VALUATION TERMINOLOGY STANDARDISATION TO IMPLEMENT MASS APPRAISAL AT LOCAL AUTHORITIES FOR AN INTEGRATED GREEN COMPUTING ENVIRONMENT IN MALAYSIA

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ABSTRACT

In property taxation, mass appraisal is the best practice being applied by various developed contries to support paperless administation for Local Authorities. In Malaysia, the existing mass appraisal model being developed at Universiti Teknologi Malaysia is aimed to assist mass appraisal for Local Authorities under Malaysian environment and to standardise the list of mass appraisal parameters at national level. At present, the emerging issues in mass appraisal model that obstruct green computing implementation are the capacity gap, the hedonic model parameters, lack of parameters' value classification, and the parameters' terminology usage by the Local Authorities. The lack of valuation terminology standardisation consequently obstructs to provide an integrated and automated environment among mass appraisal, finance and GIS departments at Local Authority's administration. The vigorous issues at present which is the standardisation of valuation terminology, and the proposed terminology glossary are discussed.

KEYWORDS: Mass Appraisal, Mass Appraisal Parameters Standardisation, Valuation Teminology Standardisation.

1. INTRODUCTION

Property Valuation is essential for taxation as it is one of the major income resources for every Local Authorities (LA). In Malaysia, the Local Government Act 1976 allows the taxing powers among Local Government Units (LGU) to impose and collect property tax (rates) as long as they are within the ceilings that are prescribed under Act 171. The amount targeted is set so as to meet their pre-determined annual financial budgets which comprises of the costs of administration, providing public services, infrastructures, maintenance, landscapes, staff salaries, etc.

On the other hand, the Act 171 insists every local government to carry out property inspection within their jurisdiction every 5 years once. According to Dzrull et al (2008), 5.26% of local authorities follow this periodical property inspection whereas 31.58% every 10-15 years once and the rest 63.16% of local authorities performing the revaluation exercise on a 15 year interval or more due to lack of manpower and the budget allocation for property inspection and valuation. During the interval the property values were not updated according to current value is a loss for the local authorities and to the nation.

The current practices of valuation from data collection until analysis are carried as a pre-stage to implement in a paper based environment. Such practices effect in long-term which would be the cause of ever-rising costs and increased space required to store files. At present, most local authorities' record keeping are paper based. Retrieving and updating of information are costly and hevily time-consuming due to paper based (manual) communication either within or inter departments. For example, change of the landtitle could be done within the valuation department of any LA. The ownership or corresponding information of a property needs to be updated with valuation and finance department whereas renovation approval need to be updated with the valuation and planning departments, etc.

The keen examination on the Information Technology (IT) tools, and discussion with Local Authorities and Valuers identified that the IT systems purchased by related organisations aimed to increase their performance in day-to-day tasks do not assist property valuation efficiently. These IT systems merely store and retrieve the property details similar to databases. The payments of rates or tax by clients are digitized only in finance departments but the data are unsynchronized and decentralized as one copy is digitally kept by finance department whilst other departments using set paper based. Subsequently, the valuation of properties for taxation purposes is performed manually yet.

Hence, the property valuation being carried at present is limited with increased properties in numbers, limited property inspection time under a specific period, less manpower, capacity building inline with technology, and accurate valuation etc., lead to adopt automation and Mass Appraisal.

2. MASS APPRAISAL IN MALAYSIA

In Malaysia, the improved property valuation is excercised by the state of Johor and the rest of the states are pracitising annual property valuation (Dzrullkarnaian et al, 2009). For improved valuation, the land title, ownership, property location, building category, and building facilities namely the gate and fencing which are considered as contributing to the value of the property are counted as parameters by the LA in Johor. However, no standard guidelines on the number of parameters and its range of values consideration for improved values were established among the LAs in Johor. Other states in peninsular Malaysia such as Perak, Pahang, Malacca and Kelantan where tax were calculated based on the annual value also adopt similar nonstandardised approach in treating the parameters and their range of values.

As in other jurisdiction throughout the world, conducting mass appraisal using automated systems that were developed locally, getting priority due to the need of forecasting the revenue out of property taxation, rapid increase of new property developments, time saving, and green computing since the whole process life-cycle is paperless. However, as mentioned above, most mass appraisal exercise used by many Local Authorities use hedonic model for valuation.

