CHAPTER IV
SYSTEM DESIGN FOR VALUATION PROCESS

The design phase of this research mainly implements business processes improvement which does not cover technical design such as database, class diagram, application diagram, and user interfaces. So the deliverable of this chapter is primary design specification which covers improvements of system and enterprise modelling, and some sketched user interfaces that users approve to use.

4.1 Improved system modelling

Major problem of the old diagram is duplicate processes and data. The improved system contains many changes which are;

- **Create Job Database**

    'Job List' and 'Job Summary' contain duplicate data in many fields. So normalising and transforming them from spreadsheet to database called 'Job Database' can centralise data access that eliminate conflict and redundant data. It allows parallel data access that can reduce waiting time.

- **Re-arrange step of job insertion into database**

    Insert job into database at quotation creation instead of insertion after payment complete to add data into database as soon as it comes in.

- **Continuously update database**

    The database should be updated continuously to provide the latest data which is always ready to be accessed by all staff in the company.

- **More systematic workflow**

    Providing more processes, nodes, and arrows are needed to help the improved processes become more systematic and efficient.

- **More pre-defined data**

    Placing pre-defined data into some specific fields of documents to facilitate users to recheck data instead of manually key-in such as automatic placing client's information into quotation or job order document.

4.1.1 Basic Flowchart

The basic flowcharts of the improved system cover the same scope of work compared to old flows. However, the prominent changes in the new flows are;

- Use 'Job Database' instead of 'Job List' and 'Job Summary', and continuously access database to synchronise data to keep it up to date.
- Transform symbol manual input ( ) to process ( ) which indicates that the manual processes are transformed to processes in the information system (computerised system)

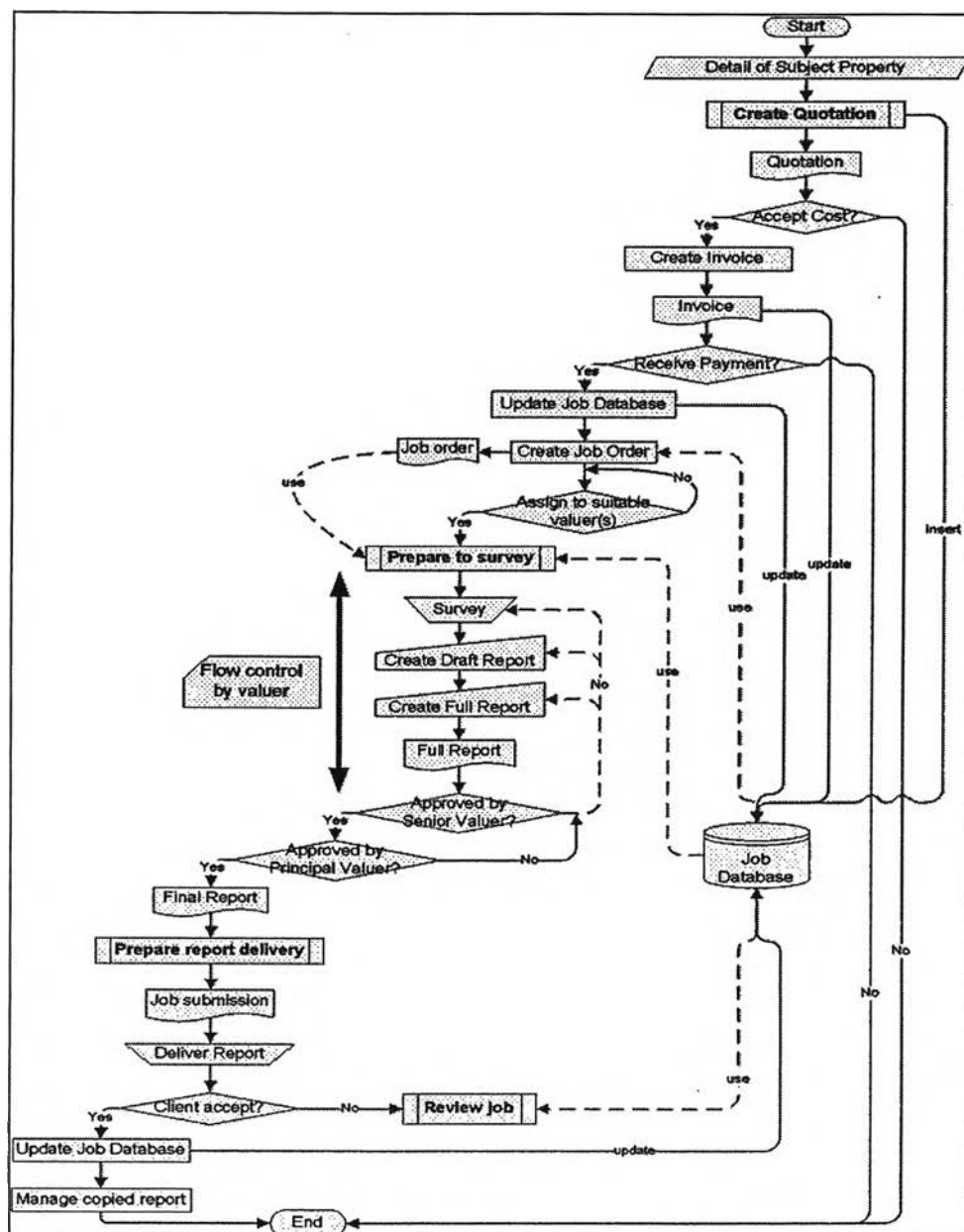The basic flowchart of all system can be redrawn as figure below.

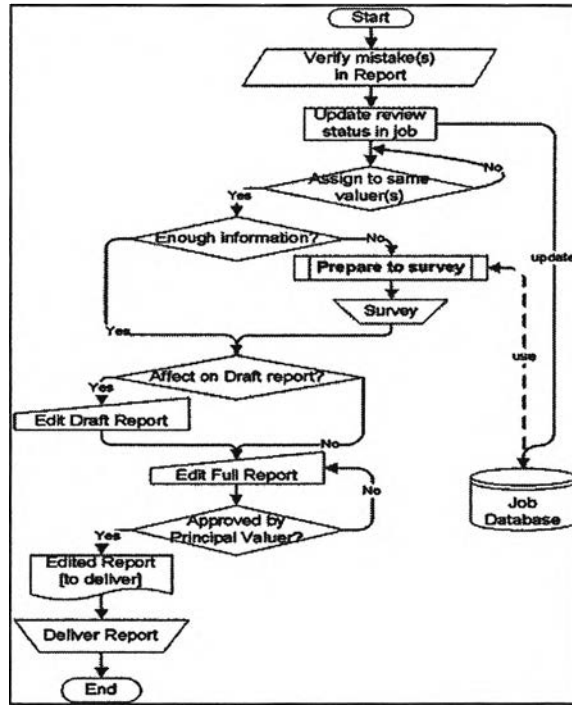Figure 4.1: Basic Flowchart of normal job [improved system]

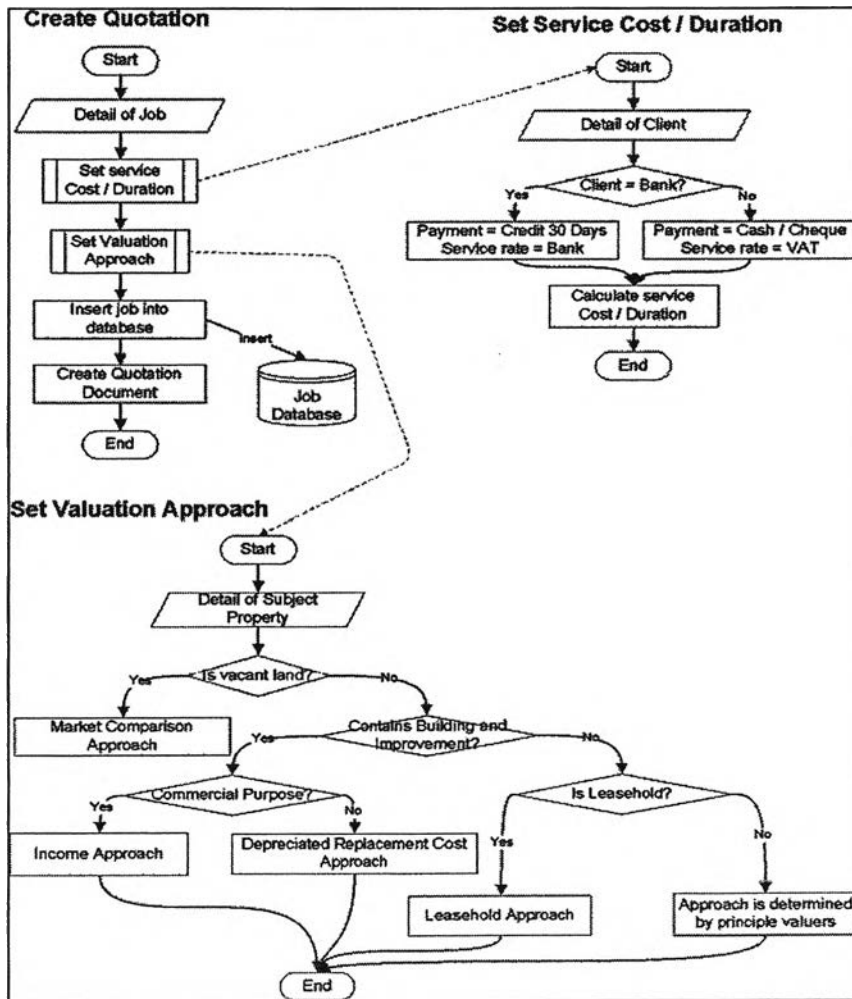Figure 4.2: Basic Flowchart of review job [improved system]

Figure 4.3: Sub-system of create quotation [improved system]

Reasons for job insertion in create quotation instead of payment complete are;

- Rate of cancelled job is very low; it is better to eliminate analysing process by inserting it as soon as the first analysis is finished.

- References; the old system does not collect cancelled job in the shared document. It is better to collect all the requests in the database to analyse client's behaviour.
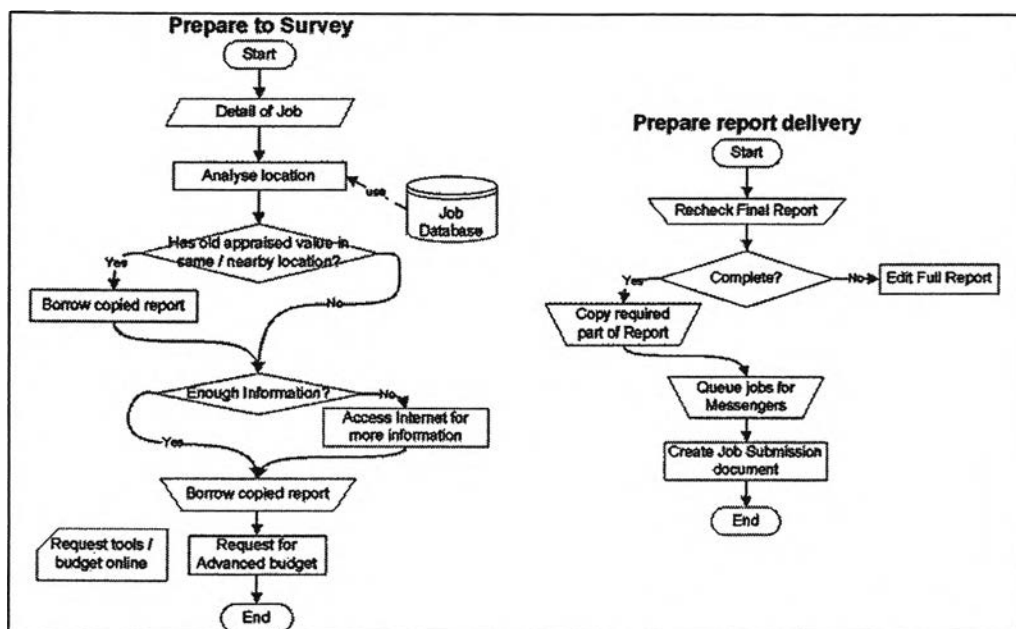

Figure 4.4: Sub-system of prepare to survey and report delivery [improved system]

4.1.2 Use Case Diagram and Description

The improved use case diagram combines Job list and Job Summary into a unique 'Job database', so seeing that all users in the system access data from same source. Moreover, it is added 'include' stereotype that presents dependency between actions to control work flows. The new system will run more systematically.

