

## **CHAPTER 8**

### **CONCLUSION**

#### **8.1 Introduction**

Based on the empirical study and the analysis from Chapter 6 and Chapter 7 respectively, the concept of multipurpose 3D cadastre for 3D property rights in Malaysia was conceptualized and the research objectives as stated in Chapter 1 were fulfilled. Thus the aim of this research was achieved. Following the discussion of the concept, recommendations were made for amendments to the current cadastre system in Malaysia, especially where they specifically cater to the multipurpose 3D cadastre for 3D property rights (Section 8.3). Meanwhile, Section 8.4 describes the integration of data information while Section 8.5 offers suggestions for future research.

## **8.2 A Concept of Multipurpose 3D Cadastre for 3D Property Rights in Malaysia - Conclusion**

This research was carried out in two main stages. The first stage involved the literature review on the characteristics of land administration, cadastre and 3D properties worldwide. This was followed by a review of the land administration and cadastre systems in Malaysia, with the conclusion that the Malaysian traditional cadastre is based on the division of land or parcel into flat surfaces with rights of ownership registered on these parcels. Most traditional registrations are found to be adequate as long as whole spaces belong to an individual or to identified groups of people. However, in certain cases, the intensive use of land or parcel makes it possible, and necessary to have many different uses simultaneously above and below other parcels. This has resulted in multiple use of space, whereby the same land parcel is held simultaneously by several proprietors.

Malaysian land and cadastre registration is served by a transparent and accessible registration of rights to properties. Nevertheless, current cadastre systems that are traditionally parcel-based experience complications in maintaining and providing information on the legal status of properties in three-dimensional situations. A 3D cadastre and 3D property registration must cater for not only general, fundamental needs but also country specific needs. General needs address the issue on how to maintain and provide three-dimensional information on properties in land administration and cadastre systems, which are traditionally based on a plane surface cadastral map and registry title.

Therefore, a new approach, *viz.* A 3D property system is needed to overcome these weaknesses. Such an approach calls for a new system of measures aimed at the establishment of properties, the rights of which are explicitly defined both horizontally and vertically. Historically, property rights have been considered three-dimensional for quite a long time, but the lack of explicit vertical delimitation of these rights did not allow true 3D property ownership. There is, therefore, an urgent need for a 3D property system in Malaysia to be incorporated into the current cadastre and land law.

Base on the above mentioned situation, in this thesis, a generalised concept of 3D property rights has been outlined, with suggested amendments to the current cadastre and land law practice in Malaysia. In addition, potential emerging problems related to the 3D property system have been highlighted, and ways to solve them have been proposed. In this respect, many related legal, technical and organisational matters have been investigated.

Next, possible directions of the establishment of 3D property system in Malaysia have been outlined. The target categories are properties above the surface, including structures attached to a multi-layer building, the usage of airspace as well as building structure above a public road or subsurface that is independent from title to the surface of the land. Since it is possible to own strata and stratum properties in Malaysia according to the Strata Titles Act 1985 (Act 318) and National Land Code 1965 (Act 56) respectively, only specific clauses relating to a 3D property system need to be added to the current legislation, or alternatively they can be incorporated in new guidelines and survey regulations. Such clauses need to define firstly, neighbour relationships issues and management of common areas and secondly, the rights of ownership and boundary limits. In order to be able to define above spaces as 3D properties, the development and adoption of new legislation would be needed. To achieve this aim, two objectives were outlined as follows:

- a) To examine the rights of landowner in on surface properties, above surface properties and below surface properties as provided by the National Land Code 1965 (Act 56), Strata Titles Act 1985 (Act 318), the Building and Common Property (Maintenance and Management) Act 2007 (Act 663), Certified Plan and Document of Title, and how do rights are registered in the cadastre.
- b) To examine the rights of landowner in on surface properties, above surface properties and below surface properties as provided by the Swedish Land Code and Cadastral Procedure Acts, and how do rights are registered in the cadastre.

Based on these objectives, the following subsection concludes the findings of this study.

### **8.2.1 Examination of the Rights of the Landowner in Three-dimensional Properties and the Registration of these Rights in the Cadastre**

From the comparisons in Chapter 7, one can conclude that Malaysia has better land tenure system compared to Sweden. From the history of the Malaysian land tenure system, a property can be recognised in three dimensions, *viz.* on surface, above surface and below surface. Nevertheless, the Malaysian land administration system does not recognise rights and titles in one of the abovementioned dimensions independently from the other two dimensions. Owing to the lack of knowledge about 3D property concept, there is an exception of properties that are above surface right independent of ground surface.

This study was undertaken to answer the research question: *Is the law in Malaysia adequate for recognising separate (independent) titles to airspace, surface and subsurface?* It is clear that the use of airspace and subsurface is on the rise, therefore, legal conflicts may arise when different activities are located on different levels of space. Hence, the findings of this study indicate that the laws in Malaysia do not recognise titles to airspace or subsurface which are independent from the title to the surface of the land. Experience has shown that handling such situations within the existing traditional property formation framework does not allow for the provision of a clear insight into the related property rights, and this framework might no longer be applicable in future cases involving more complex situations.

The current Section 57(3)(b) of Strata Titles Act 1985 (Act 318) allows owners of strata title units to have rights to the surface of the land where the owners have undivided shares on that piece of land under the strata scheme. However, there is no provision for having strata titles without having rights to the land surface.

