Sql servers provided in:

- Westville (\\wstistweb2\ist3) OR
- Pietermaritzburg (\\major.istn.ukzn.ac.za)

The working and final version of the actual system, consisting of the system code, will have to be stored on each group's mapped drive and not on any of the group's member's home drives or their personal flash disks. While it is recommended that back-up copies of the system be kept at all times, the main copy of the system has to be stored on the group's mapped drive. ***The default arrangement for the final system presentation is to copy the system from the mapped drive onto the presentation machine so that it can be demonstrated to the assessment panel***.

5. USER STORY APPLICATION

Much of the detail regarding this aspect of implementation will be discussed in class. However, an overview is presented in order to create an initial awareness.

The MP is being developed using an agile approach to software development. Agile Methodology is underpinned by the idea that the highest priority is attached to user acceptance of the system. In order to achieve this, the user (mentor/client) has to have constant interaction with the developing system. This interaction is essentially to ensure validation of each system feature or correct interpretation of the user stories that underpin the system. A quick overview of user stories is provided here:

A ***user story*** is simply a quick description of the feature/functionality that the intended user of the system requires. The language used in the "write-up" of a user story is the language of the user and not the developer. Hence there should be no reference to any technical jargon. The user story outline/template has the following format:

As a <*type of user*>, **I want** <*some goal*> **so that** <*some reason*>
OR

As a <*role*>, **I want** <*goal/desire*> **so that** <*benefit*>

e.g.1: **As a** *customer*, **I want** *to search the product list* **so that** *I could get a more detailed description of a specific product*

e.g.2: **As a** *manager*, **I want** *a listing of all products that are below the Minimum order quantity level* **so that** *I can order more of these products*

e.g.3: **As a** *cashier*, **I want** *to log-in to the system* **so that** *I could process a sale*

Each user story has a set of acceptance criteria that is negotiated between the developer and the client. The acceptance criteria serve as a customer validation test to determine if the user story has been successfully implemented. An example of a set of acceptance criteria for the user story depicted as Example 3 above, is as follows:

- User types in correct username and password - the system responds with a welcome message and opens up the feature that will allow the processing of a sale
- User types in incorrect username and correct password – the system responds with the message incorrect username and does not allow open any processing features of the system
- User types in correct username and incorrect password – the system responds with the message incorrect password and does not open up any processing features
- User types in incorrect username and incorrect password – the system responds with the message incorrect username and incorrect password

Typically, each user story has to have at least **3 acceptance criteria**. The developer is at liberty to add more test criteria to ensure a perfectly working system.
Each user story is assigned to a **pair of programmers** together with an approximated starting implementation date as well as a finishing implementation date. Each user story is allocated a **unique number** as well as a **unique title**. While the user story is being developed, it is regarded as part of the system "**backlog**". Hence a user story consists of the following:

- The type of user/role player for the user story
- The actual user story
- The title of the user story
- A unique user story number
- A set of acceptance criteria
- The names of the group members who have been allocated the task of developing the user story
- The approximate starting and ending date of the user story implementation
- An indicator of the user story status – i.e. *completed* or *backlog*

During the first week of the implementation phase, each group is required to have an implementation "kick-off" meeting where you compile your set of user stories that will underpin the entire system. The duration of the "kick-off" meeting should be approximately 60-90 minutes. During this time, you are expected to document all your user stories using MS-Word. After completion of the user stories, you are required to set up a meeting with your mentor to discuss the user stories. You may also use this opportunity to finalise your system analysis and design models so that any areas of concern are addressed between the group and the mentor. Once there has been mutual agreement with your mentor that all

aspects of system functionality have been adequately covered, you are then in a position to proceed with the system implementation.

The User Story Application Specification

As part of the process of getting to know the VS 2015 implementation environment, it has been decided by the MP co-ordinators that each group will be required to develop and present an application that will be used to store the details of the user stories. The application will be developed using VB.Net, Sql Server and VS 2015. This application is separate from the main system being developed. The requirements of the user story application will be discussed as a series of practical exercises and will form part of the practical component for the ISTN 3AS course. The user story application is part of the assessment structure for M2 of the MP and each group is required to do a quick demonstration of the user story application as part of the final M2 presentation.

6. FRONT END DEVELOPMENT

The front end system should satisfy as many of the functional user requirements as possible. While there is a bit of compromise in terms of the system completeness, all main functional requirements have to fully developed and demonstrated.