Finally, the new diagram reduces nodes from 23 to 21 use cases. The use case diagram can be drawn follow UML standard as figure 4.5 below.

The 'Use Case description' describes detail of each use case which includes use case name, roles, entry / exit condition, and flow of work. These tables are provided for more understand in business logic of programmers.
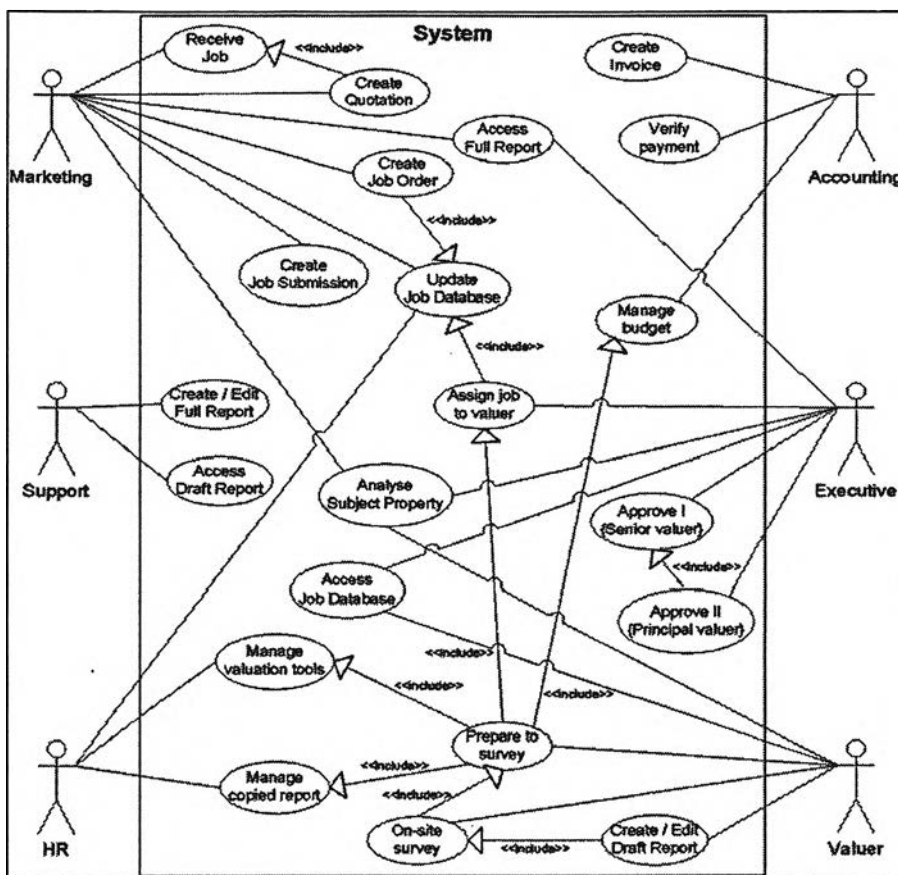
Figure 4.5: Use case Diagram [improved system]

Table 4.1: Use Case description [improved system]

Use Case Name	Receive Job
Participating actor	Marketing
Entry Condition	Request for appraisal from client
Flow Event	• Client sends detail of job to marketing department of the company
Exit Condition	Job received
Use Case Name	**Analyse Subject Property**
Participating actor	Executive, Marketing, Valuer
Entry Condition	Detail of property is needed
Flow Event	• Analyse Subject Property
Exit Condition	Analysed detail of property
Use Case Name	**Create Quotation**
Participating actor	Marketing
Entry Condition	Pass 'Receive Job' use case
Flow Event	• Analyse Subject Property • Calculate cost / duration using suitable rate • Select suitable valuation approach • Create Quotation
Exit Condition	Quotation is sent to client
Use Case Name	**Verify Payment**
Participating actor	Accounting
Entry Condition	Client accept cost
Flow Event	• Client inform detail of payment • Accounting verify payment
Exit Condition	Payment is valid

Use Case Name	Create Invoice
Participating actor	Accounting
Entry Condition	Payment is valid
Flow Event	• Create Invoice
Exit Condition	Invoice is created
Use Case Name	**Update Job Database**
Participating actor	Marketing, Human Resources
Entry Condition	Some update about jobs are available
Flow Event	• Gather detail of job • Add / Update record in Job database
Exit Condition	Updated Job Database
Use Case Name	**Create Job Order**
Participating actor	Marketing
Entry Condition	Job database is updated by marketing Pass 'Update Job Database' use case
Flow Event	• Gather detail of job from Job database • Create Job Order document
Exit Condition	Job Order is created
Use Case Name	**Access Job Database**
Participating actor	Executive, Valuer
Entry Condition	Require detail of job
Flow Event	• Retrieve job from database • Select job from search result • View detail of job
Exit Condition	Detail of job is retrieved and used
Use Case Name	**Assign job to valuer**
Participating actor	Executive
Entry Condition	Pass 'Update Job Database' use case
Flow Event	• Receive Job Order document • Analyse Subject Property / Job database • Assign job to suitable valuer • Marketing update Job database
Exit Condition	Job is assigned to valuer / Updated Job database
Use Case Name	**Manage budget**
Participating actor	Accounting
Entry Condition	Valuer prepare to survey and request for budget
Flow Event	• Request budget from accounting • Accounting approve reasonable money
Exit Condition	Valuer receive budget
Use Case Name	**Manage copied report**
Participating actor	Human Resources
Entry Condition	Request for copied reports for reference
Flow Event	• Valuer borrow copied reports from HR • HR manage borrow-return report history
Exit Condition	Valuer receive selected copied report
Use Case Name	**Manage valuation tools**
Participating actor	Human Resources
Entry Condition	Request for tools
Flow Event	• Valuer borrow valuation tools from HR • HR manage borrow-return tools history
Exit Condition	Valuer receive valuation tools
Use Case Name	**Prepare to survey**
Participating actor	Valuer
Entry Condition	Pass 'Assign job to valuer' use case Pass 'Manage budget' use case

	Pass 'Manage copied report' use case Pass 'Manage valuation tools'use case
Flow Event	• Analyse Subject Property • Access Job database • Access the Internet for more reference • Request copied report of nearby location • Request for budget for valuation • Request for tools for survey
Exit Condition	Enough resources for survey
Use Case Name	**On-site survey**
Participating actor	Valuer
Entry Condition	Pass 'Prepare to survey' use case
Flow Event	• Pack all resources • On-site survey
Exit Condition	Finish survey / return tools and report
Use Case Name	**Create / Edit Draft Report**
Participating actor	Valuer
Entry Condition	Pass 'On-site survey' use case

Flow Event	• Organise all survey data
	• Create draft report include
	  o Picture of valuation
	  o Location Map
	  o Land / Building Layout
	  o WQS Table

Exit Condition	Finished draft report
Use Case Name	**Access Draft Report**
Participating actor	Support
Entry Condition	Finished draft report
Flow Event	• Access draft report • Select suitable format for report
Exit Condition	Studied draft report and suitable format
Use Case Name	**Create / Edit Full Report**
Participating actor	Support
Entry Condition	Studied draft report and suitable format
Flow Event	• Create full report follow format
Exit Condition	Finished full report
Use Case Name	**Access Full Report**
Participating actor	Executive, Marketing
Entry Condition	Finished full report
Flow Event	• Access full report checking correctness
Exit Condition	Report is complete and correct
Use Case Name	**Approve I**
Participating actor	Executive [Senior Valuer]
Entry Condition	Finished full report
Flow Event	• Access Full Report • Access Job database • Review all parts of report
Exit Condition	Report approved I
Use Case Name	**Approve II**
Participating actor	Executive [Principal Valuer]
Entry Condition	Pass 'Approve I' use case
Flow Event	• Access Full Report • Access Job database • Review value
Exit Condition	Report approved II

Use Case Name	Create Job Submission
Participating actor	Marketing
Entry Condition	Report ready to be submitted
Flow Event	• Queue reports for submission • Update Job database [submission date]
Exit Condition	Reports are submitted to client

4.1.3 State Chart Diagram

Because of manual process, marketing people – who deal with clients – do not know much about the actual state of the job after it is assigned to a valuer. So they use 'report creation' to covers all activities which takes too long period. Clients may not be so satisfied with their jobs' status that staying in same state for a long time.

Clearer states and conditions are needed for developing accurate system. So the new state chart increases states from 13 to 16 and also edits names as below.

Table 4.2: State description [improved system]

No.	Input state	Conditions to change state	Output state
1	Initial point	Receive detail of job from client	2
2	Job received	Analyse detail of job Calculate cost / duration Select suitable valuation approach Fill-in general information, cost, duration, approach in quotation form	3
3	Quotation creation	Quotation is created and print out	4
4	**Invoice creation**	Client accept cost Create invoice and send to client	5
5	**Payment**	Client complete payment process	6
6	Job active	Arrange all information for valuer Insert detail of job into database Prepare information to fill in Job Order form	7
7	Job Order creation	Document is created and print out Queue for MD to assign to valuer	8
8	Job assignment	Job is assigned to suitable valuer Job database is updated 'valuer' data	9
9	**Prepare to survey**	Study detail of job Retrieve old jobs for reference Access the Internet for more information Request for valuation tools Request for budget Make appointment with property owner Ready to survey	10
10	On-site survey	Back from survey	11
11	**Draft Report creation**	Study all survey data Draft report Send draft report to support department	12
12	**Full Report creation**	Study draft report Acquire suitable format of report Create full report Send full report back to valuer Request senior valuer to approve	13

13	Approve I	- Approve → Request principal valuer to approve - Not approve → Request support department to correct report	14 / 12
14	Approve II	- Approve → Mark report as 'Approved' → Send report to marketing → Marketing recheck report and copy important part → Prepare information to fill-in Job submission form - Not approve → Request support department to correct report	15 / 12
15	Job submission creation	Fill-in Job submission form Document is created and print out Queue reports to deliver to client	16
16	Report delivery	Client receive report	Final state