A hedonic based mass appraisal The Multiple Regression Analysis (MRA) allows estimation of the relative contribution of each variable to the property value, and the direction as well as the magnitude of each variable's impact. The MRA methodology has been in place for over 40 years now and is widely applied in various countries and large cities. Hence most of the mass valuation or appraisal has been based on multiple regression analysis methods (Mark and Goldberg, 1988) which have been popular because of their established methodology, long history and wide acceptance among both practitioners and academicians (Do and Grudnitski, 1992; Mark and Goldberg, 1988). As mentioned above few have used the system to conduct the valuation exercise on a mass basis including Malaysia.

3. MASS APPRAISAL AND GREEN COMPUTING IN MALAYSIA

Our observations found that there are three mass appraisal models that have been applied for green computing on mass appraisal namely: a) GIS-based Mass Appraisal Model, b) Computer Aided Mass Appraisal (CAMA), and c). The GIS-based Mass Appraisal model using Spatial Hedonic Model (SHM) for its location clustering (Ibrahim and Oliver, 2006) only the CAMA have been in a more advance stage of utilitisation.

In the GIS-based Mass Appraisal Model, the GIS component is the main core and valuation as sub-core for this model. Since GIS data are spatial, updating of data as a data entry by clerical staff need GIS knowledge which needs high capacity building at clerical level. Moreover, as the SHM details are large in numbers, the mass appraisal becoming very slow.

Second, the Computer Aided Mass Appraisal (CAMA) which has been developed by Universiti Teknologi Malaysia (UTM) uses the Hedonic Model with MRA for Mass appraisal. The CAMA has been featured with building drawing, GIS and valuation successfully. However, CAMA is limited with intranet based, decentralized GIS, and above all Windows XP platform dependant and implemented in the

Local Authority organizations including: Tangkak District Council, Kluang District Council, Johor Bahru Tengah Municipal Council, Johor Bahru City Council, Kuala Krai District Council, Tumpat District Council, Tanah Merah District Council, Batu Pahat Municipal Council and Kuala Pilah District Council (Dzrullkarnaian and Buang, 2006).

The third is a computerized mass appraisal named e-Penilaian. For this system, no published document about the model implementation was found (Azmi. 2011). However, it was observed that the location of property using this system goes through a manual selection process which could be considered individual processing as the property selection is neither location nor cluster based.

Though the mass appraisal has been implemented to support green computing, the preliminary findings made while implementing the inland tailored mass appraisal model's interface has been redesigned without changing the mass appraisal process which is the heart of the engine to implement the terminology being used for valuation according to above listed LAs resulted with increased mass appraisal budget and model redesigning time.

4. E-GOVERNANCE IN MASS APPRAISAL

The Ministry of Housing and Local Government of Malaysia has introduced the paperless e-government for the local authorities. Under the government's paperless administration through E-Governance to assist the Malaysian Local Authorities (PBT), whereby submission to bid for tenders, compound, supplies as well as the payment of property taxes can be made online (e-PBT 2012). The valuation of properties for tax purposes however is still being conducted manually. The proposed e-PBT is not supporting the mass appraisal and hence the valuation department of every LA need to perform the valuation manually or re-keyin the evaluated property value and its relevant tax into e-PBT for payment online. The workload is doubled as they have to process the valuation and keyin processes separately. Some LAs who has been automated their valuation either individual or mass appraisal are facing problems in data

sharing with e-PBT or within the LA's inter departments due to their parameters terminology and its unstandardised value (refer Table 1).

5. EMERGING ISSUES IN MASS APPRAISAL STANDARDISATION

A number of related issues have emerged over recent times which challenge the implementation of mass appraisal as a single system, share the valuation data within the local authorities various departments for an integrated environment, and also standardisation of mass appraisal practices in Malaysia. The following main issues have greater priority to pave smooth surface to start apply mass appraisal without delay.

i. **Lack of Terminology Standardization:** A Malaysian tailored mass appraisal system by various local system developers are facing problems in standardizing terminologies when developing the computerized mass appraisal systems as the terms used by local authorities in particular are unsynchronized.

