

Amendment History				
Change Number	Revision Description	Pages Affected	Revision Number	Date

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2.5 FUNCTION SPECIFICATION

2.5.1 Context Diagram

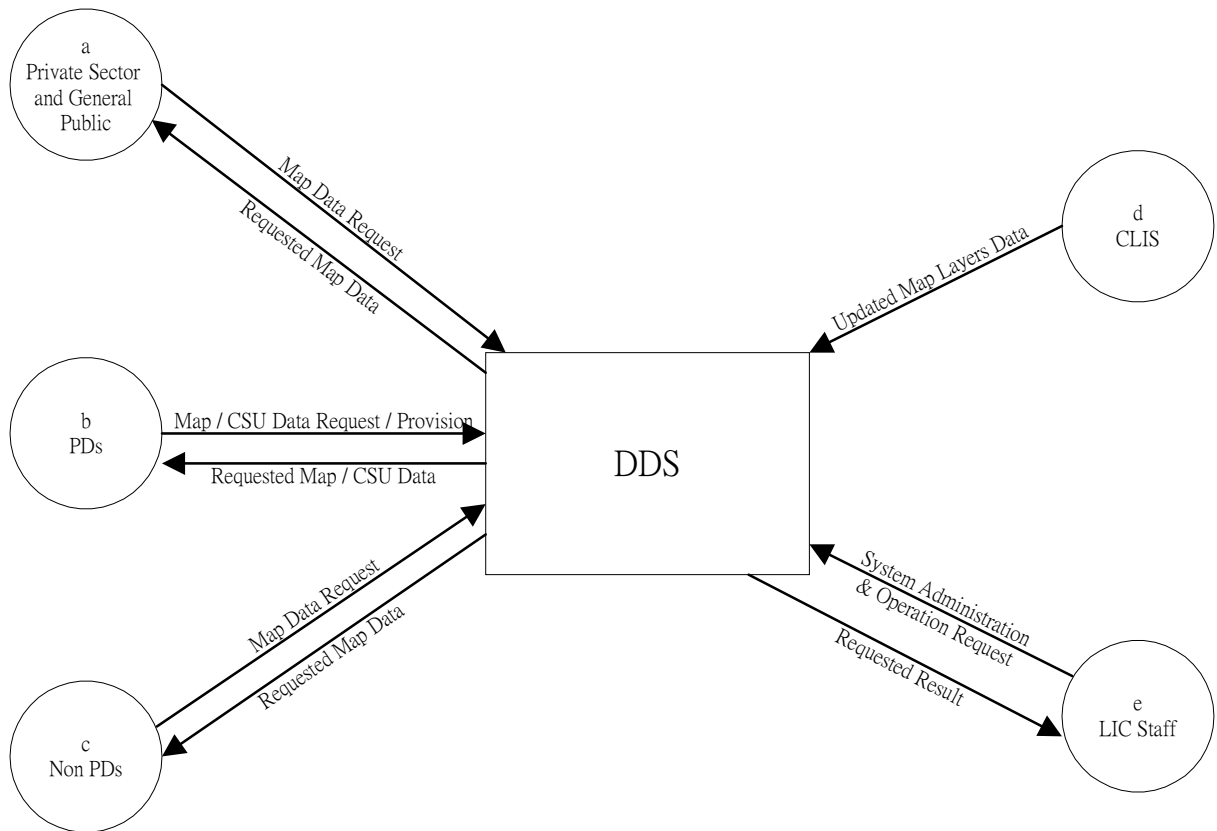
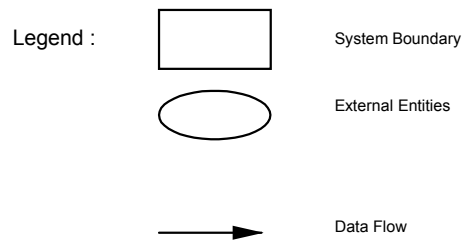


Figure 2.5.1-1 Context Diagram



2.5.2 Data Flow Diagram

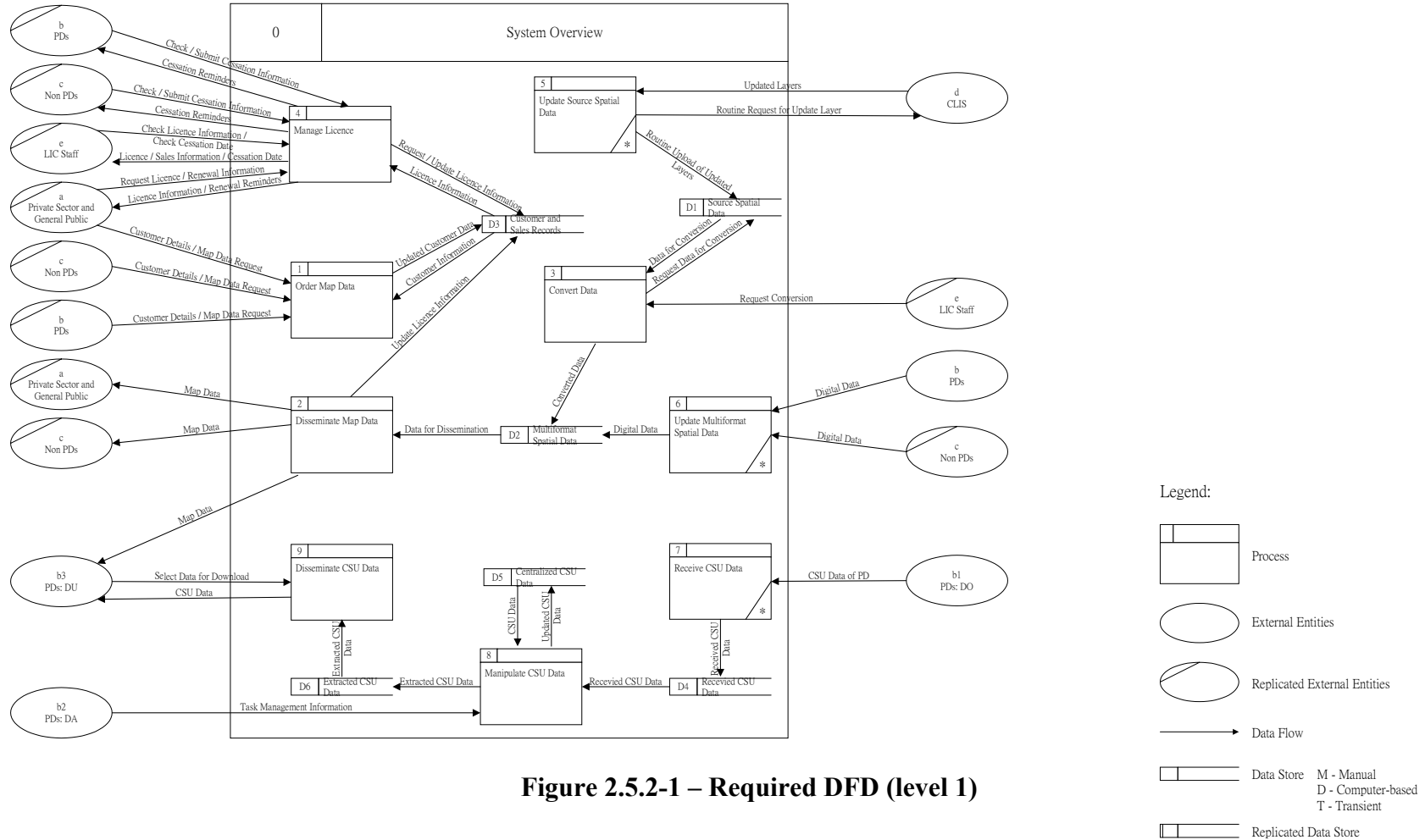


Figure 2.5.2-1 – Required DFD (level 1)