Hence, ownership to an above-ground property is not permissible without concurrent ownership and rights to the ground located below that property. Although Section 75A of National Land Code 1965 (Act 56) allows sharing the airspace above a road reserved for a non-strata scheme, however, such sharing is only valid for a period of 21 years, and this provision is not allowed for land except State reserved land, and any development that is not profit-oriented.

According to Section 11(1) of the Electricity Supply Act 1990 (Act 447), *Tenaga Nasional Berhad* (TNB) is allowed to lay, place or carry on, under (land underground surface) or over (airspace) any land, other than State land, such post and other equipment that may be necessary or proper for the purposes of the licensed installation. However, this is for the installation of a high-voltage cable only. For low-voltage cable, TNB can enter the land by way of consultation with landowners. Although this Act allows use of airspace by TNB, such sharing is only under a licence, i.e. right of use, but not a freehold or leasehold title.

Malaysian legislation recognises rights to airspace on private and State land. The right over private land and Electricity Supply Act 1990 (Act 447) is independent of the title to the surface of the given land. The right to airspace is given/recognised under Section 75A of National Land Code 1965 (Act 56) but this right is limited in term or period, i.e. 21 years, provided the term is not renewed after its expiry. The law does not provide for titles to airspace independent from the title to the surface.

This study took into account the above weakness of the aforementioned law before proposing a new type of title that is not dependent on the title to surface, airspace, and below surface where the depth of the below surface land under alienation is not specified.

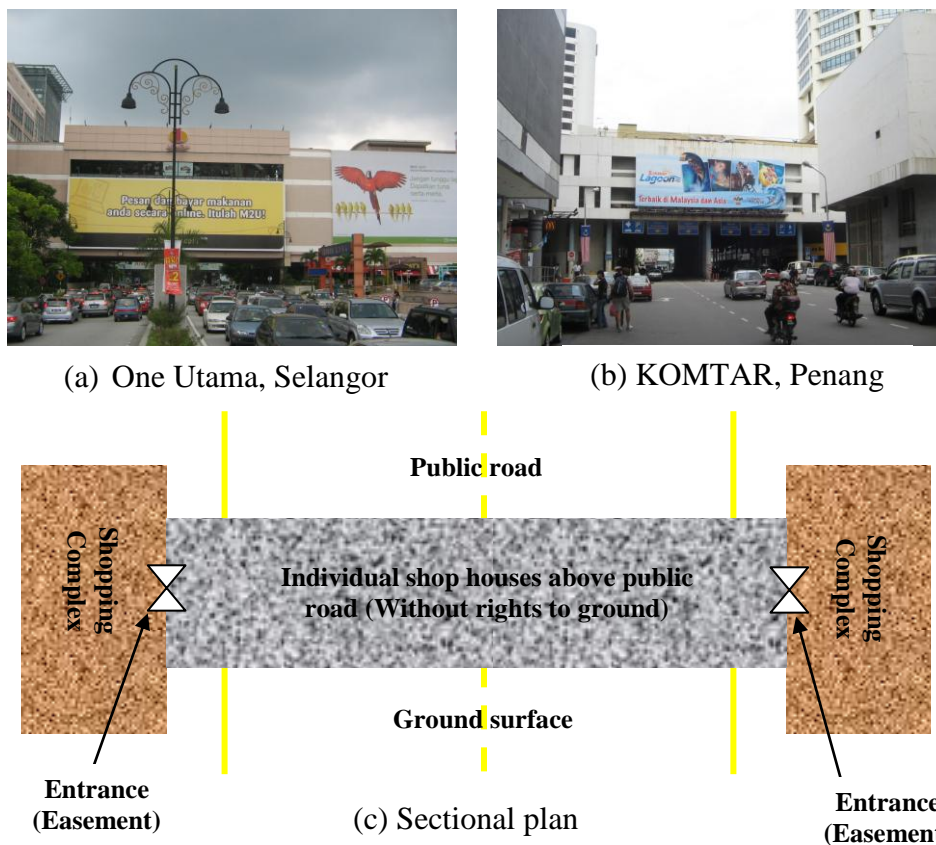
The Malaysian strata title laws provide relatively weak separate (independent) titles under Section 57(3) of National Land Code 1965 (Act 56), and fully independent titles under Section 92B and Section 92D of National Land Code 1965 (Act 56). But this is not so under Section 92C of National Land Code 1965 (Act 56), that is for below surface alienated land. There is no separate (independent) title if the depth of the alienated land is not specified. Where the depth is specified, an separate

(independent) title could be issued to anyone other than the proprietor that own the on-surface land.

For strata titles, Section 57 of Strata Titles Act 1985 (Act 318) indicates dependence of strata titles on the surface where, after termination of the scheme of subdivision of the building, all ex-proprietors have titles to the lot or surface of the land. There is no clear provision whether or not a title could be issued to the surface of land independent of those to the strata units. For instance, it is possible in a case, say of a five-storey building with the ground floor maintained as a unit while the other four storeys are terminated from strata titles. In this case, all the proprietors of the specified four storeys are given the right to support the strata independently.