Finally, the improved state chart diagram is illustrated below.
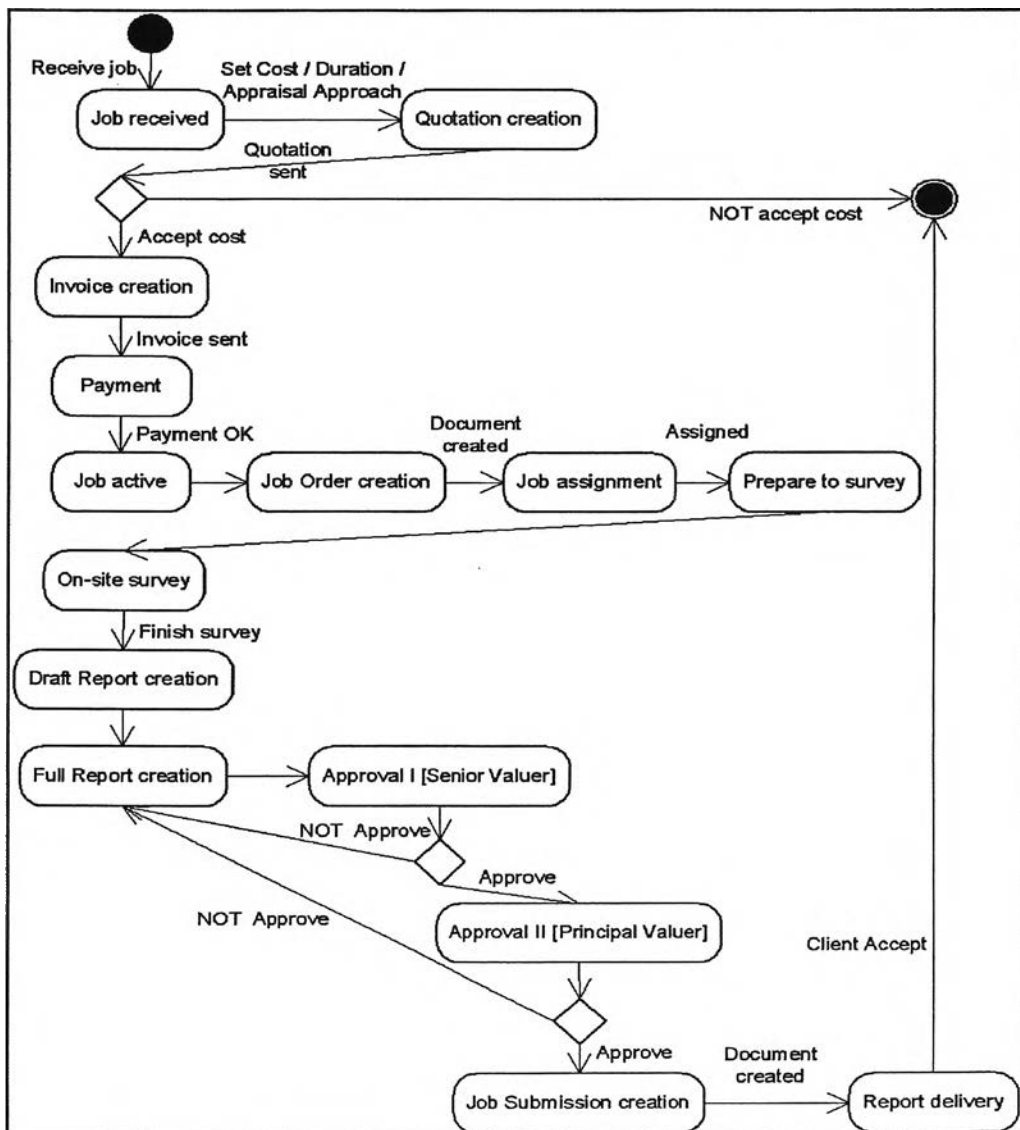
Figure 4.6: State Chart Diagram [improved system]

4.1.4 Sequence Diagram

The sequence diagram is a guideline for developing control flows of the system. The improved sequence diagram not only performs general changes, it is also implements specific changes as below;

- Reduce <inform> message by let user access 'to-do-list' from the system
- Add 'recheck report' and 'copy report' before submitting job.
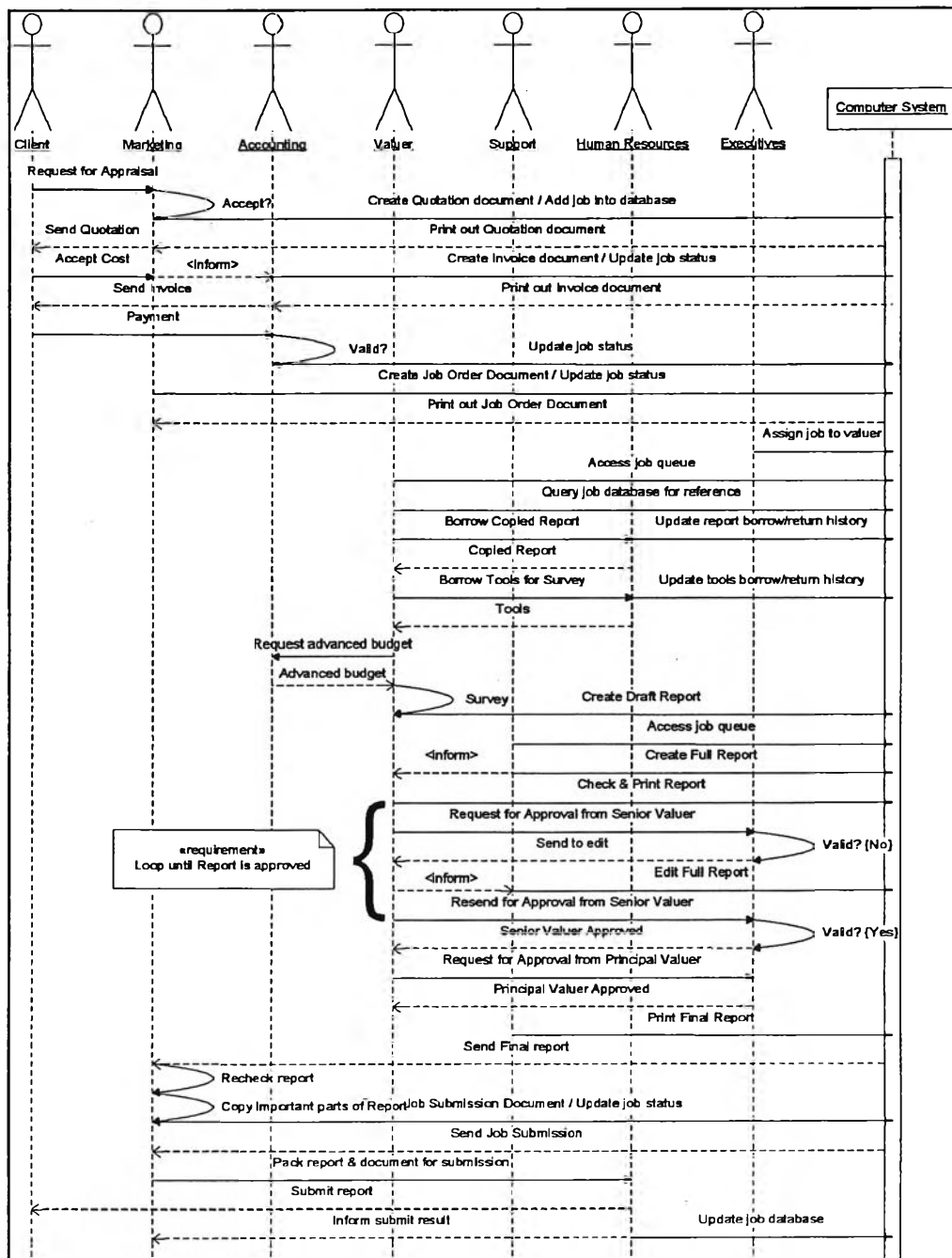- Report creation and approval processes are the same.

Figure 4.7: Sequence Diagram [improved system]

4.1.5 Activity Diagram

New activity diagrams still conform to general improvements. The new activity diagram also inserts 'transition' (⬚) that indicates parallel work which can be done at the same time but have to finish them before moving to next steps.

There are many activities that move from user to system and use the word generate rather than create because of pre-processing of information system.
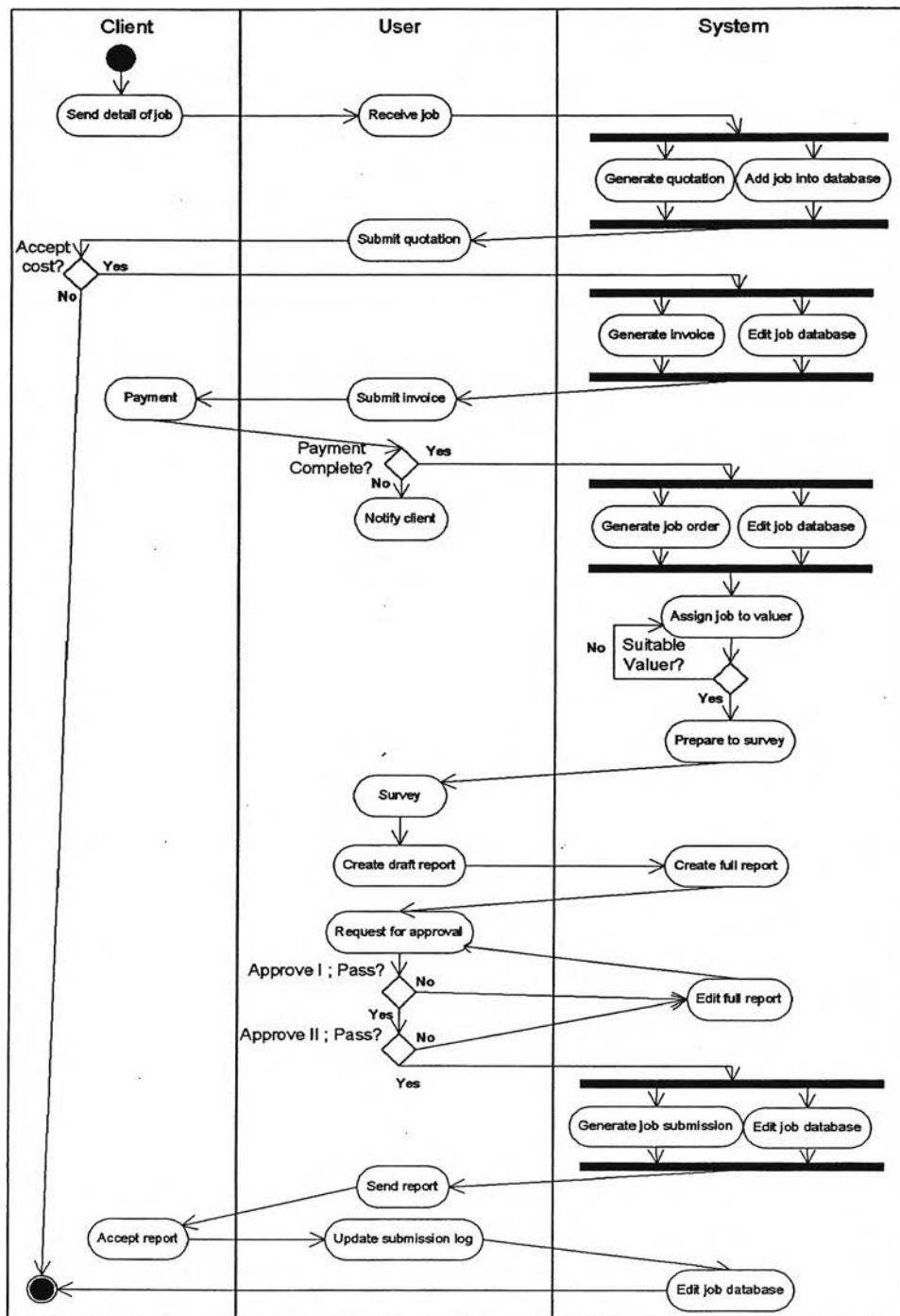