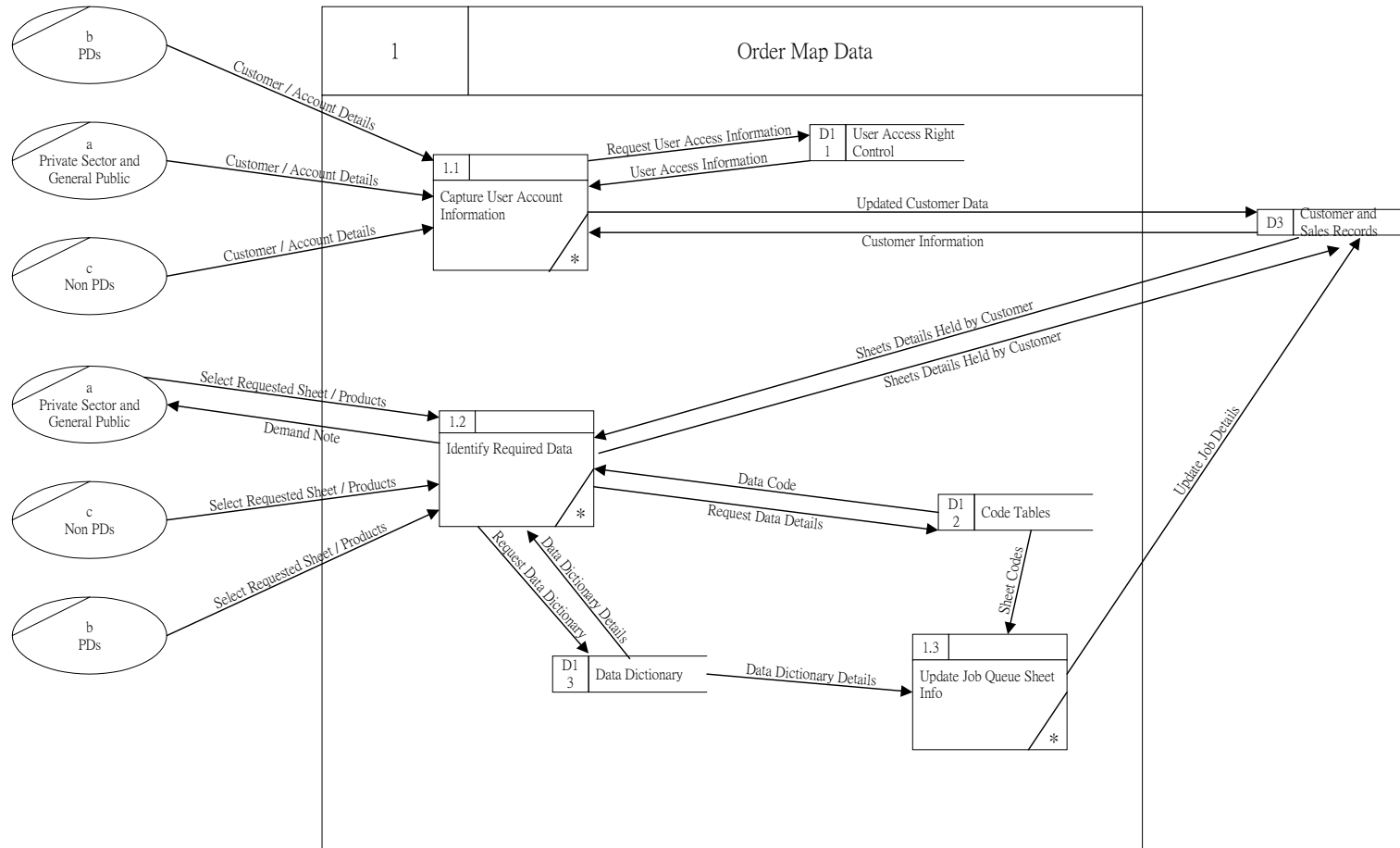


Figure 2.5.2-2 – Required DFD (level 2)

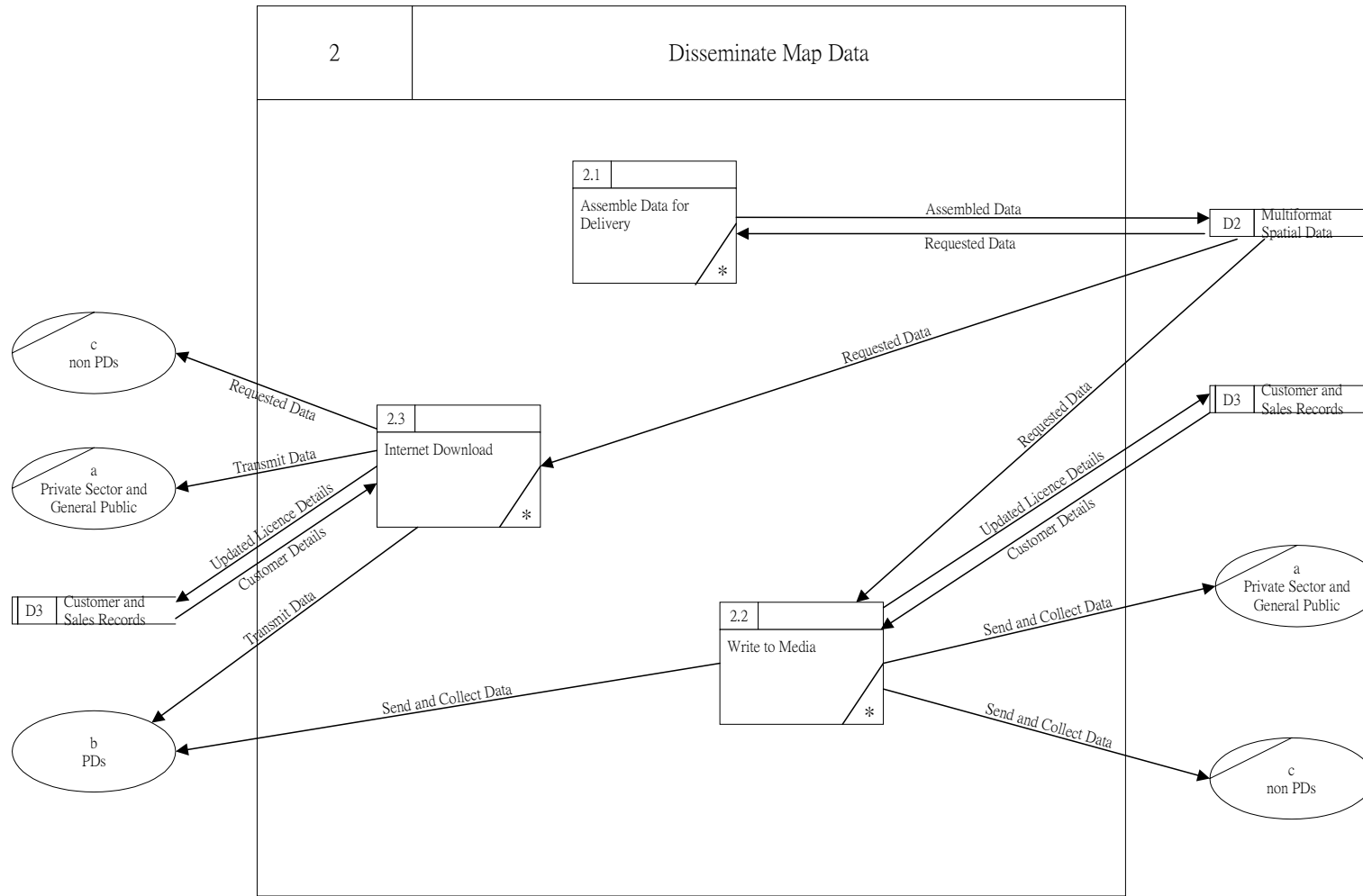


Figure 2.5.2-3 – Required DFD (level 2)