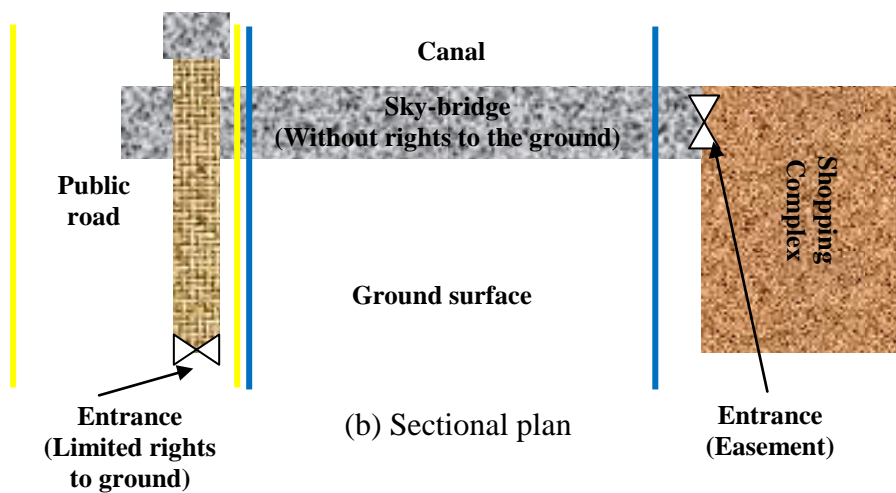
To resolve this problem, it is suggested that State authority recognised the surface, below surface and above surface, whereby the title to airspace or underground stand alone without having title to the surface. The authority should accordingly issue a totally separate title or independent title to a property above the ground surface (airspace) with some limited rights to the surface.

There are three scenarios of airspace rights. The first relates to shop houses above a public road (see Figure 8.1). Here, the individual shop houses above public road are given separate titles without having any right to the ground surface. The owners of the individual shop houses are given an easement to access their properties from the adjacent properties.



**Figure 8.1:** Shop houses above public road

The second scenario is a sky-bridge above a canal (see Figure 8.2). Here, the sky-bridge is given a separate title without rights to the ground surface, but the entrance to sky-bridge (building support) is given limited rights to the ground surface. The owner of sky-bridge is given an easement to access his property from the adjacent building or he can also have access from the entrance that has limited rights to the ground surface. The owner of the sky-bridge is allowed access through easement from the adjacent property to access his property from two entrance points.

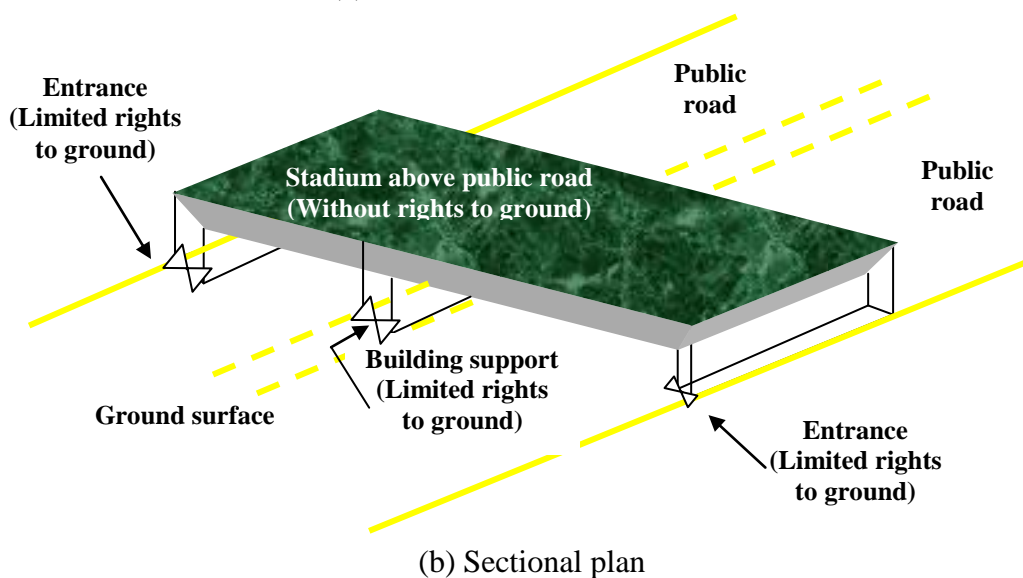
(a) *Gondolen*, Sweden**Figure 8.2:** Sky-bridge above canal

The third scenario is regarding a building (e.g. restaurant, indoor stadium) above a public road (see Figure 8.3). Here, the building above the public road is given a separate title without rights to the ground surface, but the entrance to the building (building support) and others building support (e.g. concrete beam) are given limited rights to the ground surface.





(a) Attiki Odos, Greece



(b) Sectional plan

**Figure 8.3:** Building above public road

Finally, it is proposed that 3D properties above surface - with or without rights to the ground surface - be formally recorded in the Document of Title and Certified Plan to facilitate identification in registration and land survey. The Document of Title and Certified Plan should be presented as follows: (i) title with only one dimension, i.e. whether dimension above surface or dimension on surface or dimension below surface, (ii) title with two dimensions, i.e. the combination of dimension on the land surface and dimension above surface, and (iii) title with all

three dimensions, i.e. dimension above surface, dimension on surface and dimension below surface. There should also be new land administration guidelines and survey regulations for 3D properties, independent of ground surface with limited rights or without rights to the ground surface.

### **8.3 Recommendations for Amendments to Cadastre-related Legislation**

As mentioned earlier in this writing, the need for 3D property in Malaysia is increasing, especially in cities and large towns. Thus, it is important that we examine the legislation which is already in place for the creation of 3D property before recommending changes to the current cadastre and land law. The definition of real property, according to the Real Property Gains Tax Act 1976 (Act 169), is any land situated in Malaysia and any interest, option or other right in or over such land (Real Property Gains Tax Act 1976, 2007). This means that it is possible to own property where the dimension is on the surface, above the surface and below the surface. The issue of ownership of these three dimensions is of great concern in 3D property rights.