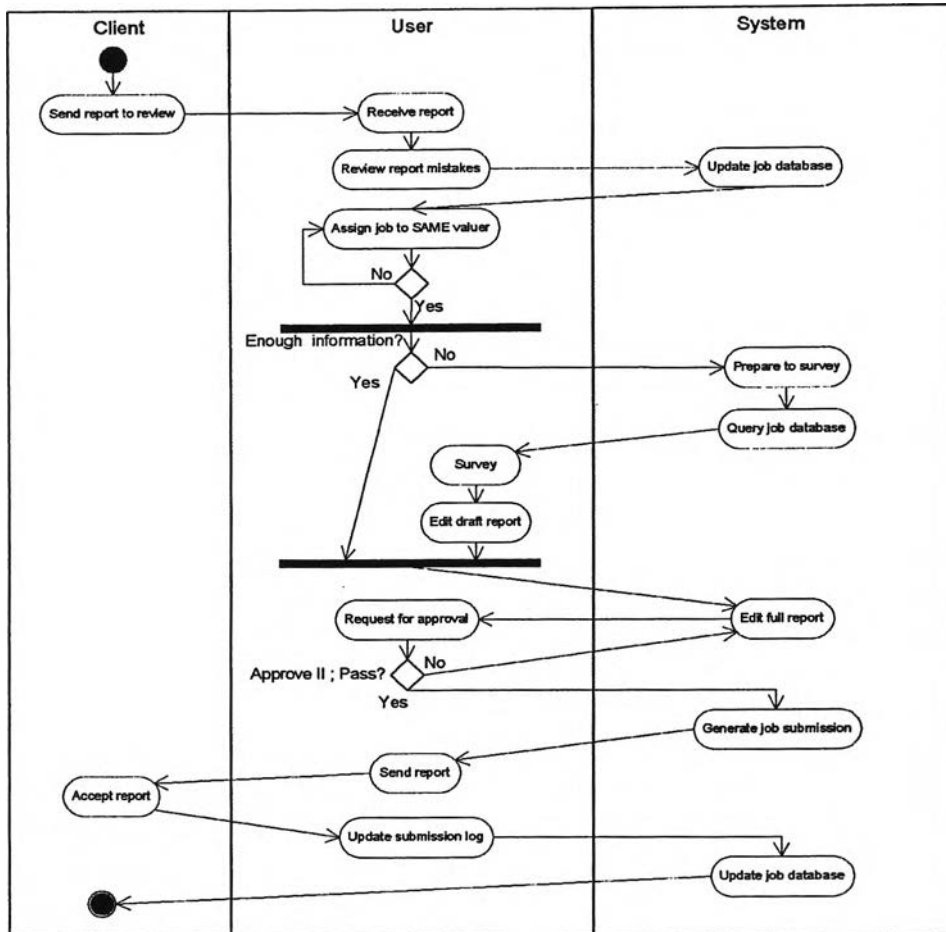Figure 4.8: Activity Diagram of normal job [improved system]

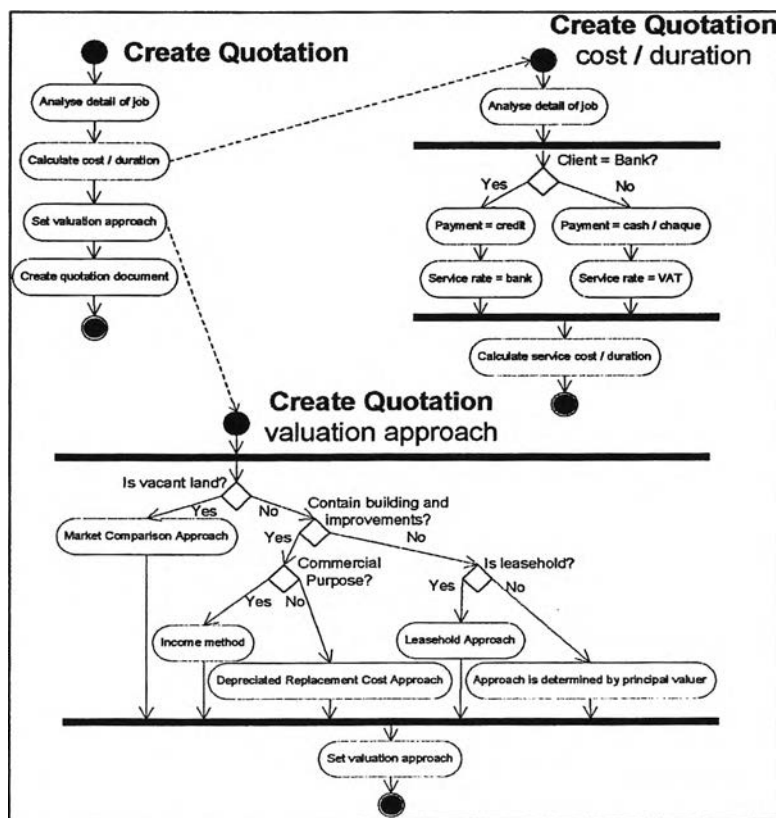Figure 4.9: Activity Diagram of review job [improved system]

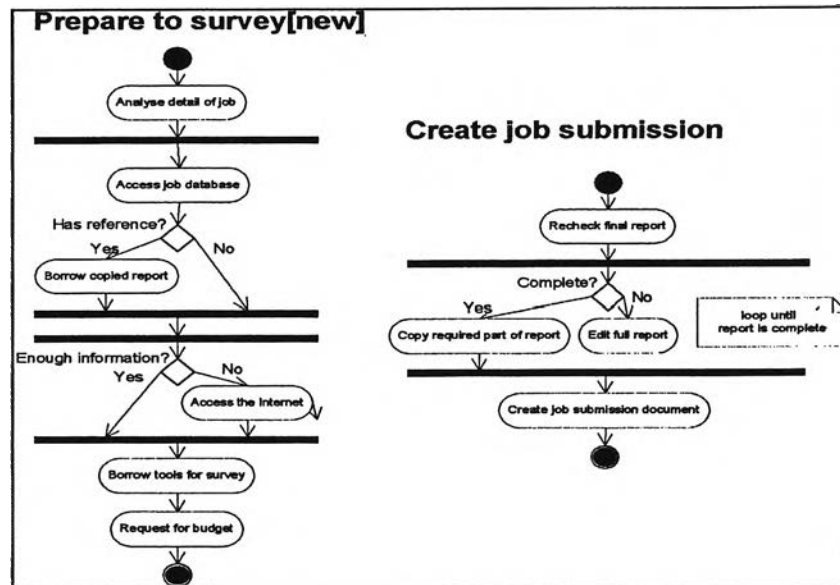Figure 4.10: Sub-system of create quotation [improved system]

Figure 4.11: Prepare to survey and Create job submission [improved system]

Processes to create quotation and prepare to survey are not changed. But they are moved to system area which means they are run and controlled by the computer.

4.2 Enterprise modelling

Enterprise modelling encourages people to understand the overall business processes and improve to increase performance. It can be divided into 2 categories.

- *Process Model* – identified outputs, inputs, controls, mechanisms of process.

- *Data Model* – identified connections between process and external entities.

Process models usually are used for application development. In contrast, data models are used for database design and input-output (I/O) pattern.
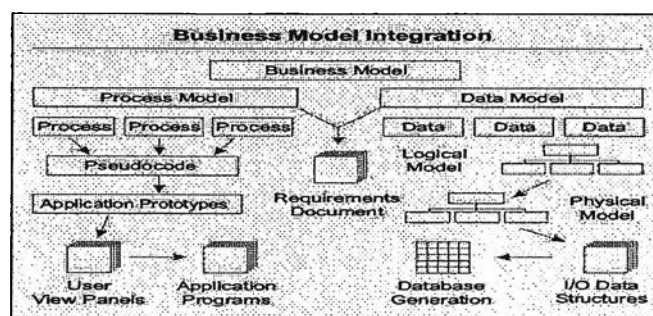

Figure 4.12: Business Process Integration
(Paul R. S. and Richard S., 1993: 9)

In this case, Integration Definition (IDEFØ) is categorised in process modelling. Data Flow Diagram (DFD) is representatives of data modelling tools. Detail of IDEFØ and DFD of the valuation company are described in the following sections.

4.2.1 IDEFØ

Figure below shows context diagram of valuation process which is not changed from context diagram of the old process.
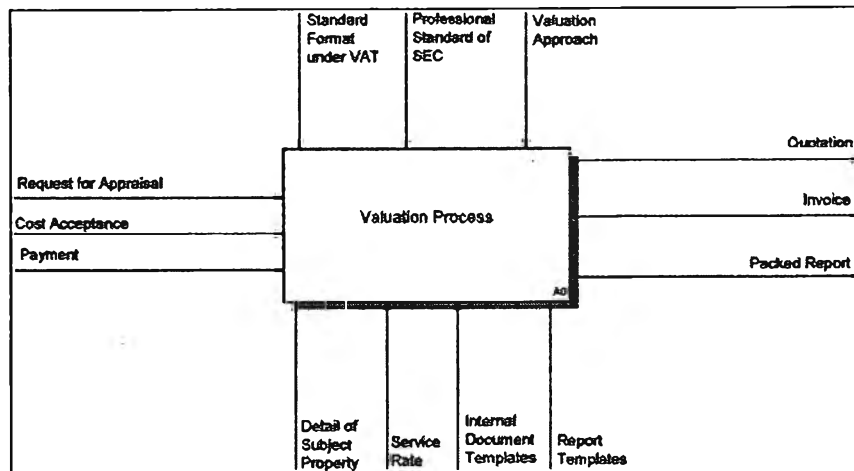

Figure 4.13: IDEFØ level 0 – Context Diagram

Like other diagram, the unique change of IDEFØ combination of Job List and Job Summary into 'Job Database', and some rearranged activities.
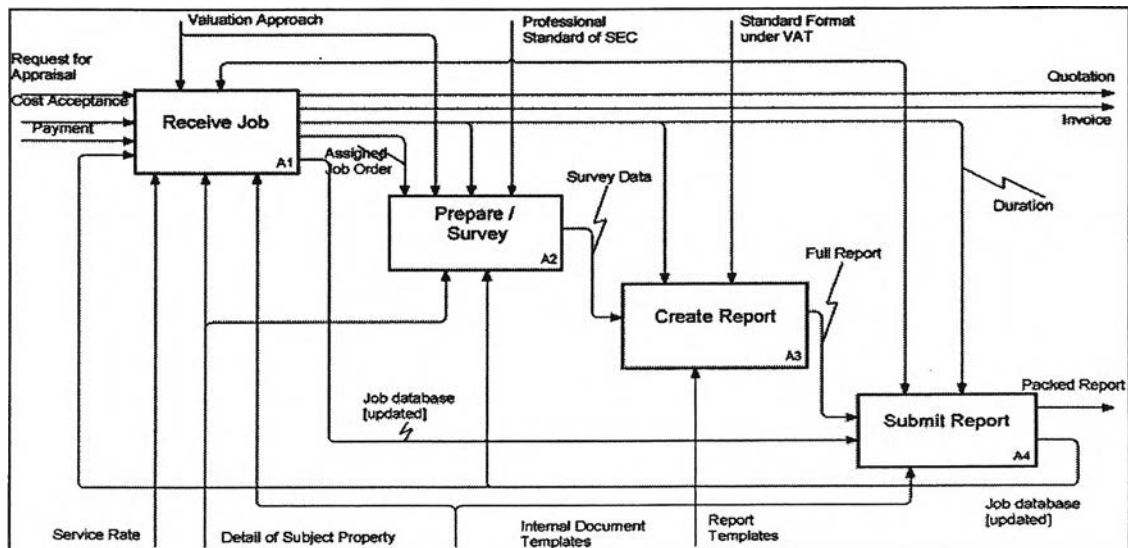

Figure 4.14: IDEFØ level 1 – A0 Diagram

- **A1: Receive Job**

  This activity covers from receiving the request for appraisal until the job is assigned to the valuer. There are 3 sub-activities of A1 diagram.