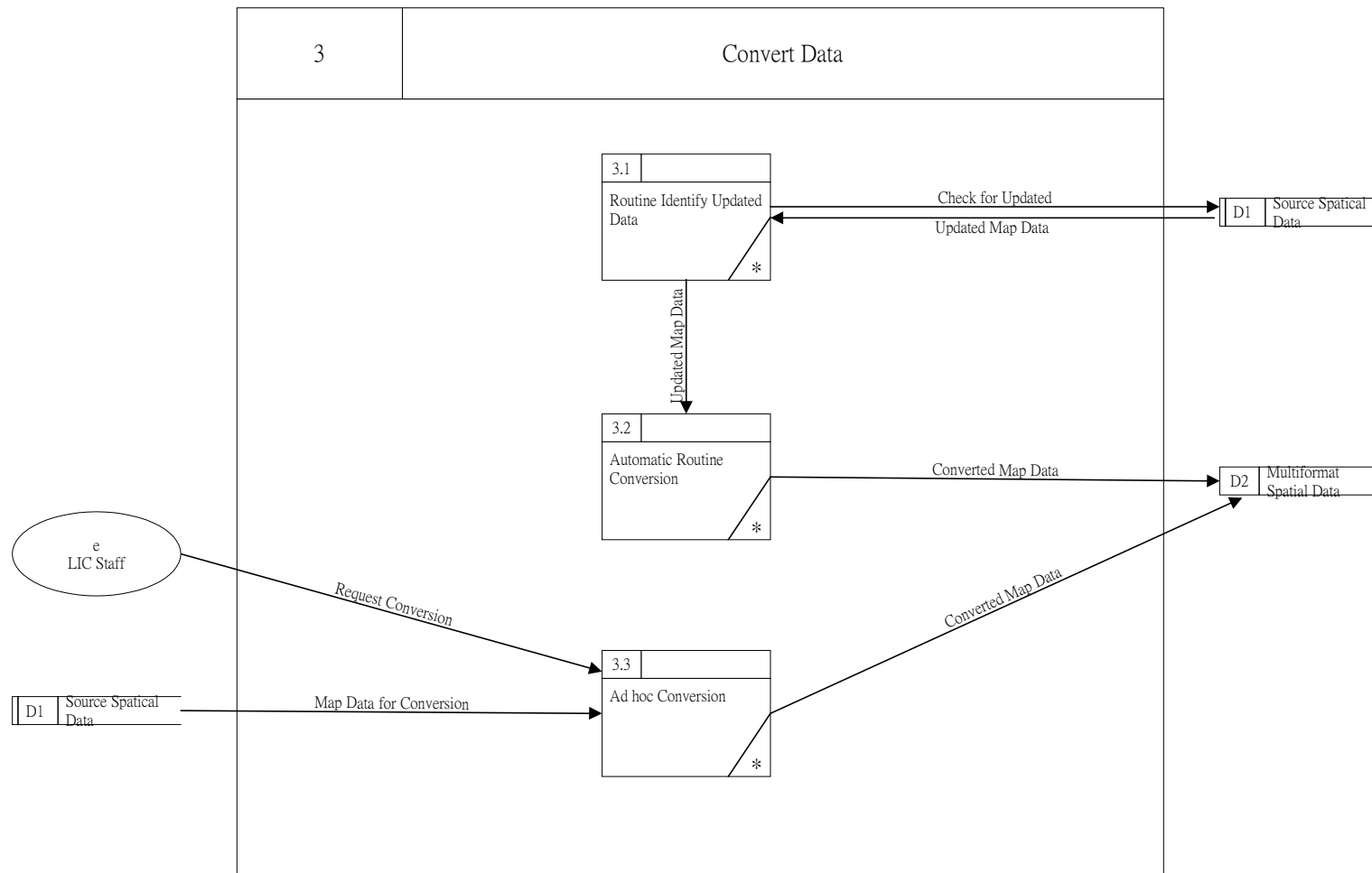


Figure 2.5.2-4 – Required DFD (level 2)

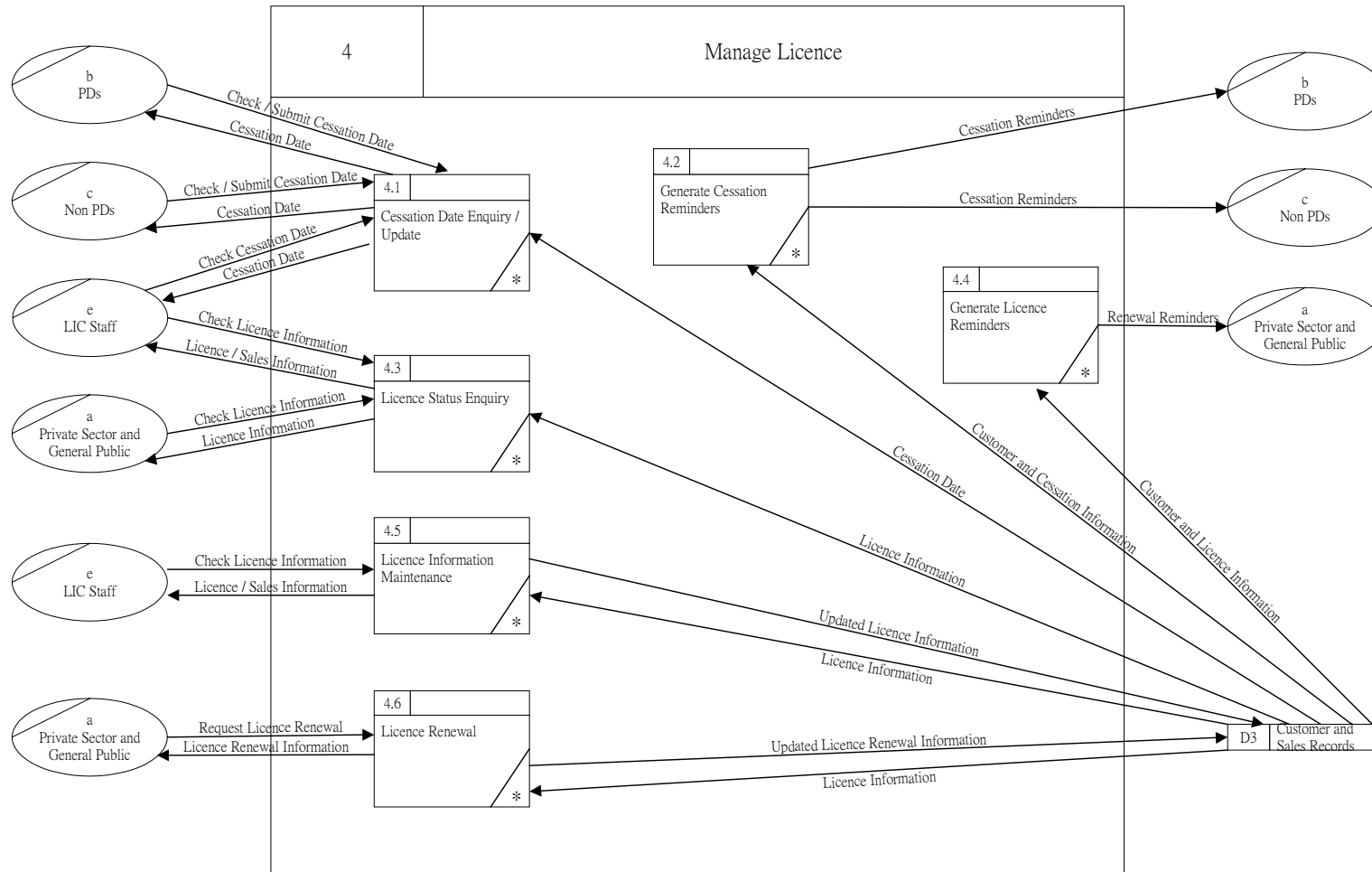


Figure 2.5.2-5 – Required DFD (level 2)

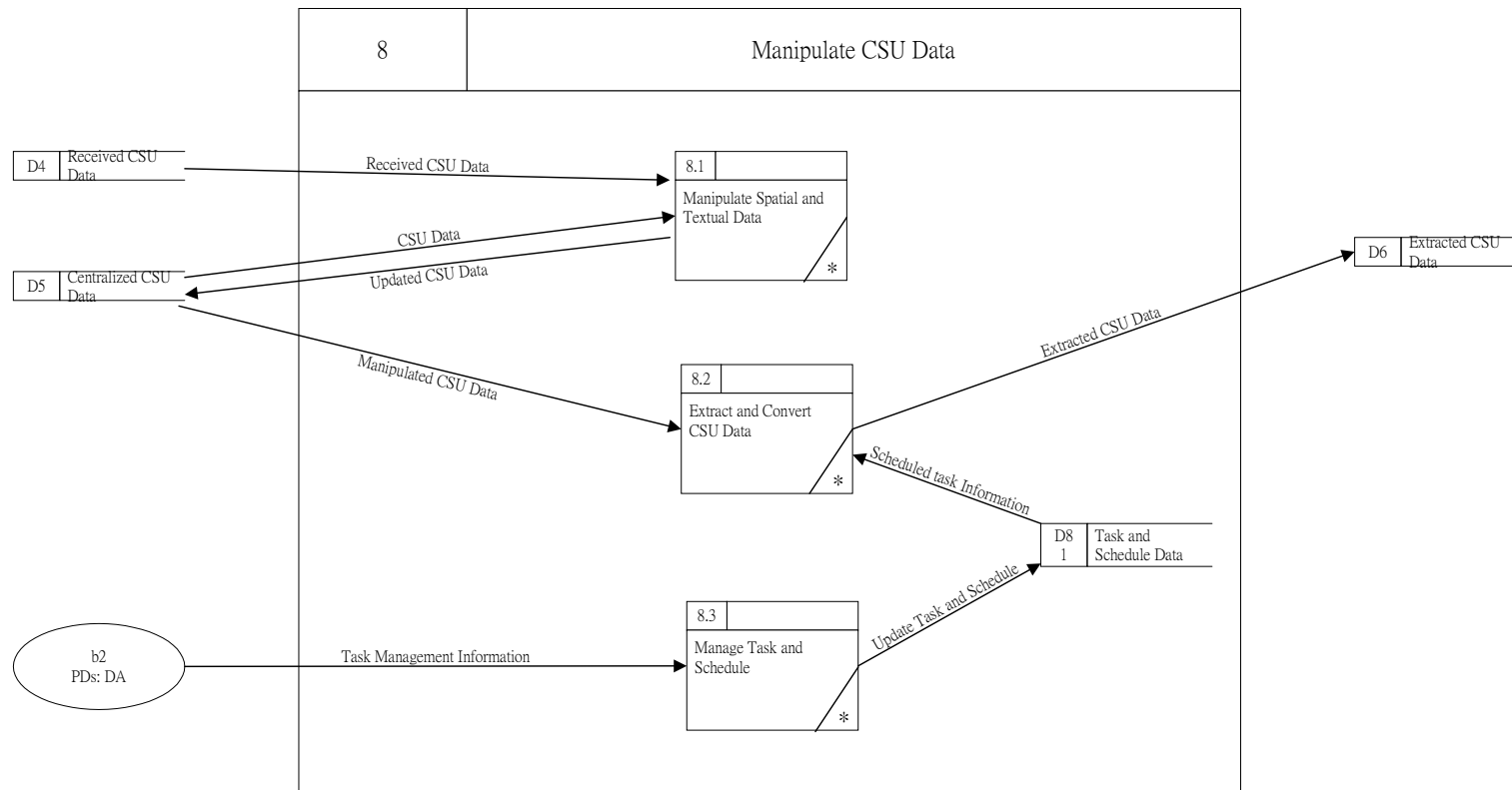


Figure 2.5.2-6 – Required DFD (level 2)