In order to ensure a clearer and more comprehensive legal framework for tenure and registration as well as delineation of 3D property rights, the legislation needs to be amended where necessary. It is vital to make provisions for defining complicated building structures, especially those that include underground space and airspace that may qualify for separate (independent) titles of 3D properties. As far as such properties are concerned, it would also be useful to define them as a kind of 3D property so as to deal with them as integral legal objects, not divided among different parcels. The owners of these properties, some of which are quite influential companies, might well be interested in clearly defined legal rights over their possessions. This would give them better assurance that their properties are adequately protected, and provide incentive for further investment that would also generate government revenue, such as assessments and quit rents. Some of the laws

that relate to the proposed tenure and survey framework are listed below for the purpose of amendment thereto.

### **8.3.1 National Land Code 1965 (Act 56)**

It is suggested that the State authority may alienate separate title (independent) to a property above ground surface by giving limited right or without right to the surface. As mentioned in Chapter 5, Section 75A of the Code permits the use of airspace above State land and reserved land. The State authority under this section may approve the issue of a permit for a period not exceeding twenty-one years for the purpose of erecting, maintaining and occupying a structure on State land or reserved land, or over State land or reserved land as an adjunct to any structure on the adjoining land. Airspace includes the dimension above the ground surface for three-dimensional properties. Section 75A needs to be amended so that the State could alienate airspace to a different owner for a period of 99 years. Therefore, Section 75A of the Code should be amended by adding a new paragraph that accommodates the above suggestion.

For 3D properties above surface that do not have entrance access from the ground surface, and that has limited right to ground, it is suggested that an easement should be imposed on such properties from ground on State/private alienated land. Therefore, Part Seventeen (Easement) of the Code should be amended by adding a new section on easement from the adjacent building to a 3D property above surface. In addition, there should be new guidelines from the Department of Director General of Lands and Mines to specify the height limit of the 3D property that is allowed from the ground surface.

Though there is an issue with sections 92B and 92D, this could be resolved by issuance of guidelines regarding new titles that, for new titles, the depth of all

subsurface properties should be specified so that independent titles could be registered.

Lastly, Part Twenty-Nine of the code, in Section 396, describes the manner in which land surveys are to be carried out. Subsection (1)(b) of this section mentions that the boundaries that are to be determined are to be demarcated on the surface of the land by boundary marks, or if by reason of the configuration or any other cause the placing of boundary marks on the actual line of the boundary is to any extent impossible or impracticable, boundary marks are to be so placed as to enable that line to be ascertained. Therefore, this subsection should be amended by adding a description on how the 3D property boundaries located on surface and above surface can be demarcated on those surfaces. In addition, a new guideline or regulation from the Department of Survey and Mapping Malaysia should be drawn up to explain the land survey method as well as the expected output in the Certified Plan and Document of Title of this 3D property above ground surface.

### **8.3.2 Building and Common Property (Maintenance and Management) Act 2007 (Act 663)**

Owing to the need to be able to create 3D properties in certain cases, such as for a 3D property that has limited rights to the ground or a 3D property that has no rights to the ground, a new section should be added to Building and Common Property (Maintenance and Management) Act 2007 (Act 663) (Strata Management Bill 2012) accommodate this category of 3D property. Where ownership of a 3D property is coupled to limited rights to the land surface, it is proposed that this type of limited common property should be managed by the subsidiary management corporation. On this matter, it is suggested that a new responsibility be allocated to the Joint Management Body or Management Corporation, i.e. new by-laws and house rules should be established.

### 8.3.3 Certified Plan

The Certified Plan (CP) is prepared following the format determined by the Department of Survey and Mapping Malaysia. It shows the lot boundaries in various scales with a given Certified Plan number, for example, PA 102393, where 'PA' is stand for '*Pelan Akui*' and '102393' is the number given by Department of Survey and Mapping Malaysia. Information pertaining to the lot location, lot numbers, areas, bearings and distances is also displayed. While the implementation of e-Cadastre simplifies the format of Certified Plan (land parcel), there is no change to the Certified Plan (strata building/land parcel).

As mentioned in Chapter 7, there are three types of Certified Plans, *viz.* Certified Plan (land parcel), Certified Plan (strata building/land parcel) and Certified Plan (stratum). In order to synchronise the Certified Plan, it is proposed that only one type of Certified Plan be used to cater to all three types of Certified Plans, with the master lot Certified Plan number as the base, for example PA 102393.

To differentiate properties with titles for one dimension, i.e. for the dimension on the land surface, or the dimension above surface, or the dimension below surface, it is proposed that the Certified Plan describes it in the following way: for a property with dimensions on the land surface, the Certified Plan number should be PA 102393 (OS); for a property with dimensions above surface, the Certified Plan number should be PA 102393 (AS), and for a property with dimensions below surface, the Certified Plan number should be PA 102393 (BS), where 'OS', 'AS' and 'BS' are stand for on surface, above surface and below surface respectively. For properties with titles for two dimensions, i.e. for dimension on the land surface and dimension above surface, it is proposed that the Certified Plan is described as PA 102393 (OAS), where 'OAS' stands for on and above surface. Finally, for properties with titles for all three dimensions, i.e. dimension on, above and below surface, it is proposed that the Certified Plan is described as PA 102393 (3D), where '3D' stands for three-dimensional.

This study proposes several minor changes to the format of the Certified Plan (land parcel). For example, Lot 17018 may be an underground structure with dimensions below ground surface; this underground structure can be car parks, retail shops or a tunnel, or it could be an above land surface structure with dimension above the ground surface, such as a sky-bridge, car park or retail shop. Such 3D properties are different from other lots in the same development. The 3D property lot is indicated with a backslash to the lot number (\ 17018 \). The 3D property boundaries are specified by the specific line type of points on a dotted dash line.