Table 4.3: ICOM table of A1 Node

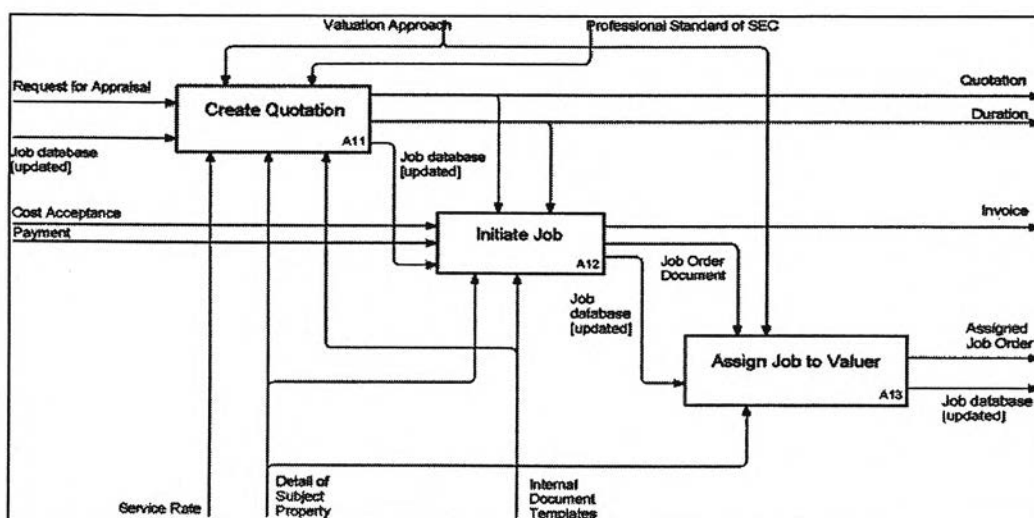| Input	Output
■ Request for Appraisal ■ Cost Acceptance ■ Payment ■ **Job database [updated]**	■ Quotation ■ Invoice ■ Duration: ■ Assigned Job Order:
Control	**Mechanism**
■ Valuation approach ■ Professional standard of SEC	■ Detail of subject property ■ Service rate ■ Internal document templates

Figure 4.15: IDEFØ level 2 – A1 Diagram; Receive Job

- A11: Create Quotation: 'Job database [update]' is input to this activity and get out from activity with a new record inserted. The information in quotation is automatically filled in the forms as pre-defined data to edit instead of inputting them again manually.

Table 4.4: ICOM table of A11 Node

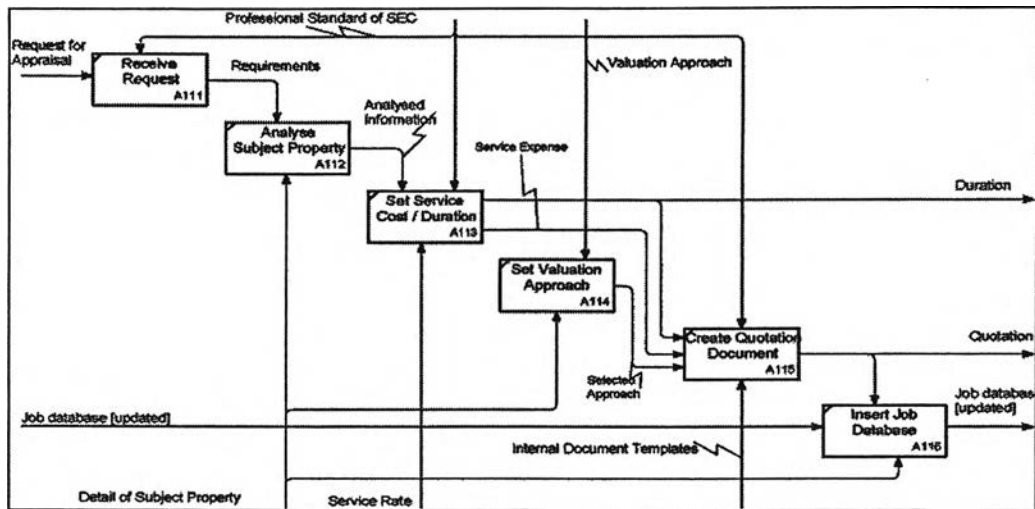| Input	Output
■ Request for Appraisal ■ **Job database [updated]**	■ Quotation ■ Duration ■ **Job database [updated]** – new record inserted
Control	**Mechanism**
■ Valuation Approach ■ Professional Standard of SEC	■ Detail of Subject Property ■ Service Rate ■ Internal Document Templates

Figure 4.16: IDEFØ level 3 – A11 Diagram; Create Quotation

The A11 diagram contains 6 sub-activities as below.

Table 4.5: Summary ICOM table of A11 diagram: A111-A115

Receive Request (A111): get detail of job from client	
Input	**Output**
> Request for Appraisal	> Requirements
Control	**Mechanism**
> Professional Standard of SEC	N/A
Analyse Subject Property (A112): study property in detail	
Input	**Output**
N/A	> Analysed information
Control	**Mechanism**
> Requirements	> Detail of Subject Properties
Set Service Cost / Duration (A113): calculate for cost / duration of job	
Input	**Output**
N/A	> Duration > Service Expense
Control	**Mechanism**
> Analysed information > Professional standard of SEC	> Service Rate
Set Valuation Approach (A114): pick suitable approach for job	
Input	**Output**
N/A	> Selected Approach
Control	**Mechanism**
> Valuation Approach	> Detail of Subject Properties
Create Quotation Document (A115): fill-in and print-out quotation	
Input	**Output**
> Duration > Service Expense > Selected Approach	> Quotation
Control	**Mechanism**
> Professional standard of SEC	> Internal Document Templates

Insert Job Database (A116): add new job into database	
Input	**Output**
> **Job database [updated]**	> **Job database [updated]** – new record inserted
Control	**Mechanism**
> Quotation	> Detail of Subject Properties

- **A12: Initiate Job:** job initiation starts after the client accepts the company services cost and completes payment. The invoice contains pre-defined information which is just query for update payment detail.

Table 4.6: ICOM table of A12 Node

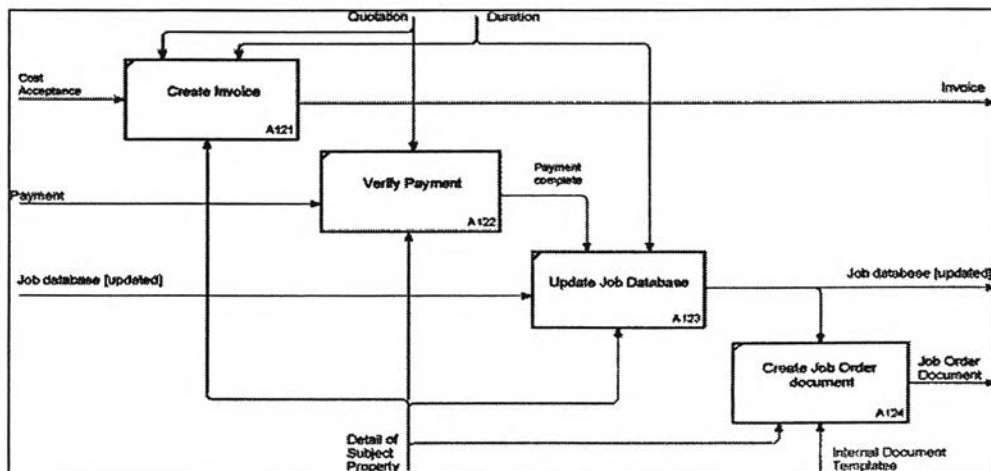| **Input**	**Output**
• Cost Acceptance • Payment • **Job database [updated]**	• Invoice • **Job database [updated]** – payment detail • Job Order document
Control	**Mechanism**
• Duration • Quotation	• Detail of Subject Properties • Internal Document Templates

Figure 4.17: IDEFØ level 3 – A12 Diagram; Initiate Job

The A12 diagram contains 4 sub-activities as below.

Table 4.7: Summary ICOM table of A12 diagram: A121-A124

Create Invoice (A121): fill-in and print-out invoice	
Input	**Output**
> Cost Acceptance	> Invoice
Control	**Mechanism**
> Quotation > Duration	> Detail of Subject Properties
Verify Payment (A122): check payment before open job	
Input	**Output**
> Payment	> Payment complete

Control	Mechanism
> Quotation	> Detail of Subject Properties
Update Job List (A123): insert new record into Job List document	
Input	Output
> **Job database [updated]**	> **Job database [updated]** – payment
Control	Mechanism
> Payment complete > Duration	> Detail of Subject Properties
Create Job Order document (A124): print-out brief information about job	
Input	Output
N/A	> Job Order Document
Control	Mechanism
> Job database [updated]	> Detail of Subject Properties > Internal Document Templates

- <u>A13: Assign Job to Valuer</u>; job database is updated assigned valuer.

Table 4.8: ICOM table of A13 Node

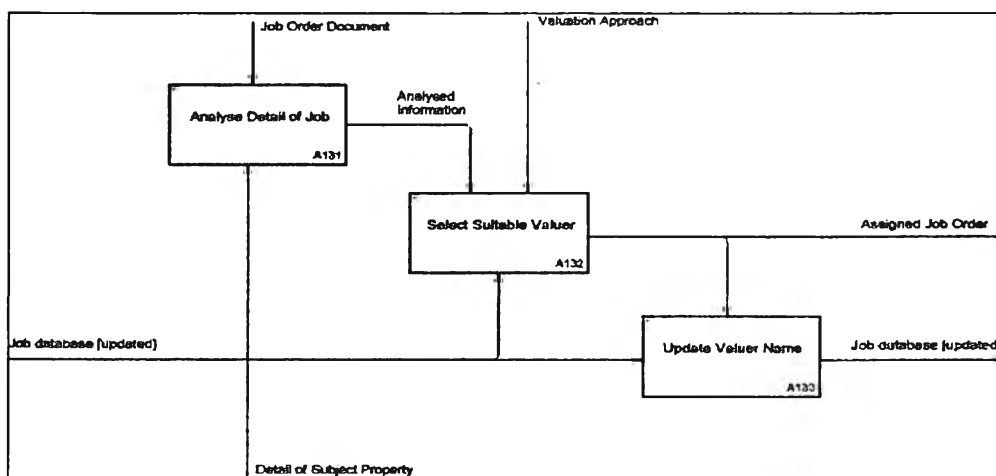| Input	Output
▪ **Job database [updated]**	▪ Assigned Job Order ▪ **Job database [updated]** – assigned valuer
Control	Mechanism
▪ Valuation Approach ▪ Job Order Document	▪ Detail of Subject Property

Figure 4.18: IDEFØ level 3 – A13 Diagram; Assign Job to Valuer

The A13 diagram contains 3 sub-activities as below.