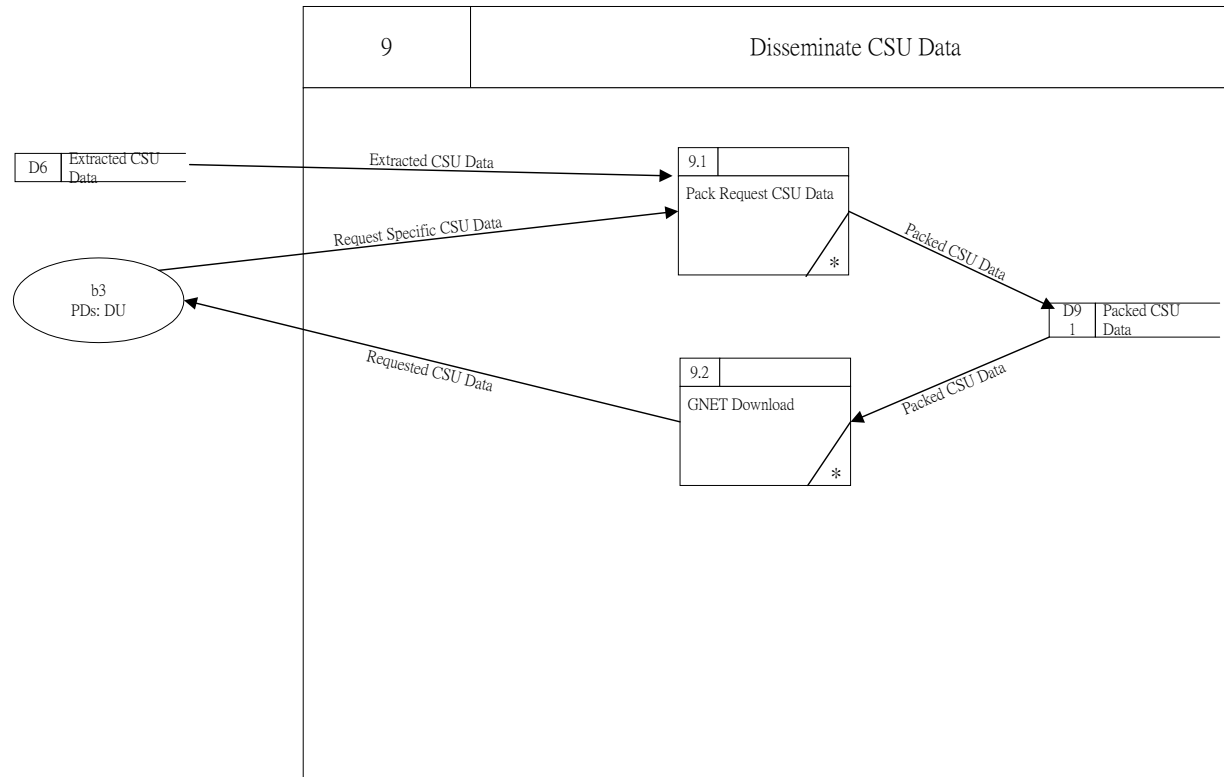


Figure 2.5.2-7 – Required DFD (level 2)

2.5.3 Required System Logical Data Store / Entity Cross Reference

Data Store ID	Data Store Name	Entity Name
D1	Source Spatial Data	B1000 in Arc/Info Native
		B5000 in Arc/Info Native
		B10000 in DGN
		B20000 in DGN
		C1000 in Arc/Info Native
		G1000 in Arc/Info Native
D2	Multi-format Spatial Data	B1000 in E00
		B5000 in E00
		B10000 in E00
		B20000 in E00
		C1000 in E00
		RG1000 in E00
		SG1000 in E00
		B1000 in ASCII
		B5000 in ASCII
		B10000 in ASCII
		B20000 in ASCII
		C1000 in ASCII
		BG1000 in ASCII
		RG1000 in ASCII
		SG1000 in ASCII
		B1000 in DGN
		B5000 in DGN
		B10000 in DGN
		B20000 in DGN
		C1000 in DGN
		RG1000 in DGN
		SG1000 in DGN
		B1000 in DWG
		B5000 in DWG
		B10000 in DWG
		B20000 in DWG
		C1000 in DWG
		RG1000 in DWG
		SG1000 in DWG
		B1000 in DXF
B5000 in DXF		
B10000 in DXF		
B20000 in DXF		
C1000 in DXF		
RG1000 in DXF		
SG1000 in DXF		
B5000 in TIFF		
B10000 in TIFF		

Data Store ID	Data Store Name	Entity Name
		B20000 in TIFF
		GeoCom in MDB
		GeoCom in XLS
		DOP5000 in ECW
		DOP10000 in ECW
		DOP5000 in MrSID
		DOP10000 in MrSID
		DOP5000 in TIFF
		DOP10000 in TIFF
		Digital data from other Government departments
D3	Customer And Sales Records	Customer Information
		Licence and Contract Information
		Customer Order Information
		Order Detail
		Undertaking Information
		Job Queue
		Transaction Log
D4*	Received CSU Data	CSU Textual Data in XML format
		CSU Spatial Data in E00, DGN or DWG format
D5**	Centralized CSU Data	Building CSU
		Building Geographical Info
		Proposed Tower Polygon
		Proposed Podium Polygon
		Active Tower Polygon
		Active Podium Polygon
		Demolished Tower Polygon
		Demolished Podium Polygon
		Building Structural Info
		Geo-Struct Mapping
		Building OP Info
		OP Info
		Building Lot No In OP
		Development Name
		Building Development Name
		Building Name
		Building Address
		Street Location
		Street Name
		Location Name
		Data Provision Date
		Participating Department
		Renamed CSU
		Lot CSU
		Land Info
		Cert of Compliance Date
		Resumption Notice
		Land Resumption Notice

Data Store ID	Data Store Name	Entity Name
		Lot Type Name
		Lot Type District
		Land Classification
		Area Unit
		Land Ownership
		Lease Condition Type
		Lease Use
		Lot Polygon
		Overlap Lot Polygon
		Lot Register
		Lot Register Lot Type
		Lot Register Area
		Memorial
		Lot Register Memorial
		Memorial Nature
		Subdivision
		Road Centreline CSU
		Road Segment Layer
		Road Intersection Layer
		Road Intersection
		Road Name
D6	Extracted CSU data	Building CSU Spatial Data in E00 and DGN format
		Lot CSU Spatial Data in E00 and DGN format
		Road Centreline CSU Spatial Data in E00 and DGN format
D1-1	User Access Right Control	User Access Right Control Table
D1-2	Code Tables	Code Tables such as sheets code
D1-3	Data Dictionary	Data Dictionaries
D8-1	Task and Schedule Data	Task and Schedule Table
D9-1	Packed CSU Data	Packed CSU Files

Note:

- * Prior arrangement has been made between LandsD (Data Agent of Building CSU) and ArchSD so that ArchSD would submit Building CSU data under their jurisdiction in DWG format.
- ** The entities of the Centralized CSU Data should go with the latest recommendation of CSU data specification from DAM project.

2.5.4 Function List

The function specification describes the requirements and capabilities for DDS to address the needs of Lands Department (LandsD). The whole function specification document contains the combined function specification for CLIS DDS and CSU DDS. The functions of the CLIS DDS are mainly transferred from the Function Specification Document of the last FS (CLIS DDS) and selected relevant parts are updated as per the revised user requirements. A Request For Information (RFI) had been conducted in the last FS (CLIS DDS) to assess the feasibility of a total comprehensive solution CLIS DDS. The result indicated that a fair amount of customisation of potential software package would eventually be required for the proposed CLIS DDS. A Function Point Analysis (FPA) was done in the last FS (CLIS DDS). Since the UR has been slightly modified and the scope will include CSU DDS in the integrated DDS, the FPA will be updated and documented separately.

The functions for the DDS are classified into the following four major categories:

1. Retrieval for enquiry and display;
2. Update for data loading;
3. Dissemination for data exchange and conversion; and
4. Provision, manipulation and dissemination for CSU data.

The function list defines the functions to be provided by the DDS with the following naming convention.