In addition, changes could be done to the format of the Certified Plan (strata building/land parcel) where 3D property parcel/3D property land parcel/3D property accessory parcel/3D property mezzanine floor are indicated with a backslash to the parcel or land parcel or accessory parcel or mezzanine floor number (\ 1 \) / (\ L1 \) / (\ A1 \) / (\ N1 \). The 3D property boundaries are specified by the specific line type of points on a dotted dash line.

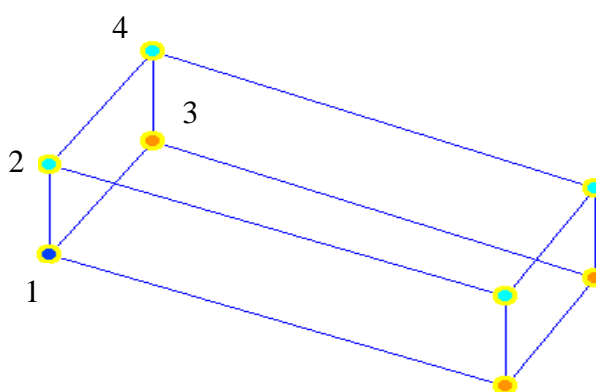
With the recent implementation of e-Cadastre, no Certified Plan (land parcel) is printed and kept in hardcopy format; all spatial data are kept in the National Digital Cadastral Database (NDCDB) and all plans are kept in digital copy in PDF format and are printed on demand. The Certified Plan (strata building/land parcel) that is kept as a digital copy in TIFF format is also printed and a hardcopy kept on file. It is proposed that all spatial data in the Certified Plan (strata building/land parcel) and Certified Plan (Stratum) should be kept in digital copy by using the building/land parcel number as the base in the NDCDB. For example, PA 102393 (OS)-1, where ‘1’ stands for the building/land parcel number of a 3D property.

Malaysia has a comprehensive and advanced survey and mapping system, which is capable of dealing with the demarcation, storage and supply of information. What is needed at this moment is a review of the current two-dimensional cadastre registration, with the view to extend it to three-dimensional cadastre registration with the incorporation of the vertical dimension, i.e. insert the ‘z’ value into the existing National Digital Cadastral Database (NDCDB) to create the three-dimensional NDCDB. Therefore, it is proposed that the vertical component of survey information

be included in the NDCDB, the coordinated Cadastral System, and the Electronic Strata Module.

Currently, the Certified Plan (Strata building/land parcel) indicates only the height of the storey while the Certified Plan (Stratum) has all the corners of the volumetric parcel surveyed with reference to the national vertical height datum. However, the height or the 'z' coordinates are not maintained within the NDCDB, but this 'z' value only shown as text in TIFF format.

In order to cater for three dimensions, the reduced level of the ground of each point should be surveyed and identified in all the newly proposed certified plans. Each of the point of the parcel should be given coordinates of north/south, east/west and reduced level. For example, coordinates  $x, y, z$ , where 'x', 'y', and 'z' stand for east/west, north/south and reduced level respectively. These coordinates  $(x, y, z)$  should be stored in the National Digital Cadastral Database (NDCDB) with other spatial information, together with textual information to perform the data information integration. Furthermore, it is proposed that the database containing the multilayer information with the coordinates  $(x, y, z)$  for Certified Plan (Strata building/land parcel) and Certified Plan (Stratum) be further enhanced to include various digital construction drawings and also digital images for better visualisation. The figure below shows the model of a parcel and table of coordinates.



(a) Parcel model

Point	Coordinate		
	East/West (T/B)	North/South (U/S)	Reduced Level (Meter)
1	T 1233.000	B 3456.000	10.000
2	T 1233.000	B 3456.000	14.000
3	T 1230.000	B 3450.000	10.000
4	T 1230.000	B 3450.000	14.000

(b) Table of coordinates

**Figure 8.4:** Parcel model and coordinates

### 8.3.4 Document of Title

As mentioned earlier, the Document of Title can be considered as the pillar of the documenting machinery in the registration system as it serves as evidence of ownership. With the Document of Title, the proprietor can make dealings such as charge, transfer, lease, sale or grant right of easement over the property. At the time of writing, the Document of Title is still in accordance to the Fourteenth Schedule of National Land Code 1965 (Act 56). As it is a computerised Land Registration System, no alteration is allowed through e-Cadastre. However, at the time of writing, the Department of Director General of Lands and Mines (JKPTG) is in the process of gazetting the Sixteenth Schedule of National Land Code 1965 (Act 56), namely the Electronic Land Administration System or better known as e-Land, to replace the Fourteenth Schedule. When the Sixteenth Schedule is gazetted, there will be changes in the form and format.

In this study, it is proposed that several minor changes be made to the format of the form, with additional express conditions, implied conditions and restriction of interest as well as identification numbers in accordance with the types of 3D certified plans. The Document of Title involved are Form 5BK, Form 5CK, Form 11AK, Form 5DK, Form 5EK, Form 11BK, Form 4(K) and Form 4A(K). This is to give conditions and restrictions of interest to the mentioned alienated land involving three



dimensions i.e. for properties with dimensions above surface that have limited right to ground surface, or without right to ground surface. Apart from the above-mentioned amendments to express conditions, the Plan Of The Land in Form B1 (for final title), Form B2 (for qualified title) and Plan Of Strata Title in Form S(K) should follow the format of Certified Plan generated by the Department of Survey and Mapping Malaysia.