ii. **Lack of Parameter Values Classification:** Another main issue that makes developing mass appraisal to be used by Malaysian Local Authorities, costly, is the expected incompatibility of data sharing with other units within the same local authority such as the planning, building and finance units let alone between local authorities thus making data sharing difficult. For example, Building type was classified into three major sections namely the Category, Type and Levels. The building categories are namely a) Agriculture, b) Residential, c) Commercial, and d) Industrial. Under the residential category, the building type is detailed for a clear identification of that property. Terrace house, Apartments, Condominium, Bunglow, Semi-Detached, Low-Cost house, Medium cost house, etc are the detailed building types under residential category. Then the third section namely the Levels are the levels of the property such as 1 storey, 1 & ½ storey, 2 storey, etc. The mass appraisal valuation tends to differ according to the Category, Type and Levels. These classifications are not standardized within the valuation

departments itself and also with other units such as the finance departments within the same LA. Hence data handling becomes complicated. This is one of the major issues being identified which is a barrier for computerization of mass appraisal and also for data sharing.

iii. **Capacity Gap:** According to Dzurllkanian Daud and Buang Alias (2010), local authorities lack the capacity to efficiently collect relevant data. This is a common gap for most local authorities. Efficient data collection is important for equitable property tax administration.

They identified the reasons for the existence of capacity gap which includes:
a) The time and resources required to implement the initiatives is lacking;
b) The uneconomic size of some local authorities;
c) The inability to work in partnership with institutions particularly institution of higher learnings;
d) Lack of skilled personnel;
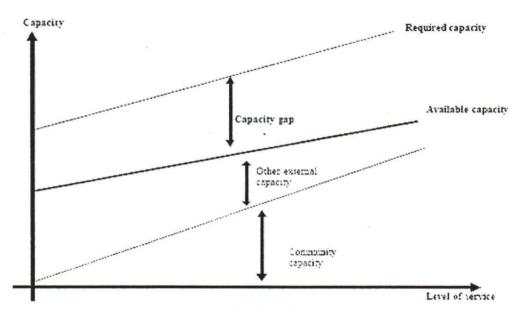e) Lack of knowledge in the application of advanced technology

Figure 1: Capacity Gap (Source: Dzurllkanian Daud and Buang Alias, 2010)

Figure 1 illustrates the capacity required to operate and maintain services tend to increase with quality and level of service needed, the higher the quality and level of services needed, the greater the capacity required to effectively operate and maintain these services, the more fund and knowledge are required.

1. VALUATION TERMINOLOGY STANDARDISATION

Spuzic and Neuwens (2004) inform that in the context of any country's transformation towards knowledge-based economy, it is necessary, first to work on terminology standardization in order to develop a better communication within the specific area. The computer, manufacturing

industries are harvesting the benefits by duly standardise their technical terminolgy internationally. Similar to these industries, the real estate also needs technical terminology standardisation in order to implement Information Technology. In Malaysia, neither among the LAs nor within the national level institutions, the technical terminologies are being standardised.

For example, the term property account number which is expected to be displayed on the interface comes in several forms. The term for "MAKLUMAT RUJUKAN" differ between PBT1 (**No Ruj** and **No Akaun**), PBT2 (**Rujukan** and **NoAkaun**) and PBT3 (**No Ruj**

and **Ruj Buku**). There is no standardization in the use of terms and number of cross references.

6.1 Valuation Terminology Usage Among Local Authorities In Malaysia

Through observation and focus group and observations with various LAs in Malaysia, the unstandardised technical terminology being used by major three LAs are tabulated for the better understanding and the importance of terminology standardisation (Table 1). The LAs exercising valuation on improved and annual are documented according to the valuation technical term category.