Function ID = [Category] + [2-digit Sequence Number]

Where Category:

- RF Retrieval function
- UF Update function
- DF Dissemination function
- CF CSU provision, manipulation and dissemination function

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
UF24	<p>Automatic update of the Source Spatial Data Hub with digital map data from CLIS</p> <p>This function automatically updates the digital map data in the Source Spatial Data Hub by extracting the list of revised digital map sheets and layers from CLIS. It will also extract the latest revision date information from CLIS and update to the digital map product information of DDS.</p> <p>This update process continues until completion. Any intermediate failure during the process will be logged.</p>	Batch	518	D002	CLIS Source Data Management Activities

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
DF17	<p>Error log for automatic update of the Source Spatial Data Hub with the digital map data from CLIS</p> <p>This function stores any error messages generated by the process of automatic update of the Source Spatial Data Hub with the digital map data from CLIS.</p> <p>Error message includes at least:</p> <ul style="list-style-type: none"> . Failure type, date and time . Digital map sheet number . Layer name <p>An error message is generated whenever there is a failure or incompleteness during the automatic update process.</p>	Batch	518	D002	
DF18	<p>Reactivating the automatic update of the Source Spatial Data Hub with the digital map data from CLIS</p> <p>The function allows an authorised LandsD user to reactivate the automatic update of the Source Spatial Data Hub with digital map data from CLIS on an ad hoc basis either entirely or partially.</p>	Online	518	D002	
RF10	<p>Identification of the updated digital map sheets since last purchase</p> <p>This function compares the revision date of the digital map sheets of the customer's previous order and that of the current version in DDS. It will highlight those digital map sheets that have been updated since the last purchased.</p>	Online	20,321	SYS003	
RF18	<p>Interface with CLIS to extract the revision history information of digital map products</p> <p>This function will extract the revision history information of the required digital map products from CLIS on request basis. The extracted data will be used for further data manipulation.</p>	Batch	518	SYS001	Ordering and Payment Activities
RF01	<p>Access customer accounts information</p> <p>This function allows customers to read their accounts records within the DDS. Customers with valid licences are able to read their own account records each of which includes in the</p>	Online	173,683	SYS001	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	<p>following information:</p> <ul style="list-style-type: none"> • General account details (e.g. address, telephone numbers, contact person) • Current digital map sheets and digital map products held by the customers and their corresponding licence expiry dates • Details of previous transactions (digital map products purchased, payment details, dates) <p>Customers can have access to the above mentioned information via the Internet.</p>				
RF02	<p>Control the access right of customer account</p> <p>The access right of each customer is managed and controlled with appropriate security measures. Linkage between the customer account and the user access right control table is established to facilitate this function. Each customer can only maintain his/her own account details. All customer account information could be accessed by authorised Lands Department (LandsD) users only.</p>	Online	1,082	SYS001	
RF04	<p>Provide a wizard or computer guide for selection of the digital map product</p> <p>This function provides the wizard, which provides a computer generated set of suggestions that can help guide the customers in selecting the appropriate digital map product.</p>	Online	20,321	SYS001	
RF06	<p>Display digital map sheet and revision details</p> <p>This function provides information on the index and the latest revision details of the digital map sheet.</p> <p>Based on the selected digital map products, the following information are provided:</p> <ul style="list-style-type: none"> • The digital map sheet index • Basic geographical information (coastline, key roads, outline of built up area, area place names). • Digital map sheet reference numbers • The latest revision details <p>Zoom and pan facilities will be provided over digital map sheet index to allow customer to locate his/her area of interest.</p>	Online	20,321	SYS001	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
UF06	<p>Maintain digital map product information</p> <p>This function allows authorised LandsD users to maintain the detail information of digital map product such as the digital map product category, scale of the digital map and cost information.</p> <p>It also allows the user to enquire and print the digital map product details (e.g. cost information and latest revision date of the map products).</p>	Online	518	SYS001	
RF07	<p>Selection of digital map product</p> <p>This function allows customers to select the particular digital map products that are available for sale. Information such as the brief description of digital map products (including LandsD digital map data and data dictionary, as well as digital data from other Government department), list of available digital map sheets and layers, data format, data charge, and sample of LandsD digital map data and so on will be provided to assist the customers in making the selection.</p> <p>For selecting LandsD digital map data, the following methods are provided:</p> <ul style="list-style-type: none"> • By means of entering standard areas as selection criteria (Single button/pull down options will be provided to facilitate the select the particular digital map sheets covering standard areas such as: entire HKSAR, District Board or Constituency Area, Geographic entities/places (e.g. Hong Kong Island, TST, Shatin) • By means of entering digital map sheet reference number as selection criteria (This enables selection of large scale digital map data by entering reference number of small scale sheet enclosing them (e.g. select all 1:5000 scale digital maps that fall within a particular 1:20000 sheet by giving the B20000 sheet reference number) • By cursor based selection on the digital map sheet index either through point-and-click at the required digital map sheets or drag to indicate an area of the index with the cursor • By entering the Hong Kong grid coordinates and latitudes / longitudes as 	Online	20,321	SYS001, SYS002	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	<p>selection criteria</p> <ul style="list-style-type: none"> By selecting the specific feature layers (e.g. buildings, road, elevation etc) within the large-scale digital map products 				
RF12	<p>Automatic calculation of the total cost of ordered digital map products</p> <p>This function calculates the total cost of the ordered digital map products selected by customers via the online ordering facility. The cost is calculated based on the following:</p> <ul style="list-style-type: none"> Whether a digital map product is purchased for the first time or as an update; The type of a customer (as different charge scales may apply to different types of customers such as Government customers or private sector customers); Data storage and dissemination methods selected; and Postage or standard courier charges involved (subject to pricing policy review by LandsD). <p>The total cost can be settled by offline payment.</p>	Online	20,321	SYS005	
DF02	<p>Electronic submission of purchase order</p> <p>This function allows customers to submit the purchase order electronically. For each order, a unique licence number/undertaking contract number will be assigned to the customer.</p> <p>The following information will be captured via the on-line ordering facility:</p> <ul style="list-style-type: none"> Order date and customer information (e.g. customer name); Licence/undertaking contract information such as licence number/undertaking contract number, intended use of data and description of computer configuration for using the data; Digital map data ordered and the data format required; and Dispatch method etc. <p>Upon submission of order, the order information is entered into the job queue and waits to be processed.</p> <p>The order information will be processed for the generation of Demand Notes.</p>	Online	20,321	SYS001	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
DF04	<p>Generate order form/memo</p> <p>This function allows customers to download the order forms/memos in standard formats (PDF or DOC formats), that are either blank or already filled with relevant information and submit in paper form to make a purchase accordingly.</p> <p>The customer can either:</p> <ol style="list-style-type: none"> 1. Download the order forms/memos electronically, print them and complete the order form/memo manually for the purchase of digital map product, or 2. Make the purchase selection on-line so that information on the relevant selected digital map products/ digital map sheets, customer account details etc will be automatically entered into the relevant section/fields of the order form/memo prior to a download, print and submission. 	Online	10,160	SYS001	
DF13	<p>Generating a Demand Note</p> <p>This function automatically generates a demand note to the customer who orders digital map data via the online ordering facility but does not select to settle the payment electronically. This process will automatically generate a unique identification number for the demand note and will be available for download by customers.</p>	Online	20,321	SYS005	
DF30	<p>Download Demand Note</p> <p>This function allows customers to download demand note.</p>	Online	4,064	SYS005	
DF50	<p>Enquire and print a Demand Note</p> <p>This function allows authorized LandsD users to enquire specific demand note on ad-hoc basis and print it for customers following the existing practice.</p>	Online	20,321	SYS005	
UF10	<p>Update Demand Note and payment status upon payment confirmation</p>	Online	20,321	SYS005	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	This function allows authorized LandsD users to update the demand note status and automatically update the payment status for corresponding order for payments.				
DF29	Send an E-mail notification to customer to download the data This function automatically sends an e-mail notification to customers, once the order is processed and ordered digital map data is ready for download.	Online	20,321	SYS007	
UF05	Maintaining the customer profile records This function allows the customers to maintain their own profile records such as name of the company, address, telephone number, fax number etc. A unique identification number will be automatically be generated to each customer once his/her profile is created.	Online	86,842	SYS008	Customer Profile, Licence and Sales Record Activities
UF17	Maintaining the code tables for DDS This function provides a facility for the LandsD users to maintain the code tables for storing the codes and relevant information in DDS. Those codes tables are mainly classified into 3 groups: i. Code Tables for Customer Information, e.g. ➤ Customer type code ➤ Government departments code ➤ Intended use of a digital map product ➤ Agreement number ➤ Terminal types used by customers ii. Code Tables for Product Selection, e.g. ➤ Digital map product categories ➤ Digital map product names ➤ Available data format iii. Code Tables for Other DDS Activities, e.g. ➤ System administration ➤ Backup activities Only authorised LandsD users have the access right to maintain these tables.	Online	69	SYS008	
DF19	Automatic conversion into Multi-format Spatial Data Hub	Batch	126,990	D003	Data Conversion Activities