Besides the above, an additional table for coordinates  $(x, y, x)$  or better known as coordinates east/west, north/south and reduced level should be added in the Plan of Land and Plan of Strata Title in the Registry Title and Land Office Title. The Certified Plan number that is used here must follow the newly proposed Certified Plan number mentioned in the previous section. This Certified Plan number is the unique parcel identifier that links the Land Office Title from the State Land Office, and Registry Title from the State Land and Mines Office with Certified Plan from Department of Survey and Mapping Malaysia.

#### **8.4 Towards Data Information Integration**

Land administration should ideally be under the supervision of a single authority that acts as the lead agency. Such an arrangement will guarantee the best possible coordination between the various parts of the whole process and provide the necessary framework for establishing a unified land information system and service. However, this ideal principle does not exist in Malaysia. In practice, Malaysia has a tradition of separate governmental institutions with the cadastre recording property boundaries under the jurisdiction of the Federal Ministry. The State authorities are responsible for taxation and land use rights for a separate legal registration system. The Federal Ministry often makes its own rules, while co-operation between State authorities frequently depends more on personalities than on policies. This results in separate inquiries having to be made about rights of ownership and rights of use before any transfer can take place, leading to overlapping efforts, inconsistencies. As

a result, inaccuracies in the data may arise, coupled with additional costs being incurred (United Nations Economic Commission for Europe, 2005). Therefore, it is important to propose data information integration of all these data from various agencies.

Generally, lawyers oversee the transfer of property rights and legal issues, while land surveyors are more concerned with the survey of property boundaries and of the properties than with the costs or delivery times involved. Valuers are more interested in land value than land use management, while the town planners' focus is more on urban environment. All these approaches, emphasizing the different priorities of each profession, need to be recognised and reconciled.

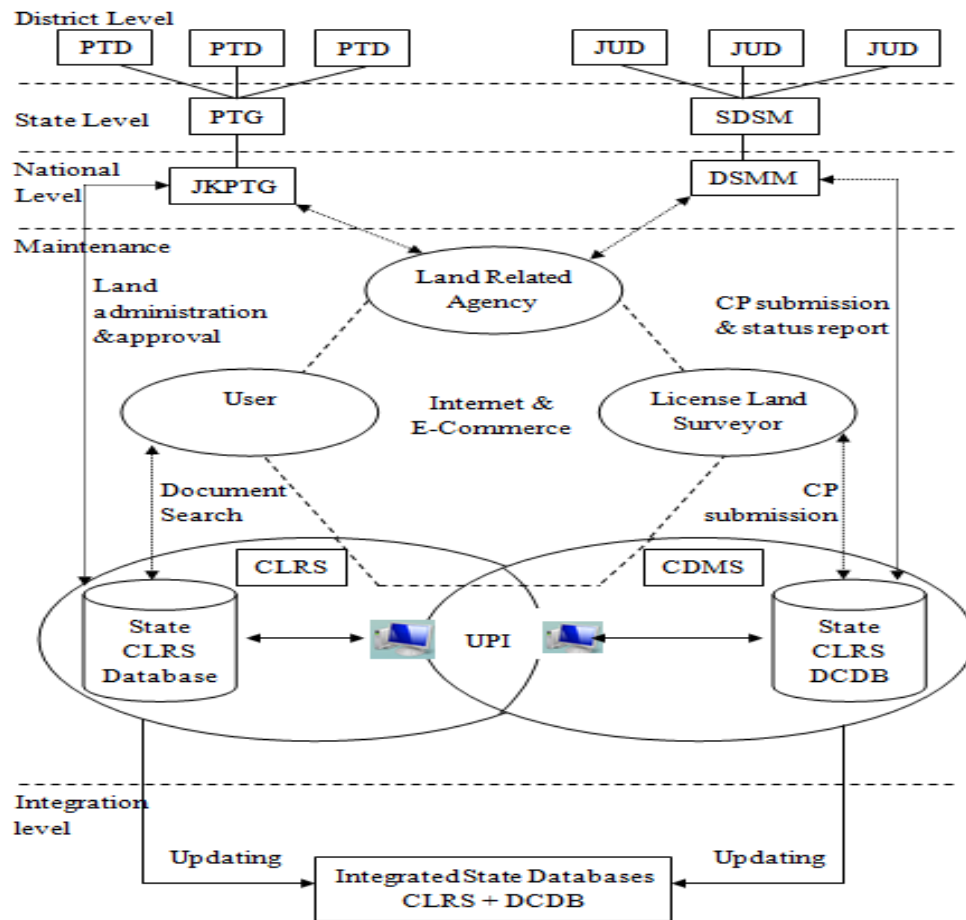
In order to ensure closer cooperation between government bodies, Malaysia has established a higher level of land administration coordination board, i.e. the National Land Council, better known as *Majlis Tanah Negara*. This mechanism can help to coordinate the administration of land and the environment and can develop policies in handling land-related data that are in line with the federal government and its local authorities. It can help to reduce overlapping powers between ministries, increase efficiency, and provide a forum in which improvements to land administration service can be discussed in the light of changing circumstances and any consequence needed to amend the law. It can also recommend policies in archiving data that may be needed in the long-term national interest. Such a mechanism can also address personal privacy matters as well as maintain the confidentiality of data in order to protect the interests of private landownership.