Table 1. Differing Parameter Terminology for Some Terms

JENIS MAKLUMAT	PIHAK BERKUASA TEMPATAN (PBT)		
	PBT 1 (PERAK)	PBT 2 (JOHOR)	PBT 3 (JOHOR)
Maklumat Rujukan	No Ruj	Rujukan	No Ruj
	No Buku	NoAkaun	No Akaun
Maklumat Lokasi	Zon_Nama	Zon Nama	Zon Nama
	Kawasan Nama	Subzon Nama	
	Jalan Nama	No Bangunan	No Bangunan
	Lorong	HartaAlamat1	Alamat1 Harta
	Poskod	HartaAlamat2	Alamat2 Harta
Maklumat Pemilikan	Jenis Pemilik	Pemilik Nama	Nama Pelanggan
	Pemilik Nama	Alamat1	No Kp Lama
	Pemilik Alamat1	Alamat2	No Kp Baru
	Pemilik Alamat2	Alamat3	No Telefon
	Pemilik Poskod		Kod Warganegara
	Pemilik Bangsa		Kod Bangsa & Bangsa
			Status Bumi
Maklumat Hakmilik	No Lot	Tanah Nolot	No Lot
	Hakmilik		No Sub Lot
			No Hakmilik
			Kod Jenis Hakmilik
Maklumat Pegangan	Luas Tanah	Tanah Luas	Saiz Tanah
		Tanah LuasTambah	Unit Saiz Tanah
	Luas Bangunan		Saiz Bangunan
			Unit Saiz Bangunan
	Jenis Bangunan	Jenis Bangunan Nama	Kod Jenis Bangunan
		Kegunaan Bangunan Nama	Kod Kegunaan Bangunan
			Bil Tingkat
			Nilai Baru
			Kadar Baru
			Tarikh Nilai
			Amaun Semasa

6.2 Valuation Terminology Usage Among National Authorities In Malaysia

Besides the Local Authorities, the National Property Information Center (NAPIC), National Institute of Valuation (INSPEN), and the Valuation and Property Services Department (JPPH) are under Ministry of Finance Malaysia, as well as other private entities, are also dealing with real estate related activities.

Tables 2 to 6 show some of the observed terminology being used and yet undefined obtained from NAPIC, JPPH, and Local Authorities (PBT). Some of these terminologies are tabulated into four main categories namely:

a) Holdings details;
b) Ownership details;
c) Comparable details; and
d) Valuation details.

Table 2. Details on Property Holding (Non Physical)

Bil	JPPH	NAPIC	PBT
1	No Kait	No Kait	No Akaun
2	Jenis/No. Lot	Kod Lot	Kod Lot
		No	No
		Jenis Lot	Jenis Lot
3	Jenis/No Hakmilik	KodHakmilik	KodHakmilik
		No Hakmilik	No Hakmilik
4	Sek/Mukim	X	Mukim
5	Zoning	Zon	Zon
		Sub Zon	Sub Zon
		Sub SubZon	Sub SubZon
		Jalan	Jalan
		NamaLorong	NamaLorong
6	Bandar/Daerah	Bandar	Bandar
		Negeri	Negeri
7	Kategori /Kegunaan	Kategori	Kategori
		KategoriBangunan	KategoriBangunan
		KegunaanTanah	KegunaanTanah
8	JenisPegangan: Tahun tamat pajakan dan bakimasa	JenisPegangan	JenisPegangan
		Tempoh	Tempoh
		Akhir	Akhir
9		Status	Status
10		JenisHarta CBK	JenisHarta CBK
11	X		
12	Syarat	X	X
13	Sekatan	Sekatan	Sekatan
14	Bebanan	X	X
15	AlamatHarta/Tempat	No Bangunan	No Bangunan
		Alamat 1	Alamat 1
		Alamat 2	Alamat 2
		Alamat3	Alamat3
		Poskod	Poskod
12	Dalamkawasan PBT	X	X
13	Balasan RM	X	X
14	Tarikh: P/PM/N	X	X
15	MaksudNilai	X	X

Source: Observation

Table 3. Details on Property Holding (Physical)

Bil	JPPH	NAPIC	PBT
1	LuasTanah (mp)	LuasTanah	LuasTanah
		LuasTanahTambahan	LuasTanahTambahan
		JenisLuas	JenisLuas
		JenisRuang	JenisRuang
2	LuasBangunan	LuasLantai	LuasLantai
	a) BangunanUtama		
	b) BangunanSokongan	X	X
3	Kedudukan (Kg /Taman)	X	X
4	Jarakdaripusat Bandar	X	X
5	JalanMasuk	JalanTerdekat	JalanTerdekat
6	Pembangunan Sekitar	X	X
7	KemudahanAsas	X	X
8	Rupabumi	ParasTanah	ParasTanah
9	Bentuk	KeadaanTanah	KeadaanTanah
10	JenisTanah	X	X
11	JenisTanaman/Umur	X	X
12	PenjagaanTanaman	X	X
13	Pagar/Tembok	X	StrukturPagar
14		X	JenisPagar
15		X	JarakPagar
16	JenisBangunan	JenisBangunan	JenisBangunan
17	X	Bil. Tingkat	Bil. Tingkat
18	X	Tingkat	Tingkat
19	X	Aras Lantai	Aras Lantai
20	TarikhSiap/Kegunaan	TahunBina	TahunBina
21	KeadaanStruktur/Hiasan	KeadaanBangunan	KeadaanBangunan
22		JenisStruktur	JenisStruktur
23	BahanBinaan	X	X
24	a. Bumbung	X	JenisBumbung
25	b. Siling	JenisSyiling	JenisSyiling
26	c. DindingLama	JenisDinding	JenisDinding
27	d. Lantai	JenisLantai	JenisLantai
28	Sewa sebulan/setahun	Sewa	Sewa