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	This function converts the revised digital map data from the Source Spatial Data Hub into each of the available digital map data formats supported by the Multi-format Spatial Data Hub. The restricted layer of the digital map data stored in the Source Spatial Data Hub will be excluded from this process. This function is automatically triggered by the updating process being executed in the Source Spatial Data Hub. Conversion is based on standard conversion applications (based on COTS or LandsD conversion routines). This update process continues until completion. Any intermediate failure during the process will be logged.				Activities
DF08 [#]	Separate English and Chinese annotation in different layers of the digital map data This function separates the English and Chinese annotation in different layers of the digital map data during the data conversion process.	Batch	126,990	SYS004	
DF09	Suspending the batch conversion Authorised LandsD users can suspend the batch conversion process under a controlled environment.	Online	518	SYS004	
DF10	Reactivate the conversion process This function allows authorised LandsD user to reactivate the conversion process entirely or partially on an ad hoc basis.	Online	518	SYS004	
DF20 [#]	Conversion process error log This function stores any error messages generated by the conversion applications. Error messages includes at least: <ul style="list-style-type: none"> • Failure type, date and time • Digital map sheet number • Layer name An error message is generated whenever there is a failure or incomplection during the conversion process.	Batch	518	SYS004	
DF21 [#]	Display alert message from conversion process An alert message is sent to an authorised	Batch	518	SYS004	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	LandsD user for any conversion job that has encountered problems.				
DF22 [#]	<p>Conversion validation</p> <p>This function is to validate the result of the conversion by using the conversion applications. It verifies the integrity of converted data in terms of symbology, attributes and geographic features.</p>	Batch	126,900	SYS004	
RF41 [#]	<p>Conversion error log report</p> <p>This function generates a report for the conversion error log mentioned in DF20. This report provides options to list the information in full, or according to job number, date, time, digital map sheet number and layer name etc. as user user-specified criteria.</p>	Batch	284	SYS004	
DF39 [#]	<p>B1000 conversion</p> <p>This function converts B1000 digital map data into the following formats: E00, ASCII, DGN, DWG, and DXF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation, Chinese characters and cartographic symbology are also translated accordingly.</p>	Batch	21,150	SYS004	
DF40 [#]	<p>B5000 conversion</p> <p>This function converts B5000 digital map data into the following formats: E00, ASCII, DGN, DWG, DXF and TIFF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation, Chinese characters and cartographic symbology are also translated accordingly.</p>	Batch	21,150	SYS004	
DF41 [#]	<p>B10000 conversion</p> <p>This function converts B10000 digital map data into the following formats: E00, ASCII, DGN, DWG, DXF and TIFF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation, Chinese characters and cartographic symbology are also translated accordingly.</p>	Batch	21,150	SYS004	
DF42 [#]	B20000 conversion	Batch	21,150	SYS004	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	This function converts B20000 digital map data into the following formats: E00, ASCII, DGN, DWG, DXF and TIFF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation, Chinese characters and cartographic symbology are also translated accordingly.				
DF43 [#]	C1000 conversion This function converts C1000 digital map data into the following formats: E00, ASCII, DGN, DWG, and DXF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation and cartographic symbology are also translated accordingly.	Batch	21,150	SYS004	
DF44 [#]	G1000 conversion This function converts G1000 digital map data into the following formats: E00, ASCII, DGN, DWG, and DXF. The function provides complete and accurate cartographic, attribute and geometric conversion. Annotation, Chinese characters and cartographic symbology are also translated accordingly.	Batch	21,150	SYS004	
DF06 [#]	Ad hoc conversion This function allows authorised LandsD users to execute an ad hoc conversion program which is tailor-made for specific requirements that may be requested from the customer.	Batch	518	SYS004	
DF11	Job queue monitoring and processing This function processes new jobs and monitors the status of job queue. As new jobs are entered into the job queue based on the status of payment status of an order, this function will verify the job requests. If the job can be fulfilled by obtaining the requested digital map data available from the Multi-format Spatial Data Hub, it would then compress the requested digital map data and store it in a reserved area. It also creates a hyperlink referring to a corresponding location to which the customer can download the required map data via communication line.	Online	518	SYS006	Data Dissemination Activities

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	In addition, this function logs the start time and completion time of the each job. It also updates the Customer and Sales Record Subsystem with the completion date of the corresponding order.				
DF12	<p>Prioritization of the job orders in the job queue</p> <p>This function allows authorised LandsD users to manually prioritize the job orders in the job queue.</p>	Online	518	SYS006	
DF28	<p>Extraction of the requested digital map data into physical media</p> <p>This function extracts the selected digital map data from the Multi-format Spatial Data Hub and stores them into the selected physical media (CD-ROM, Tape, and Floppy disk). Job details including customer account information, order number and date are also part of the extracted information. If no media writer is available or if media has not been loaded, an alert message will be issued and the job will be put on hold and reactivated after the media is loaded.</p> <p>Upon completion of loading the digital map data to the physical media, the job queue and the Customer and Sales Record Subsystem will be updated.</p>	Online	20,321	SYS007	
DF37	<p>Automatic generation of order documentation / labels</p> <p>This function prepares the following standard documentation as an attachment to the disseminated digital map data:</p> <ul style="list-style-type: none"> • General licensing/copyright conditions • Cover letter • Layer descriptions of the purchased digital map data <p>Documentation can be provided to customer via electronic mail, or can be printed out so that it may be included in a package assembled for collection/postage to the customers.</p>	Online	20,321	SYS007	
UF25	Load digital data to DDS originated from other Government departments	Online	2,700	D004	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	This function allows the digital map data originated from other Government departments to be loaded to the DDS.				
DF38	Download digital map data This function allows customers to download the ordered historical digital map data via communication line.	Online	74	D005	
UF20	Maintain the undertakings information This function allows customers from Government Department or consultant to maintain the undertaking information such as the applicant information, the agreement number concerning a particular Project/Study, contract completion date and the undertaking person details (e.g. name, telephone number, fax number etc.). It also allows authorized LandsD users to enquire and print the undertakings information of Government department or consultant. <u>Note:</u> There are two types of undertakings: 1. The undertakings by Government Department for provisions of LIC digital data to consultants. 2. The undertakings by Consultant on the use of government digital data from the LIC, LandsD.	Online	1,270	SYS010	Licence Renewal and Cessation Activities
UF09	Update customer licence/cessation Information This function allows customers to update licence record such as change of computer terminal information etc. It also allows the customers to input cessation information for confirmation on the cessation of the use of government digital data upon expiry of their undertaking contract.	Online	86,842	SYS010	
UF07	Automatic update of the licence expiry date This function will calculate the expiry date of a new licence after the ordered digital map data are placed onto a reserved area and update the	Online	16,257	SYS010	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	licence expiry date in the licence record automatically.				
UF08	<p>Renewing customer licence record</p> <p>This function allows customers to apply for renewal of the licence to use the Government digital map data upon the expiry of the current licence.</p> <p>It includes information such as the date of application, current licence number, expiry date of current licence number etc.</p>	Online	16,257	SYS010	
RF17	<p>Print licence renewal fee statement</p> <p>This function allows the authorised LandsD users to print the licence renewal fee statement. The licence renewal fee will be calculated based on the annual licence renewal fee per sheet and the number of sheets purchased for the licence.</p>	Online	74	SYS010	
RF21	<p>Licence expiration / Cessation early reminder</p> <p>The function generates an early reminder to inform the customers his/her licence expiry date, or the corresponding Government departments to enforce the cessation of use of LandsD digital map data by their consultants.</p>	Online	74	SYS010	
RF23	<p>Generating a licence record status / cessation report for the authorised LandsD users</p> <p>The function generates a licence record status report for the authorised LandsD users to check the licence record status of the customers. It can also generate cessation report for authorised LandsD users to keep track of the Undertakings and Cessation dates for the consultants working with other Government departments.</p> <p>This function provides options to retrieve the information in full, or in user-specified time range.</p>	Online	74	SYS010	
RF27	<p>Providing online technical support information</p> <p>This function provides technical support information to any customers via a technical support web page(s). It is suggested to have the following:</p>	Online	20,321	SYS009	Customer Supporting Activities

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	<ul style="list-style-type: none"> • Detailed digital map product descriptions • Future Development, sales policy and products availability • Technical instructions on using the digital map products • Frequency Asked Question (FAQ) <p>In addition, this function can allow authorised customers to view their current purchased versions as well as the previous versions of the data dictionaries.</p> <p>Hyperlinks are provided to link to the Metadata Catalogue System which is currently being developed by LandsD, as well as to other companies' web sites which make use of LandsD digital map data and products.</p>				
UF22	<p>Maintaining the online technical support information</p> <p>This function provides a facility for the LandsD users to maintain the technical support information mentioned in RF27 and also all the versions of data dictionaries which are available on the technical support web page(s).</p>	Online	69	SYS009	
DF16	<p>Issuing the electronic news bulletin</p> <p>This function issues the electronic news bulletin to customers via electronic mail. The electronic news bulletin can inform the customers of the following information:</p> <ul style="list-style-type: none"> • Those digital map sheets that have been updated • Those data dictionaries that have been updated • Availability of new digital map products or digital map formats • The new services provided from LandsD 	Online	74	SYS009	
RF44	<p>Generating ad-hoc reports</p> <p>The function allows LandsD users to generate any required reports by using commercial report writer tools with customization capability.</p>	Online	518	SYS009	
CF01	<p>Provide CSU submission user interface for DO</p> <p>The function allows DO to submit the CSU data. DO at the client side is able to browse and select the submitting file or files which can be attached to or removed from a temporary files</p>	Online	148	DAM001	Data Provision from DO Activities