Based on what has been discussed in Chapter 4, the development of a conceptual model is proposed, with the Department of Survey and Mapping Malaysia (DSMM) and State Land and Mines Office/District Land Office (PTG/PTD) as two of the lead agencies on spatial and textual data management in daily activities, respectively. There could be extensive benefits if these two systems, namely the Computerised Land Registration System (CLRS) of PTG/PTD and Cadastral Database Management System (CDMS) of DSMM, were linked. Therefore, with the integration of attribute data from CLRS and spatial data from CDMS and through identified applications, the efficiency of land administration can

be greatly increased. Although conceptually tenable, the eventual implementation would need substantial negotiations and compromise between PTG/PTD and DSMM.

With vast advancement in Information and Communication Technologies, databases could be integrated electronically. In order to achieve the goal of a comprehensive Land Information System from district level up to State, and eventually at the national level, the integration of spatial CDMS database with the textual CLRS database is a prerequisite. In fact, a mechanism has been introduced by Mariappan (2005) to integrate these two standalone databases. Coordination among DSMM, PTG/PTD can be provided by the installation of a centralised server or distribution server at each of their offices, which act as the transporters and bridges in exchanging data between CLRS and CDMS. Although there are a lot of benefits from an integrated textual title registration database, and better graphics as well as spatial cadastral database, there are still many hurdles to overcome at this stage. Figure 8.5 illustrates the conceptual integration of the cadastral survey and title registration databases.

The development of a multipurpose cadastre information system requires the contribution of many different departments to execute the fundamental components of the system. Both the governmental and private institutions have to be involved concurrently to integrate all items of the new system. The implementation of each component is carried out by specific institutions at national, regional, and local level. The multipurpose cadastre provides not only land ownerships and property information but also a variety of land information such as land use, land zoning, infrastructure information, buildings, properties, and addresses. The new multipurpose cadastre enables systematic registration progressively and will overcome weaknesses of the old system such as the delay in updating registers, high registration costs, and absence of an exhaustive overview of existing parcels and properties within an area.



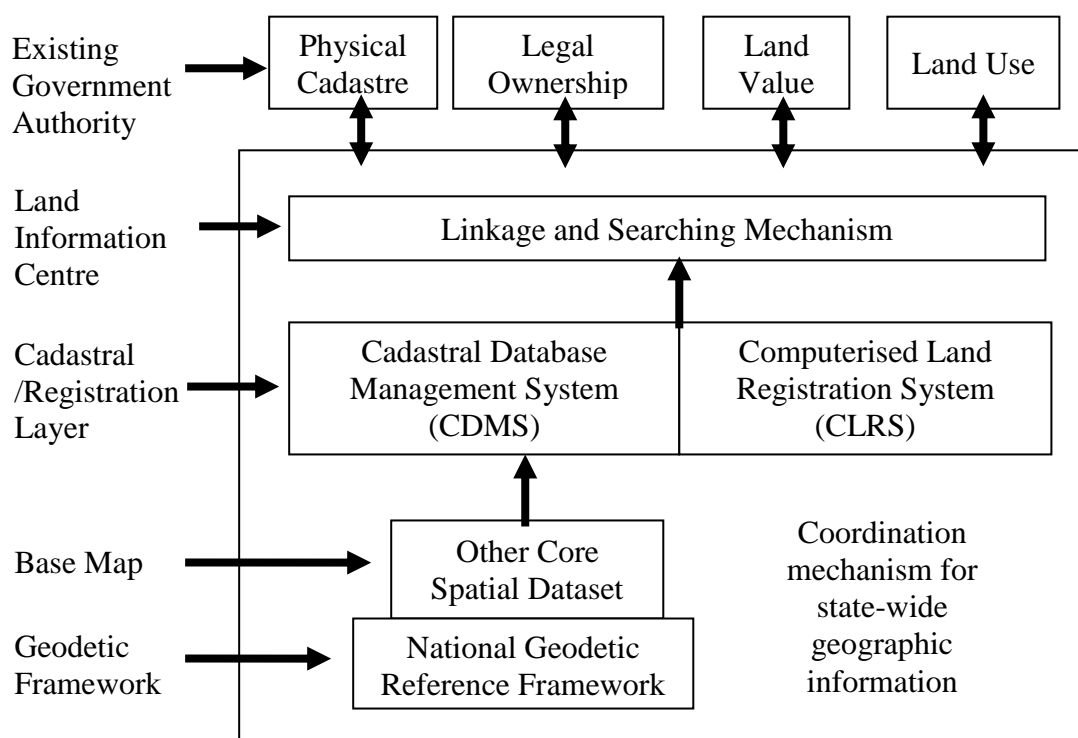
**Figure 8.5:** Conceptual model to integrate CLRS and DCDB  
(Partly adapted from Mariappan, 2005)

The new system could aim for support land planning, land administration, land taxation, and cadastre. For dissemination purposes, even hyperlinks from the cadastre or its spatial indexes to the data files of land-use planning authorities may be sufficient. However, the multiplicity of organisational and legal relations stresses the importance of structure information and in making information more widely accessible. Efficient data exchange must be focussed on data modelling, standardisation and an appropriate use of the common spatial reference framework.

There could be wide-ranging benefits if the data information in the Certified Plan from Department of Survey & Mapping Malaysia (DSMM), Registry Title and Land Office Title from State Land & Mines Office (PTG) and District Land Office (PTD), taxation from Valuation & Property Management Department, and category of land use from Town Planning & Development Department are linked together.