The overall system focus is to demonstrate how the system will support managerial decision making.
The implementation plan is that the transaction processing data required to underpin the decision making capability of the system, is efficiently captured by the current front system and demonstrated as part of the M2 deliverable.
The system will be completed in M3 (2nd semester, ISTN3SI), during which time all the transaction processing data that has been captured will be used to generate as many managerial decision making reports as possible.

Thus following requirements for the front end system have been identified:

Compulsory Requirements

- An intuitive menu/navigation system using accepted user interface design principles
- Access control (typically logins/passwords and differing account rights on the front-end application)
- Database connectivity (the system must demonstrate the ability to read from and write, update and delete from a single database)
- Transaction processing/data capture that will involve database interactivity – this includes dynamic database updates to reflect transaction processing
- Confirmation of database processing – any transaction processing activity must be concluded with a confirmation message that may be presented as some form of output
- Database Search – Search functionality must be demonstrated in as many contexts as possible
- Error handling (typically designing forms to minimise the possibility of user input error or ensuring system recovery from an error as a consequence of inaccurate user input)
- Primitive reports that display meaningful data in reporting format

Optional Requirements that may be deferred to 2nd Semester (as part of the ISTN3SI module)

- Producing reports that facilitate enhanced managerial decision making
- Context-sensitive help functionality

Note: If time permits, groups are at liberty to try and incorporate the optional requirements in the final system for the M2 demonstration as part of ISTN3AS. The assessment structure for M2 will incorporate an assessment category that will reward efforts that have gone "above and beyond" the compulsory processing requirements for M2.
If there are certain system features that have not been completed, the group has to make this information readily available. It is important to note that if any of the main features have not been developed, the group runs the risk of incurring severe assessment penalties.

7. M2 DOCUMENTATION (printed and electronic submission on or before 6th May 2019 at least by 8h30)

The documents required for M2 do not form a direct component of the M2 assessment structure. However, this document will be used to provide the assessment panel with an indicator of the quality of work that you have produced or attempted to produce. It will also be used as part of the moderation process. The M2 documentation consists of **3 aspects**

i. Group and System Details

Group No	Group/System Name

ii. **The estimated individual contribution** column will reflect an intuitive assessment that is made holistically by the entire group for each group member. This assessment should be a consensus based value where the entire group agrees on the amount of effort that individual group members have made in order to ensure the success of M2. In most cases, where the group has worked as a well organised team, this assessment value will reflect equal values for all group members. However, in cases of exception where some group members may have contributed more/less than other group members, then this should be appropriately reflected. The percentage sum of the individual contributions must add up to 100.

No	Group Member's Student Number	Group Member's Name & Surname	% Estimated Contribution to M2	Signature
		Total	**100%**	

iii. User Story Summary (A summarised version of the user stories underpinning the system development effort. Group Member 1 & 2 is a reference to the 2 programmers allocated to this user story. An indication of whether the user story has been fully completed is required)

User Story Number	User Story Title	Group Member 1	Group Member 2	Completed (Y/N)
1				
2				
……				
……				
N				

Percentage of User Stories Completed: _____

Minimum System Requirement: A minimum requirement is that at least **70%** of all user stories have to be fully completed. However, in the case where the system is deemed to be of a lesser scope than other systems, the minimum requirement is that all user stories have to be fully completed. If this requirement regarding user stories completion is not met, then the group runs the risk of failure for M2.

8. FINAL PROJECT PRESENTATION (Approximately 25-30 minutes)

8.1 System Overview (5-7 minutes – FOCUS IS ON QUICK AND DYNAMIC)

It is customary at the end of a major project to reflect on the work done, identify project strengths and weaknesses and to look to the client's future.

Note: This is your group's final chance to convince the client that the final product being handed over really does meet the requirements and solves their "real world" business problem. It is therefore a persuasive presentation, rather than a passive report-back!

In order to achieve this, a PowerPoint presentation of approximately 5-7 minutes is required. The presentation should include the following:

- Brief client background – the DFD ***may*** be used to supplement the explanation
- Brief explanation of the group's strategy/approach to the project
- Overview of the MAJOR requirements of the system
- An illustration of the final system physical ERD showing all attributes
- Overview of the expected benefits of the project to the client, both short- and long-term
- Project highlights and achievements
- Project lowlights and lessons learnt
- "Where to now?" for the client, i.e. can you convince the client to hire you for future work?

As usual, the presentation should be conducted in a professional manner. Issues such as dress, presentation skills, design of slides/visual aids, overall professionalism etc. will be taken into account.