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	docking list to be submitted. After the confirmation of submission, the files at the docking list will be submitted to the server side.				
CF02	<p>Store received CSU data from DO</p> <p>The function stores the received CSU data from DO. Upon receipt of the submitted CSU data from DO, the CSU data will be stored for further data manipulation.</p>	Online	148	DAM001	
CF03	<p>Validate CSU data from DO</p> <p>The function validates the format and the structure of CSU data submitted from DO against the conformed CSU data file format such as pre-defined XML schema or spatial data. The data items, to be verified, include CSU ID, update date and time, ownership of the update fields etc. Those information related to the data structure, Chinese characters sets and syntax of submitted CSU data file or files which could be extracted from the header of the available XML schema would be examined.</p>	Online	148	DAM002	
CF04	<p>Timestamp CSU data from DO</p> <p>The function logs the date and time of the CSU data received. Upon completion of the validation process, the system will assign a timestamp to the CSU received.</p>	Online	148	DAM002	
CF05	<p>Record transaction of submitted CSU data</p> <p>The function records the transaction of all activities that related to CSU data provision from DO. The transactions include validation, rejection, acceptance and abandon.</p>	Online	148	DAM003	
CF06	<p>Acknowledge on submission</p> <p>The function provides the information to the DO who submitted the CSU data whether the data is submitted successfully or not. Once the CSU data have passed the validation, the submitter will receive a successful acknowledgement. If the data has not passed the validation, the submitter will receive an unsuccessful acknowledgement and the identified error on the submitted CSU data.</p>	Online	148	DAM004	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
CF07	<p>Manipulate spatial and textual data</p> <p>The function manipulates the spatial and textual data. It should be able to matching spatial data record and textual data from incoming CSU data with CSUID, and then update related textual data fields correspondingly. Temporary ID will be assigned for the submitted CSU data that without CSU ID.</p>	Batch	148	DAM005	Data Manipulation Activities
CF08	<p>Store manipulated data into the spatial database</p> <p>The function provides a facility to store the manipulated data into a Spatial Database Server which is required to be established for storing both spatial and textual data. That Spatial Database Server would be a RDBMS that is capable to handle standard SQL and spatial query.</p>	Batch	148	DAM005	
CF09	<p>Validate data during manipulation</p> <p>The function provides a facility to validate both spatial and textual CSU data during manipulation. It should be able to check whether the CSU data are valid and able to be manipulated together by defined rules.</p>	Batch	148	DAM005	
CF10	<p>Timestamp the manipulated CSU Data</p> <p>The function logs the date and time of the manipulated CSU data. Upon successful completion of the manipulation process, the system will assign a timestamp for related field(s) in every CSU record.</p>	Batch	148	DAM005	
CF11	<p>Trigger task for CSU data extraction</p> <p>The function provides a schedule based control process to manage CSU data extraction. The CSU data extraction process will be activated by the scheduled timetable of CSU delta data manipulation.</p>	Batch	20	DAM006	
CF12	<p>Plan and manage task timetable for CSU data extraction</p> <p>A timetable planning function for CSU delta data production should be provided to allow system administrator of DA to plan and update</p>	Online	20	DAM006	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	<p>the production timetable (minimum to handle two years), based on the category of CSU and update frequency as user required. It should provide an organizer feature, with calendar like interface, for DA to plan or schedule the processing time and period for CSU data extraction activity. This planning aids tool for user:</p> <ul style="list-style-type: none"> • to input working calendar; • to highlight available time slots of office hour and after office hour for selection; • to plan by product category, office hour, public holidays, estimate process duration and production time interval automatically; and • with time schedule-editing functions including insert, copy, delete, move and slide. 				
CF13	<p>Define criteria and rules for data extraction</p> <p>A rules definition tool is also available for administrator to define criteria for data extract process. For example, an incomplete CSU data will not be extracted.</p>	Online	20	DAM006	
CF14	<p>Extract CSU Files to conform to file format standards</p> <p>The function should provide facility to extract data from the Spatial Database and then converts the extracted data into the required CSU format files as recommended in the DAM Project specification. Chinese characters and symbols should be preserved after the conversion. This function should also check the quality of converted CSU data. A report for any problems detected should be provided for reference.</p> <p>DAM Project recommended the Standard File Formats for geospatial data exchange and the exchanges of CSU Data should conform to latest available recommended standard.</p> <ol style="list-style-type: none"> 1. Arc/Info Coverage 7.0 (in Arc/Info Export Format, i.e. E00); and 2. MicroStation DGN (two-dimensional) version 7.0 (with attributes stored in separated dBase IV Files). <p>Additionally, conversion into other data</p>	Online	20	DAM007	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	<p>formats, such as SDTS, AutoCAD DWG/DXF and MapInfo TAB/MIF should also be supported. It could be either a stand-alone package or a translator bundled with the proprietary product, but must be customizable to meet the conversion requirements.</p> <p>The package should be able to support data conversion via the said proprietary formats; and conduct the data conversion with high quality with respect to geometric accuracy of spatial feature, correctness and completeness of features converted, correctness of attribute information associated with geometry converted. The linkage between graphic entity and attribute information must be maintained correctly and completely.</p>				
CF15	<p>Track data extraction record</p> <p>The function will keep track of the CSU data extraction process and provide basic information for data dissemination. The data extraction tracking record should contain usable information like category, data owner, date time of generation, numbers of record, and file size etc.</p>	Online	20	DAM007	
CF16	<p>Record transaction of manipulated CSU data</p> <p>The function records the transaction of all activities that related to CSU data manipulation. The transactions include update, extraction, conversion, rejection, acceptance and abandon. This function should be able to integrate with the error logged by data conversion program and related application software.</p>	Online	148	DAM008	
CF17	<p>Validate received data from DAMin/DAMout</p> <p>The function validates the format and the structure of CSU Data that submitted from DAM server against pre-defined format.</p>	Online	20	DAM009	
CF18	<p>Acknowledge on receipt of data from DAMin/DAMout</p> <p>The function provides the information to the DAM server upon submitted the CSU data whether the data is submitted successfully or</p>	Online	20	DAM009	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	not. Once the CSU data have passed the validation, the DAMin/DAMout will receive a successful acknowledgement. If the data has not passed the validation, the DAMin/DAMout will receive an unsuccessful acknowledgement and the identified error on the submitted CSU data.				
CF19	<p>Disseminate CSU data to DU</p> <p>The function should facilitate to disseminate the manipulated CSU delta data for authorized DU to download the converted CSU standard formats (E00 and DGN) file. An up-to-date data selection list will display current CSU delta data for user. Time period and version of the delta data should be clearly stated to allow user to select delta data that they need to be retrieved. It also provide historical selection list that allows DU to select items for download manually.</p> <p>The function should also provide searching criteria for historical data. It provides options for display order of the search result.</p> <p>The dissemination data shall conform to XML format with CSU ID and relevant textual attribute of each CSU for PDs if they require accessing the latest set of CSU ID to validate and to maintain the mapping between departmental information with CSU data set.</p>	Online	192	DAM010	Data Dissemination to DU Activities
CF20	<p>Display useful contact point information</p> <p>Useful contact point information such as telephone number of corresponding DO, DA and DU should be made available for access if help is needed.</p>	Online	192	DAM010	
CF21	<p>Assign order ID for download activity</p> <p>Each download activity is treated as an order. A unique order ID will be assigned to every user request. The package function will base on this order ID to name the package file by the system for user to download.</p>	Online	192	DAM011	
CF22	Pack selected CSU files	Online	192	DAM011	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	The function should facilitate to package multiple files into a single file for download. The package file should be archived in a common format (e.g. ZIP) which allows the end-user to de-archive it to original files easily. This CSU packaging function will base on the user selected items at the Interface for CSU Data Dissemination and pack those files into a single file, and then place it into the delta data dissemination area and provide a hyperlink for user to download.				
CF23	Embed password, terms and conditions into the package file The function should be provided security features to embed password, terms and conditions into the CSU file packaging. User can input a password in the data dissemination process and open the packed CSU data files upon receive. Terms and conditions on the use of CSU data as well as the copyright notice will be displayed for authorized users to read and accept them before the files can be decompressed from the package file. DA should also assign individual key or public key to DUs for CSU data retrieval.	Online	192	DAM011	
CF24	Checksum on the package file The function should facilitate the checksum mechanism for the CSU file packaging which ensures no error in the package.	Online	192	DAM011	
CF25	Remove outdated download package files by scheduler The function should provide facility to schedule and remove the entire download package files which are outdated in delta data dissemination area based on the expiry period defined by the system administrator of DA.	Online	192	DAM011	
CF26	Record transaction of downloaded CSU data The function records the transaction of all activities that related to CSU data dissemination to DU. A transaction log should be able to keep all data access activities. Every download activity by DU was treated as an	Online	192	DAM012	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	order. All CSU data dissemination ordered, rejected, accepted and abandoned transactions will be logged.				
CF27	<p>Acknowledge on CSU data download</p> <p>The function provides the information to the DU who downloaded the CSU data whether the data is downloaded successfully or not. Once the CSU package file have been received by DU, the receiver will receive a successful acknowledgement. If the data has failed to pass the data, the receiver will receive an unsuccessful acknowledgement and the identified error on the downloaded CSU data.</p>	Online	192	DAM013	
CF28	<p>Email acknowledgement of requested CSU package file hyperlink for re-download</p> <p>The function should send messages to predefined e-mail accounts of DU with the information of CSU data dissemination orders. The acknowledgement message contains order ID, packing status, hyperlink reference etc. This feature provides an alternative way for DU to download the ordered package again, in case of download failure.</p>	Batch	192	DAM013	
CF29	<p>Management report for update frequency and number of records for each provision</p> <p>The function should provide a management report in XML format to be retrieved online by DA and DO via a web browser. This report should show the information on DO, user ID, update date and time, and number of records for each provision. DO should only be able to retrieve the information exclusive to themselves.</p>	Online	648	DAM014	Reports
CF30	<p>Managements report for successful / failure CSU data transfer</p> <p>The function should provide a management report in XML format to be retrieved online by DA, DO and DU via a web browser. This report should show the information on PDs, user ID, date and time of data transfer, and status of transfer. Normally, DO and DU should only be able to retrieve the information exclusive to themselves. Some PDs if required such as LR need to retrieve the information on others.</p>	Online	384	DAM014	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
CF31	<p>Management report for CSU data release delta versions and details</p> <p>The function should provide a management report in XML format to be retrieved online by DA and DU via a web browser. This report should show the information on current and historical CSU data release delta versions and details.</p>	Online	648	DAM014	
CF32	<p>User report on user information and access right for PDs</p> <p>The function should provide a user report in XML format to be retrieved online by DA, DO and DU via a web browser to monitor and administer users. This report should show the information on PDs, user ID, user name, user details, access right, creation date and validation period. DO and DU should only retrieve the information related on their own.</p>	Online	648	DAM015	
CF33	<p>User report on User Activities</p> <p>The function should provide a user report in XML format to be retrieved online by DA and DO if needed via a web browser to monitor and administer users. This report should show the information on PDs, user ID, user activities on system, activities date and time.</p>	Online	648	DAM015	
CF34	<p>Maintain Metadata of CSU</p> <p>A set of metadata maintenance (create, update and delete) function should be able to produce metadata documentation of each CSU metadata (Building, Lot and Road Centreline) conforming to American Society for Testing and Materials (ASTM) Specification, “Standard Specification for Content of Digital Geospatial Metadata”, the Federal Geographic Data Committee (FGDC) standard and should migrate to the International Organisation for Standardisation (ISO) Standard on Metadata when it is formally launched and subsequently adopted by the Bureau. Any update to the metadata shall be carried out by the tool on update of the properties of the CSU data.</p>	Online	20	DAM016	Metadata Maintenance
CF35	<p>Submit Metadata to Metadata Catalogue System (MCS)</p>	Online	20	DAM16	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	The function should facilitate to provide metadata submission of the MCS which would be auto triggered on schedule basis (like the facilities provided for schedule-based CSU Data Extraction) and if procedure permits, facilities would be provided to allow auto log-in to the MCS and submission of updated CSU metadata documentation.				
UF27	Maintain code table The function should facilitate system administrator of DA to maintain the code table so that the system administrator can insert, update and delete the code table information.	Online	6	SYS012	System Parameters Maintenance
UF28	Maintain system parameters The function should facilitate system administrator to define and maintain the system parameters such as retention period of the historical data, report printing frequencies, etc.	Online	6	SYS012	
UF29	Synchronization of system date and time The function should be provided to synchronize the published date and time from the Hong Kong Observatory.	Online	365	SYS013	
RF31	System log audit This function provides a system log to keep track of login and logout details on the DDS system for all users. The system captures the user ID, login date and time, as well as the logout date and time.	Online	20,562	ACS01	Audit, Control and Security
RF32	Enquiry on the system log This function allows the authorised LandsD users to enquire about the information of system log or archived system log. The enquiry function provides options to show the successful logins, unsuccessful logins, or both with a user-specified date range.	Online	518	ACS01	
RF33	System log report generation This function generates a report for the system log. It also provides options to list the	Online	74	ACS01	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	successful login, unsuccessful login, or both with a user-specified date range in the report.				
RF34	Archiving and purging system log records This function provides a facility to archive the system log records for a period of 21 months according to pre-defined conditions and transfers them to an off-line storage media. Then the archived records will be purged from the system. As this log also covers on-line records for 3 most recent months, therefore it constitutes a total retention period of 24 months.	Online	6	ACS01	
RF35	Restoring archived system log This function allows the authorised LandsD users to restore the archived system log into a temporary workspace with user-specified data range.	Online	6	ACS01	
RF36	Create activities audit log This function provides a facility to keep track of all the online activities such as change of user ID, functions activated and the maintenance of the database records.	Online	20,562	ACS02	
RF37	Enquiry activities log This function allows the authorised LandsD users to enquire about the information on activities log or archived activities log. The enquiry function provides options to show information in full or according to user ID, data and time range as specified criteria.	Online	518	ACS02	
RF38	Activities log report This function generates a report for the activities log. The report provides options to list the information in full or according to user ID, data and time range as specified criteria.	Online	74	ACS02	
RF39	Archiving and purging activities log record This function provides a facility to archive the activities log records for a period of 21 months according to pre-defined conditions and transfers them to an off-line storage media. Then the archived records will be purged from	Batch	6	ACS02	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	the system. As this log also covers on-line data for 3 most recent months, there is a total retention period of 24 months.				
RF42	Archiving and purging conversion error log This function provides a facility to archive the conversion error log records for a period of 21 months according to pre-defined conditions and transfer them to an off-line storage media. Then the archived records will be purged from the system. As this log also covers on-line data for 3 most recent months, there is total retention period of 24 months.	Batch	6	ACS03	
UF30	Maintaining user accounts table This function provides a facility for the authorised LandsD users to maintain user accounts that defines user id, user name and departments within the system.	Online	16	ACS04	
UF26	Maintaining access right control table This function provides a facility for the authorised LandsD users to maintain a lookup table that defines user groups and their corresponding access rights within the system.	Online	16	ACS04	
DF48	Encryption / decryption for transmission through a secured channel This function provides a facility to impose the encryption / decryption and the security password for the transmission of customer registration data through a secured channel.	Online	20,321	ACS06	
RF45	Backing up the system logs This function performs incremental backup on the system log files in a batch process. A full backup is performed weekly using the system command.	Batch	518	ACS08	
RF47	Archiving and purging the system records This function provides a facility to archive the system records for a period of 21 months and transfer them to an off-line storage media according to pre-defined conditions. Then the archived records will be purged from the	Batch	6	ACS08	