Furthermore, the integration of the spatial database with the textual database is the prerequisite requirement for the creation of an inclusive land information system, ranging from the town level till the national level. Therefore, with the integration of these data information from various departments and agencies which are responsible for the cadastral survey, title registration, taxation and land use and through the unique parcel identifier that is assigned, the effectiveness of land administration system, land registration system, land information system and cadastre system can be significantly improved.

The multipurpose cadastre should be designed to record, store and provide not only land-tenure and land valuation information but also a wide variety of land-related facts. It does not only receive information and data from many sources, but it also provides services and products for many purposes and to many users. Therefore, in many ways, the multipurpose cadastre is designed to address the inherent problems in the geospatial industry by providing comprehensive records of land-related information and presenting this information at the parcel level. The figure below shows the fundamental framework of a multipurpose cadastre.



**Figure 8.6:** Fundamental framework of multipurpose cadastre

(Partly adapted from Williamson, 2001)

The Malaysian multipurpose cadastre should contain essential elements that would enable continuing progress and efficiency. These elements include the data contained in the Certified Plan, Document of Title, taxation and land use & planning as shown in Table 8.1 below:

**Table 8.1:** Data in the Certified Plan, Document of Title, taxation and planning

<b>Physical Cadastre (Certified Plan)</b>	<b>Legal Ownership (Document of Title)</b>	<b>Land value (Taxation)</b>	<b>Land Use (Planning)</b>
<ul style="list-style-type: none"> <li>• Area</li> <li>• State name</li> <li>• District name</li> <li>• <i>Mukim</i> name</li> <li>• Town name</li> <li>• Current land/parcel number</li> <li>• Date of Certified Plan approve</li> <li>• Current Certified Plan number</li> <li>• Land office file number</li> <li>• Document of Title number</li> <li>• Strata scheme number</li> <li>• Standard sheet number</li> <li>• Existing Certified Plan number</li> <li>• Master title lot number</li> <li>• Survey fail number</li> <li>• Scale</li> </ul>	<ul style="list-style-type: none"> <li>• Area</li> <li>• State name</li> <li>• District name</li> <li>• <i>Mukim</i> name</li> <li>• Town name</li> <li>• Current land/parcel number</li> <li>• Plan of the land/parcel</li> <li>• Date of title registration</li> <li>• Category of land use: Agriculture; Building; Industry</li> <li>• Implied condition</li> <li>• Express condition</li> <li>• Restriction of interest</li> <li>• Current Certified Plan number</li> <li>• Land office file number</li> <li>• Ownership number</li> <li>• Strata scheme number</li> <li>• Standard sheet number</li> <li>• Premium</li> <li>• Quit Rent</li> <li>• Owner name</li> <li>• Type of grant</li> <li>• Management Corporation name</li> </ul>	<ul style="list-style-type: none"> <li>• Area</li> <li>• State name</li> <li>• District name</li> <li>• <i>Mukim</i> name</li> <li>• Town name</li> <li>• Current land/parcel number</li> <li>• Address</li> <li>• Date of payment</li> <li>• Type of property: Agriculture; Building; Industry</li> <li>• Premium</li> <li>• Quit Rent/Assessment</li> <li>• Owner name</li> </ul>	<ul style="list-style-type: none"> <li>• Area</li> <li>• State name</li> <li>• District name</li> <li>• <i>Mukim</i> name</li> <li>• Town name</li> <li>• Current land/parcel number</li> <li>• Date of approve</li> <li>• Category of land use: Agriculture; Building; Industry</li> <li>• Type of mineral</li> <li>• Zoning</li> <li>• Assessment</li> </ul>

## 8.5 Further Research

From the discussion of the above results, some recommendations can be made for future research. In this study, only the main problems associated with 3D property formation have been investigated. Further research, of course, is recommended to get a better understanding various issues related to ownership of 3D properties and cadastre-related legislation in Malaysia. A number of legal, technical and organisational matters require further investigation. Besides that, as more and more countries introduce 3D property formation and more experience is accrued, new problems will emerge, and ways to solve them will be needed.

As more intensive use of land is envisaged, especially in urban areas, the judicial framework in Malaysia should be further examined to accommodate such needs. 3D property registration is only possible when the judicial framework provides the possibility to establish volume parcels that are above, on and below the surface. Therefore, further research should focus on the questions proposed by Stoter (2004) which are pertinent in the Malaysian context. Among the questions are: (a) How flexible is the definition of ownership rights of land from both the judicial and cadastre point of view? (b) Is it possible to establish volume parcels without changing the major land and cadastre legislation? and (c) Are the judicial complexities to establish 3D property rights greater than the benefits?

In addition, further research is required on the kinds of three-dimensional information that would be needed in the Document of Title, Certified Plan and National Digital Cadastral Database other than what has been suggested earlier in this study. There should also be further research on how such information can be collected, structured and offered to make a multipurpose 3D cadastre for 3D property rights possible in Malaysia.

## 8.6 Summary

In this study, the concept of 3D property rights *viz-a-viz* traditional property rights has been discussed. It is no longer possible to consider the continuous cadastre coverage because there can be horizontal overlaps between different 3D properties on different levels. 3D properties also emerge in cases related to the multiple use of space. It would require some minor alterations of the current Malaysian land laws to enact a similar 3D property system. The representation of 3D property in the Certified Plan and Document of Title is also investigated. The most important task is to represent the vertical dimension in a clear and unambiguous way. This can be done by specifying the upper and lower boundaries of the property rights in which layers of the property rights are situated. The disadvantage of this approach is that these layers can often be determined only for the objects whose horizontal projection is within the boundaries of the ordinary parcel.