Note: In a "real-world" environment, only the best speakers in the group would typically make the presentation. Use this as an opportunity to set the scene for your system demonstration by creating an "air of excitement and expectation" with regards to the actual system. In the interests of encouraging participation and skills development, a minimum of two (2) group members MUST be involved in the presentation. ALL group members are however, expected to take part in the question and answer session at the end of the presentation.

8.2 System Demonstration (Approximately 12-15 minutes)

The final system demonstration will follow IMMEDIATELY after the system overview presentation. This is a "live" demonstration of the system lasting a maximum of 15 minutes. The "live" demonstration will include a quick presentation of the user story application that will underpin the requirements for the actual system.

The final system demonstration should be FULLY SCRIPTED (think: a movie script) and designed to illustrate how the major functions of the application satisfy the client's requirements. At this juncture staff members are at liberty to interrupt your presentation with questions. The system presentation should be as interactive as possible.

Every input and output in the demonstration should therefore be carefully designed and rehearsed beforehand so that nothing takes the demonstrator by surprise. Do NOT enter "gibberish" data when demonstrating, i.e. have every test case written down in your script and ready to enter onto the system during the demonstration.

It is also highly advisable to **have your database pre-populated with meaningful data** that allows for convincing and professional interaction with the system. It is also unwise to try to be funny with the data in the database (particularly names of customers, streets, organisations etc.). This detracts from the overall professionalism of the demonstration.

8.3 Question and Answer Session (Approximately 7-10 minutes)

The presentation will be followed by an in-depth Q&A session, where groups are expected to use their "live" project to answer questions on the work done during the milestone.

The panel will typically ask the group to demonstrate specific sections of the project or to prove how a certain requirement (as specified in the documentation) has been met. The link between analysis, design and implementation is of the utmost importance.

Remember at all times that this is a showcase of your efforts throughout the semester and that the actual code is not seen by the panel. Plan your demonstration carefully. The idea is to optimise your presentation time so that you are able to make the maximum impact on your audience. Do not "labour" your presentation with trivial detail. Whilst you are not expected to conduct yourselves as entertainers, the assessment panel will appreciate a system presentation that provides for compelling viewing. You could try and incorporate an "entertaining flair" to your presentation. Use the main functional and user interface features

to showcase your system, thereby enhancing your chances of obtaining the best possible mark.

Note: Groups are STRONGLY advised to conduct a test run of the presentation and demonstration in order to anticipate and deal with any problems that may arise.

Appendix A: Major Project Work Breakdown Structure

Week No	Dates	Main Project Deliverables	User Story Deliverable
1	2nd – 5th April	ERD finalised; Physical implementation of Sql Server database for MP	Final agreement on the set of User Stories; Launch of the User Story Application (USA)
2	8th – 12th April	All menu items that record and display data should be functional	Database implementation of the USA
3	15th -19th April	The core processing (generation of new data) activity of the system should be finalised	All USA functionality to be completed
4	22nd – 24th April	Search feature to be implemented	Menu design and recording of User stories should be finalised
5	25th – **26th** April	Peripheral Processing (maintenance of database tables; error checking; group based testing of system; Report Generation; **Writing of Project Management Test**	USA should be extended to include optional extras
6	27th – 28th April (Weekend)	Preparation for Programming Test	
7	**29th April**	**Writing of Computer Programming Practical Test**	
8	30th April – 3rd May	1st Working version of the MP should be demonstrated to group mentor	USA should be fully tested
9	6th – 7th May	2nd Working version should be demonstrated to group mentor; all test related activities should be completed; create error handling routines; create a few basic reports	Assist with preparation of MP documentation as well as scripting of final system presentation; create a few basic reports
10	8th May	***All Mapped Drives and Sql Server Access will be disabled on both campuses at 8h30;*** These resources will be made available only during the time of the Group M2 Presentation	
11	8th -10th May; 13th -15th May	**M2 Final Presentations**	

*****Please take note of the following compulsory requirement:**

On the main page of the course website, there is a document named Major Project Schedule (MPS). All groups are required to download this document and submit the MPS document into the submission folder **on a weekly basis**. The submission must be made by the group's representative only. The purpose of the MPS is as follows:

- Indicate whether the implementation effort towards the Major Project system as well as the User Story application is on track as specified in the Major Project Work Breakdown structure specified in the table above.
- Indicate whether all teams members are contributing towards the M2 deliverable
- Indicate whether the team is on track to deliver the system by the 8th May

Each Major Project group is expected to make 5 submissions in total. If any of these submissions are not made timeously, a 10% penalty will be imposed when the group's final mark is allocated.