Table 4.9: Summary ICOM table of A13 diagram: A131-A133

Analyse Detail of Job (A131): study job in detail	
Input	Output
N/A	> Analysed information
Control	Mechanism
> Job Order Document	> Detail of Subject Properties

Select SuitableValuer (A132): select valuer from their skills and availability	
Input	**Output**
N/A	> Assigned Job Order
Control	**Mechanism**
> Analysed information > Valuer Approach	> Job Database [updated]
Update Valuer Name (A133): choose suitable valuer for job	
Input	**Output**
> Job Database [updated]	> Job Database [updated] – assigned valuer
Control	**Mechanism**
> Assigned Job Order	N/A

- **A2: Prepare / Survey**

This activity covers from preparation to survey until on-site survey. Job database is used for reference in data preparation before survey.

Table 4.10: ICOM table of A2 Node

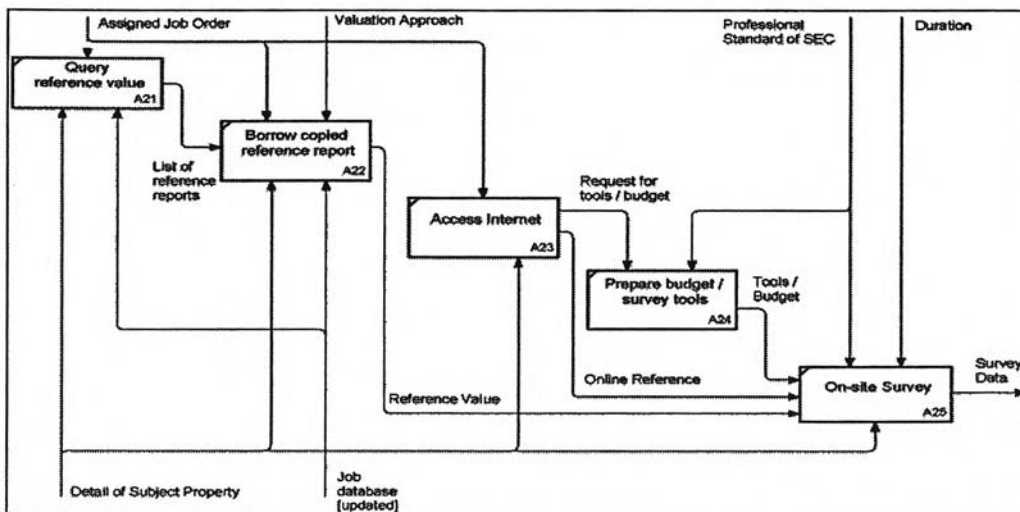| Input	Output
N/A	▪ Survey Data
Control	**Mechanism**
▪ Assigned Job Order ▪ Valuation Approach ▪ Duration ▪ Professional Standard of SEC	▪ Detail of Subject Property ▪ **Job database [updated]**

Figure 4.19: IDEFØ level 2 – A2 Diagram; Prepare / Survey

- A21: Query reference value; job database is retrieved for references value of nearby properties before survey. This step gains a faster response compared to the old system because the old reference is a large spreadsheet file.

Table 4.11: ICOM table of A21 Node

Input	Output
N/A	▪ List of reference reports
Control	**Mechanism**
▪ Assigned Job Order	▪ Detail of Subject Properties ▪ **Job database [updated]**

▪ <u>A22: Borrow copied reference report</u>: the database has already collected all the information about reference records. Valuers can access directly from their computer and there is no need to borrow copied reports anymore.

Table 4.12: ICOM table of A22 Node

Input	Output
▪ List of reference reports	▪ Reference value
Control	**Mechanism**
▪ Assigned Job Order ▪ Valuation Approach	▪ Detail of Subject Properties ▪ **Job database [updated]**

▪ <u>A23: Access the Internet</u>: there is no change from the old diagram because this step does not relate with Job database.

Table 4.13: ICOM table of A23 Node

Input	Output
N/A	▪ Online reference ▪ Request for tools / budget
Control	**Mechanism**
▪ Assigned Job Order	▪ Detail of Subject Properties

▪ <u>A24: Prepare budget / survey tools</u>: there is no change from the old diagram because this step does not relate with Job database.

Table 4.14: ICOM table of A24 Node

Input	Output
N/A	▪ Tools / Budget
Control	**Mechanism**
▪ Request for tools / budget ▪ Professional Standard of SEC	N/A

▪ <u>A25: On-site Survey</u>: there is no change from the old diagram because this step does not relate with Job database.

Table 4.15: ICOM table of A25 Node

Input	Output
▪ Reference value ▪ Online reference ▪ Tools / Budget	▪ Survey Data
Control	**Mechanism**
▪ Professional Standard of SEC ▪ Duration	▪ Detail of Subject Properties

- **A3: Create Report**

There is no change because it does not relate with Job database.

Table 4.16: ICOM table of A3 Node

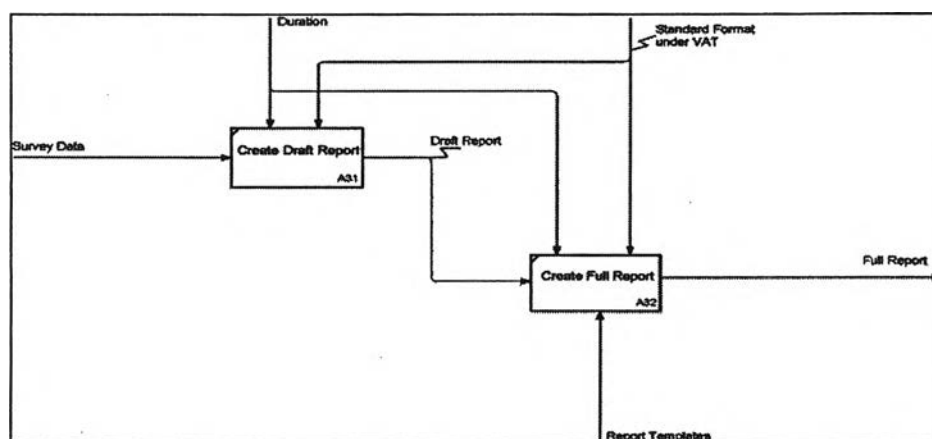| Input	Output
▪ Survey Data	▪ Full Report
Control	**Mechanism**
▪ Duration ▪ Standard Format under VAT	▪ Report Templates

Figure 4.20: IDEFØ level 2 – A3 Diagram; Create Report

- A31: Create draft report: the transformation of raw survey data to draft report – picture of valuation, maps, layouts, and WQS.

Table 4.17: ICOM table of A31 Node

Input	Output
▪ Survey Data	▪ Draft Report
Control	**Mechanism**
▪ Duration ▪ Standard Format under VAT	N/A

- A32: Create full report; the transformation of draft to formatted report.

Table 4.18: ICOM table of A32 Node

Input	Output
■ Draft Report	■ Full Report
Control	**Mechanism**
■ Duration ■ Standard Format under VAT	■ Report Templates

- **A4: Submit Report**

This activity covers from the approval process until close of the job. Job database is update survey result and submission detail.

Table 4.19: ICOM table of A4 Node

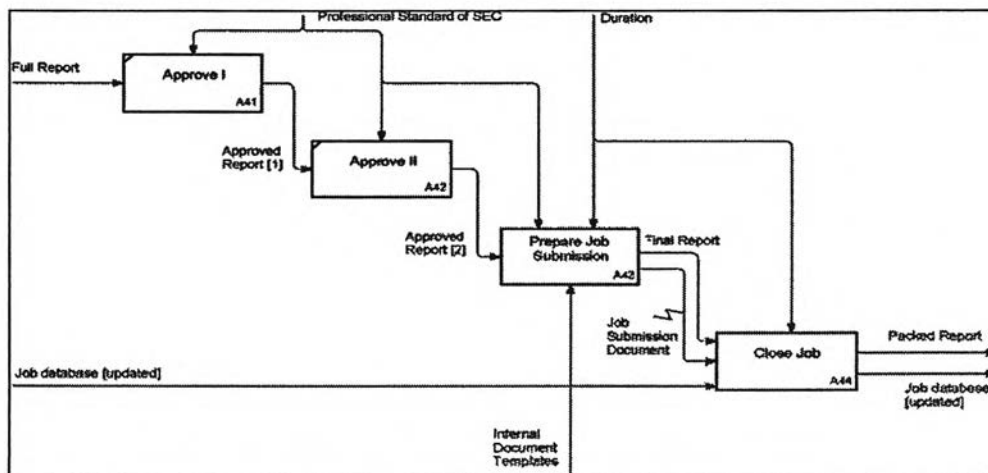| Input	Output
■ Full report ■ **Job Database [updated]**	■ **Packed Report:** Full report + Job Submission ■ **Job Database [updated]** -- survey result and submission detail
Control	**Mechanism**
■ Duration ■ Professional Standard of SEC	■ Internal Document Templates

Figure 4.21: IDEFØ level 2 – A4 Diagram; Submit Report

- A41: Approve I; there is no change from the old diagram because this step does not relate with Job database.

Table 4.20: ICOM table of A41 Node

Input	Output
■ Full Report	■ Approved Report [1]
Control	**Mechanism**
■ Professional Standard of SEC	N/A

- A42: Approve II: there is no change from the old diagram because this step does not relate with Job database.

Table 4.21: ICOM table of A42 Node

Input	Output
▪ Approve Report [1]	▪ Approved Report [2]
Control	**Mechanism**
▪ Professional Standard of SEC	N/A

- A43: Prepare Job Submission: there is no change from the old diagram because this step does not relate with Job database.