Function ID	Function Name and Description	Mode	Avg. Freq. Per Year	User Req. (REQ-)	Business Activities
	system. As it also covers on-line data for 3 most recent months, there is total retention period of 24 months.				
RF48	Restoring the archived system records This function allows the authorised LandsD users to restore the archived system records into a temporary workspace according to user-specified data or time range.	Online	6	ACS08	
RF49	Archiving and purging job queue This function provides a facility to archive the job queue records for a period of 21 months according to pre-defined conditions and transfer them to an off-line storage media. Then the archived records will be purged from the system. As this log also covers on-line data for 3 most recent months, there is a total retention period of 24 months. The function allows LandsD users to generate any required reports by using commercial report writer tools with customisation capability.	Batch	6	ACS08	
RF51	Enquiry on the job queue This function allows the LandsD users to enquire about the information on job queue or archived job queue by job ID, data and time range as user-specified criteria.	Online	518	ACS08	
RF52	Job queue report This function generates a report for the job queue. The report should provide options to show information in full or according to job ID, date and time range as user-specified criteria.	Online	518	ACS08	

Note:

The shaded area for digital map data format conversion and validation functions will be provided by LandsD to the DDS project implementation team. (Please refer to Appendix 3.2.10 for data conversion process.)

The DDS project implementation team will provide facility to interface with the data format conversion and validation software to streamline the manual operation involved in the data format conversion process.