Table 4.22: ICOM table of A43 Node

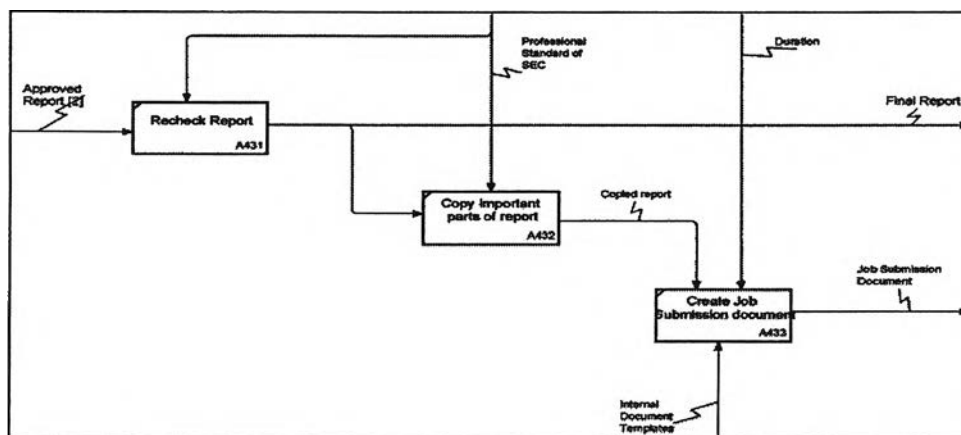| Input	Output
▪ Approved Report [2]	▪ **Final Report** ▪ Job Submission document
Control	**Mechanism**
▪ Duration ▪ Professional Standard of SEC	▪ Internal Document Templates

Figure 4.22: IDEFØ level 2 – A43 Diagram; Prepare Job Submission

The A43 diagram contains 3 sub-activities as below

Table 4.23: Summary ICOM table of A43 diagram: A431-A433

Recheck Report (A431): final recheck all parts of report by marketing department	
Input	**Output**
> Approve Report [2]	> Final Report
Control	**Mechanism**
> Professional Standard of SEC	N/A
Copy important parts of report (A432): copy report for reference by HR department	
Input	**Output**
> Final Report	> Copied Report

Control	Mechanism
> Professional Standard of SEC	N/A

Create Job Submission document (A433): fill-in and print-out Job Submission	
Input	Output
N/A	> Job Submission Document
Control	Mechanism
> Copied Report > Duration	> Internal Document Templates

- <u>A44: Close Job</u>; final report and job submission document are delivered to client. If submission is success, survey result and submission detail will be updated into job database by human resource.

Table 4.24: ICOM table of A44 Diagram

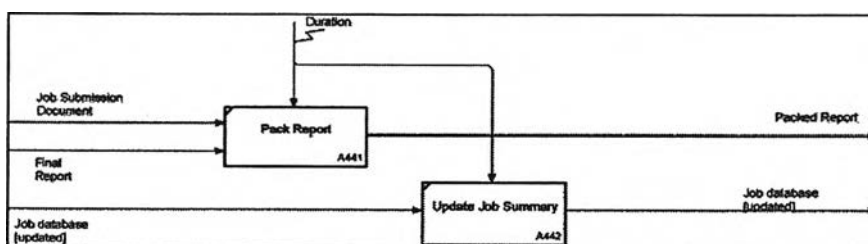| Input	Output
• Final Report • Job Submission document • **Job Database [update]**	• **Packed Report** • **Job Database [update]** – survey result and submission detail
Control	Mechanism
• Duration	N/A

Figure 4.23: IDEFØ level 2 – A44 Diagram; Close Job

The A44 diagram contains 2 sub-activities as below

Table 4.25: Summary ICOM table of A44 diagram: A441-A442

Pack Report (A441): pack final report and submission document together	
Input	Output
> Job Submission Document > Final Report	> Packed Report
Control	Mechanism
> Duration	N/A
Update Job Summary (A442): update reference of job history	
Input	Output
> **Job database [updated]**	> **Job database [updated]** – survey result and submission detail
Control	Mechanism
> Duration	N/A

4.2.2 DFD and Element Process Description

Data Flow Diagram (DFD) is a useful hierarchical modelling that defines external entities – people, database, documents, etc. – that is accessed by each step of process. DFD structure is quite similar to IDEFØ that starts from defining context diagram – a unique process that represent whole system.
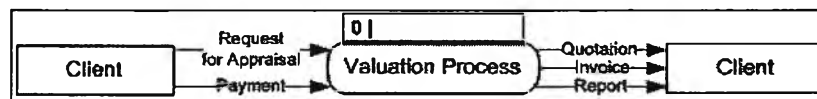

Figure 4.24: DFD level 0 – Context Diagram

Inputs are request for appraisal and payment. And quotation, invoice, report are outputs – ignoring controls and mechanisms which are required in IDEFØ.
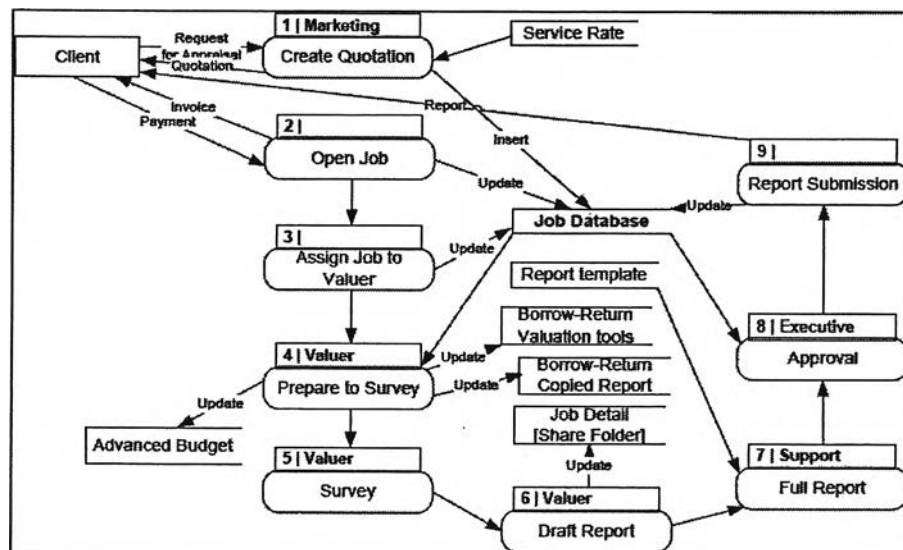

Figure 4.25: DFD level 1

The context process can be split into 9 subtasks as figure above. The detail below will briefly introduce functions of each node and steps of work in specific sub-task are presented in 'Element Process Description'.

- **Create Quotation:**

    This process starts from receiving request to add job into database and print out quotation document. There are 6 steps of work as listed in diagram and described in the table below.
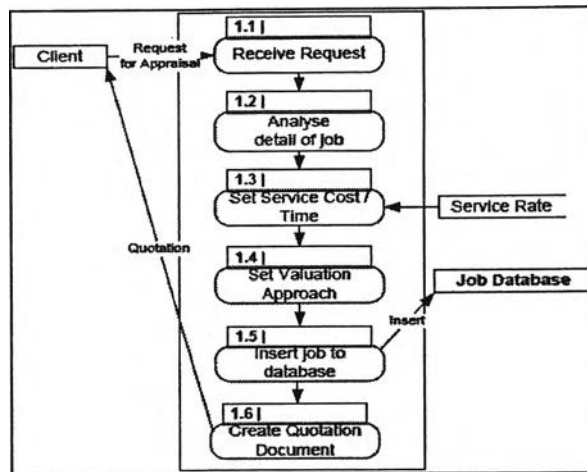
Figure 4.26: DFD level 2 – Create Quotation

Table 4.26: Element Process Description – Create Quotation

1 : Create Quotation		
Process Code	Role	Function Description
1.1 Receive Request	MK	Receive detail of job from clients If detail NOT enough Request for more detail
1.2 Analyse Subject Property	MK	Analyse client Access suitable service rate
1.3 Set Service Cost / time	MK	Calculate service Cost / Time [Cost / Time ~ distance and difficulty]
1.4 Set Appraisal Method	MK	Analyse subject property Select suitable appraisal method [Appraisal method ~ Assets]
1.5 Insert job into database	MK	Insert job into Job Database
1.6 Create Quotation Document	MK	Create document using company's form

- **Initiate Job:**

    This process includes create invoice, do payment method, update payment data into job database, and create Job Order. There is 4 steps of work as listed in diagram and described in table below.
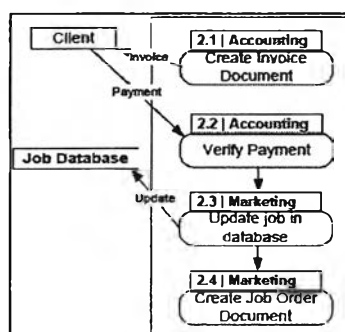

Figure 4.27: DFD level 2 – Initiate Job

Table 4.27: Element Process Description – Initiate Job

2 : Initiate Job		
Process Code	**Role**	**Function Description**

2.1 Create Invoice Document	AC	If Client accept cost
		   Create Document using company's form
		Else
		   Close Job.

2.2 Verify Payment	AC	If Client is Bank
		  If Credit 30 days OK
		    Verify = PASS
		  Else
		    Wait for Credit is approved
		Else // Client is General Individual
		  If Payment OK
		    Verify = PASS
		  Else
		    Wait for Payment

2.3 Update job in database	MK	Update payment data into job database
2.4 Create Job Order Document	MK	Create document using company's form

- **Assign Job to Valuer:**

This process is about analysing job detail and selecting a suitable valuer to do the job. There is 3 steps of work as listed in diagram and described in the table below.
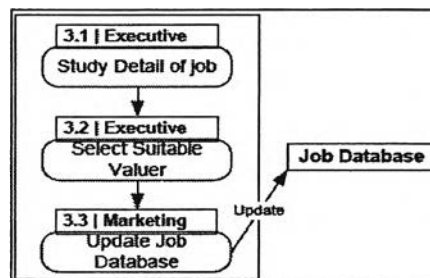

Figure 4.28: DFD level 2 – Assign Job to Valuer

Table 4.28: Element Process Description – Assign Job to Valuer

3 : Assign Job to Valuer		
Process Code	**Role**	**Function Description**
3.1 Study Detail of job	EX	Analyse asset(s) Analyse location(s)
3.2 Select Suitable Valuer	EX	See Work History of Valuers Select Valuer who - Able to handle more one job - Have to survey nearby location - Familiar with property location - Familiar with selected valuation approach
3.3 Update Job database	MK	Update valuer's name into Job Database

- **Prepare to Survey:**

This process covers complete preparation which is preparing data, documents, tools, and budget. There is 5 steps of work as listed in diagram and described in table below.
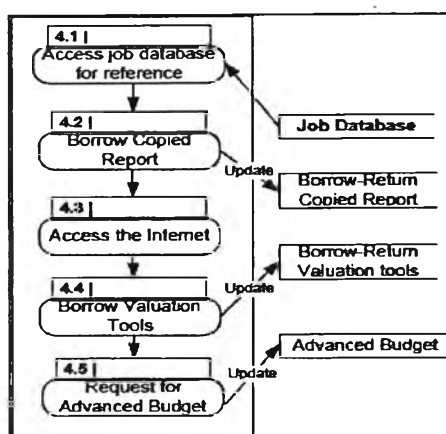

Figure 4.29: DFD level 2 – Prepare to survey

Table 4.29: Element Process Description – Prepare to survey

4 : Prepare to survey		
Process Code	Role	Function Description
4.1 Access job database for reference	VL	[Query old jobs for reference] Access Job Database Find value of same location (if any) Find value located nearby.
4.2 Borrow Copied Report	VL	Borrow copied report of selected jobs
4.3 Access the Internet	VL	Access the Internet for more information
4.4 Borrow Valuation Tools	VL	Borrow tools for survey
4.5 Request for Advanced Budget	VL	Estimate expense Request for advanced budget

- **Survey:**

All steps of work are manual processes and methods may be different, case by case, depending upon the job owner's decision.

- **Draft Report:**

Valuer has to create draft report – contains pictures of valuation, location maps, land and building layouts, and WQS table. The 6 steps of work as listed in diagram and described in table below.
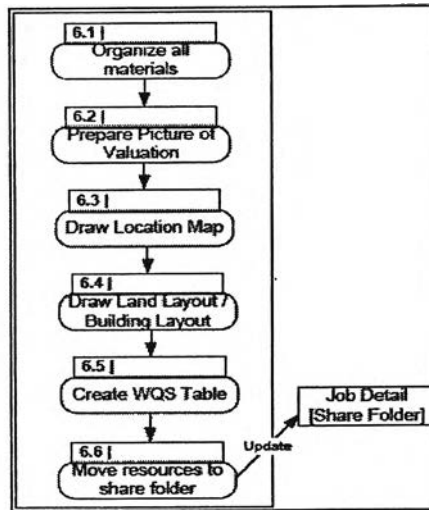
Figure 4.30: DFD level 2 – Draft Report

Table 4.30: Element Process Description – Draft Report

6 : Draft Report		
Process Code	Role	Function Description
6.1 Organize all materials	VL	Acquire resources from all valuation tools
6.2 Prepare Picture of Valuation	VL	Acquire photo from camera
6.3 Draw Location Map	VL	Draw draft map by hand **[use photo to define surrounding]**
6.4 Draw Land Layout / Building Layout	VL	Draw Layout by hand **[use GPS to locate directions]**
6.5 Create WQS Table	VL	Review all prices which are gotten from - Reference price - Selling price of nearby asset **[WQS - Weighted Quality Score = document that presents calculation of asset price]**
6.4 Move all resources to share folder	VL	Move resources to server of support department

- **Final Report:**

Draft report will be formatted to formal report called 'Full Report'. 3 steps of work as listed in diagram and described in table below.
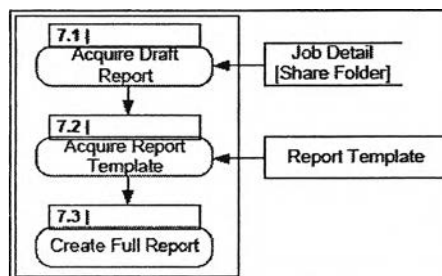

Figure 4.31: DFD level 2 – Full Report

Table 4.31: Element Process Description – Full Report

7 : Full Report		
Process Code	Role	Function Description
7.1 Acquire Draft Report	SP	Access resources in server Arrange resources into suitable part in full report Add more detail / description in full report
7.2 Acquire Report Template	SP	Choose suitable report template to use
7.3 Create Full Report	SP	Arrange all part of report into formal format Printout

- **Approval:**

Full report must pass 2 approval processes before submit to client. 4 steps of work as listed in diagram and described in table below.
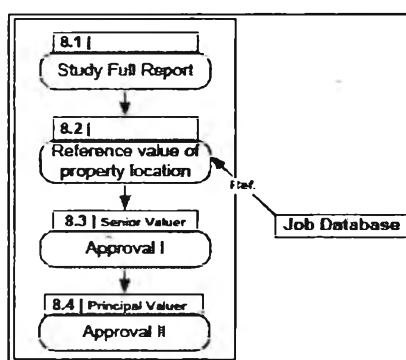

Figure 4.32: DFD level 2 – Approval

Table 4.32: Element Process Description – Approval

8 : Approval		
Process Code	Role	Function Description
8.1 Study Full Report	EX	Check overall format of report
8.2 Reference value of property location	EX	Consider appraised value |use Job Database as Reference|

8.3 Approval I	EX	If ALL parts of report IS valid
		    Approve I
		    Pass report for Approve II
		Else
		    Return report for editing

8.4 Approval II	EX	Recheck appraised value
		If price IS sensible
		    Approve II
		Else
		    Return report for review value

- **Report Submission:**

The finished report has to be rechecked and copied for reference before submission. If delivery process is complete, job will be closed. 5 steps of work as listed in diagram and described in table below.
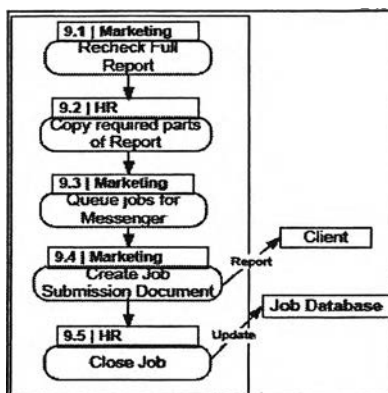

Figure 4.33: DFD level 2 – Report Submission

Table 4.33ement Process Description – Report Submission

9 : Report Submission		
Process Code	Role	Function Description
9.1 Recheck Full Report	MK	Recheck all part of report **[Focus on price / format / spelling / signature]**
9.2 Copy important parts of Report	HR	Copy important parts of report for reference
9.3 Queue jobs for Messenger	MK	Organize reports to deliver Assign messenger
9.4 Create Job Submission Document	MK	Create document using company's form

9.5 Close Job	HR	If client ACCEPT report
		  Add job detail in Job Database
		  Manage copied reports of closing jobs
		  Close job
		Else
		  Review job
		  Edit report
		  Resend

4.3 Sketched user interfaces

While doing system analysis and improvement, it is needed to continuously confirm business logic and flow with users. The analyst generally is asked about what the new system looks likes? is it easy to use?, etc. Sometimes the analyst may to talking about the satisfied user interfaces. Figures below are some hand-drafting user interfaces that users satisfy with and confirm to be used in detail design phase and prototyping.

4.3.1 Authorisation screen

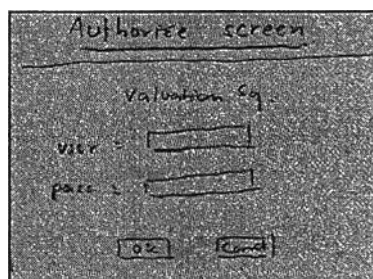This screen contains system name, input for username and password.

Figure 4.34: Authorisation screen

4.3.2 To-do-list screen

This screen is a default screen after authorisation pass. The system will query all tasks which currently stay in 'state(s)' that people in that department have responsibility to do. To do list will be grouped by tasks and ordered by due date.

For example, when marketing staff login to the system, the to-do-list will lists all jobs that waiting for actions from marketing people; create quotation document, create job order, etc. Each set of tasks will be ordered by due date.

Note: If user is <u>valuer</u>, to do list will query only jobs that assign to him individually.
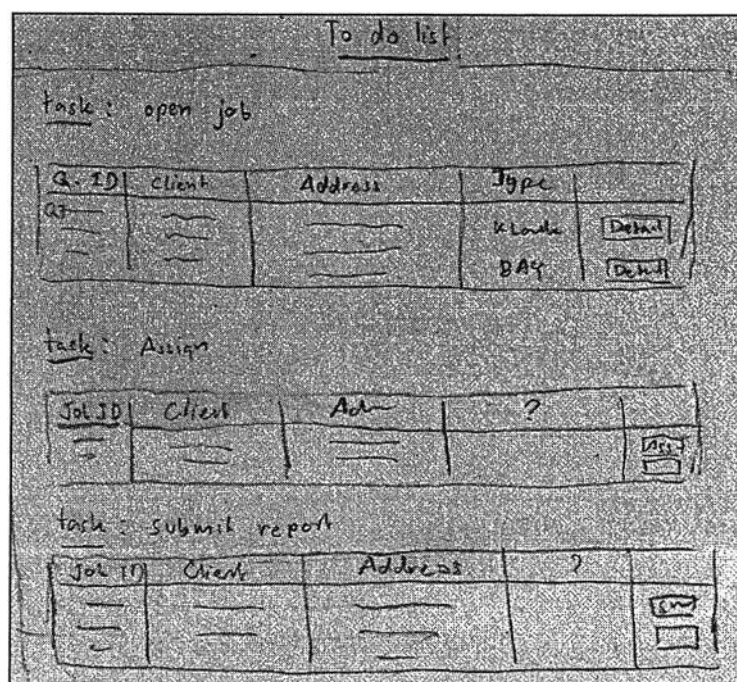

Figure 4.35: To do list screen

4.3.3 Status tracking screen

This screen can be accessed by everyone who wants to know status of specific jobs. The upper section is search criteria which are general information such as job code, client name, receive date, etc. The lower section is result pane which will list all jobs that matched with selected criteria. This page is not allowed to click on job for more detail because it just a function for quick response about status of job.
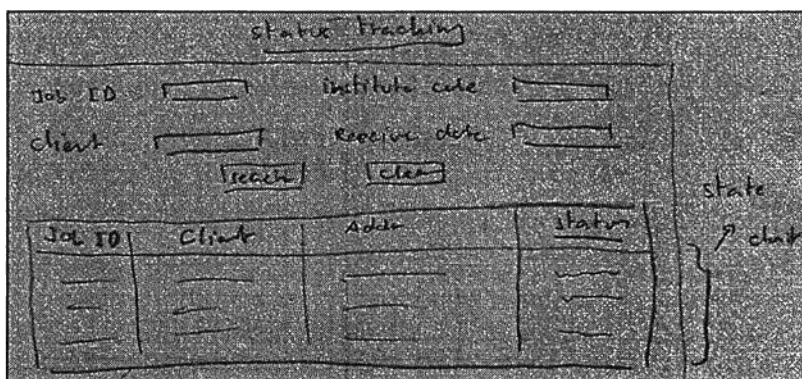

Figure 4.36: Status tracking screen

4.3.4 Job Search screen

This screen is a search engine in the system. The screen layout is quite same as status tracking screen but it contains more criteria to search. The result pane is also preview more detail of jobs and allows users to click on link to view or edit full detail of jobs – permission to view or edit depends on role of users.
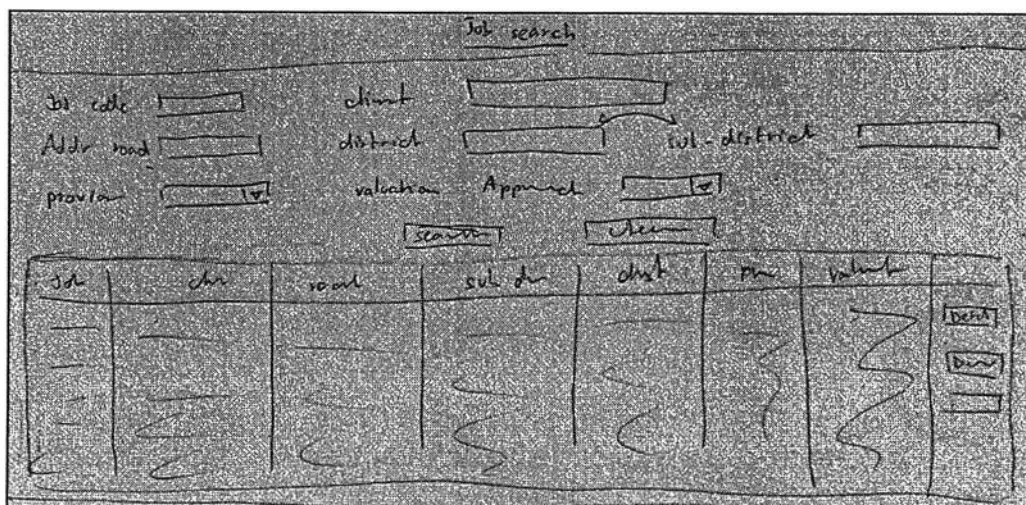

Figure 4.37: Job Search screen