Source: Observation

Table 4. Details on Property Ownership

Bil	JPPH	JPPH NAPIC	PBT
1			JenisPemilikan
2			NamaPemilik
3	X	X	Bangsa
4	X	X	NoKadPemilik (Pengenalan (Baru))
5	X	X	No KadPengenalan (lama)
6	X	X	Warganegara
7	X	X	Tel No
8	X	X	Alamat 1
9	X	X	Alamat 2
10	X	X	Alamat 3
11	X	X	Bandar
12	X	X	Poskod
13	X	X	Negeri
14	X	X	Pemilik
15	X	X	Nama Syarikat
16	X	X	No Pendaftaran Syarikat
17	X	X	JenisPerniagaan
18	X	X	No Fax
19	X	X	Tel No
20	X	X	Alamat 1
21	X	X	Alamat 2
22	X	X	Alamat 3
23	X	X	Bandar

Source: Observation

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Table 5. Details on Property Comparables

Bil	JPPH	JPPH NAPIC	PBT
1	Data Perbandingan	X	X
2	No Kait	X	X
3	Nama	X	X
4	Kelulusan	X	X
5	Maksud Nilai	X	X
6	No Lot	X	X
7	Seksyen	X	X
8	Bandar	X	X
9	Mukim	X	X
10	Daerah	X	X
11	Tarikh Nilaian	X	X
12	Tanah	X	X
13	No lot	X	X
14	Mukin/Seksyen	X	X
15	Luas Tanah	X	X
16	Luas Bangunan (utama)	X	X
17	Luas Bangunan (sokongan)	X	X
18	Tarikh Pindah Milik	X	X
19	Tarikh nilaian	X	X
20	Balasan	X	X
21	Nilaian	X	X
22	Analisis (smp) Tanah	X	X
23	Analisis (smp) Bgn (utama)	X	X
24	Analisis (smp) Bgn (utama)	X	X
25	JenisBangunan	X	X
26	KegunaanBangunan	X	X
27	Pembinaan	X	X
30	Bumbung	X	X
31	Siling	X	X
32	Dinding	X	X
33	Lantai	X	X
34	Pagar	X	X
35	Analisis Balasan	X	X
	a) Keseluruhan (Tanah dan Bangunan)	X	X
	b) Seunit (Tanah, Bangunan Utama dan Sokongan)	X	X

Source: Observation

Table 6. Details on Property Valuation

Bil	JPPH	JPPH NAPIC	PBT
1	Perbandingan/ Pelan Lokasi (sila rujuk lampiran)	X	X
2	Faktor-faktor yang dipertimbangkan	X	X
3	Maksud Nilaian	X	X
4	Tarikh Nilai	TarikhHarga	TarikhNilaian
5	Nilai	X	X
6	Balasan	X	X
7	Asas Nilaian	X	X
8	Kaedah Nilaian	X	X
9	Nilai Pada:	X	X
10	Lawat Periksa	X	X
11	Pindahmilik Pertama	X	X
12	Kasih Sayang	X	X
13	Loji dan Jentera	X	X
14	Nilai yg dilapurkan	X	X
15	Nilaian	Harga	NilaiTahunan
16	Nama	X	X
17	Tarikh	X	X
18	Menilai	X	X
19	Nama	X	X
20	Jawatan	X	X
21	Tandatangan	X	X
22	Tarikh	X	X
23	Kelulusan	X	X

Source: Observation

6. PROPOSED STANDARDISATION FOR VALUATION PARAMETERS TERMINOLOGY

In order to standardise mass appraisal practise with automation in Malaysia, this study proposed the following technical terminalogy standardisation after analysing available data on parameters normally used. This study categorized the technical terminology standardization namely as:

a) Holding details (Maklumat pegangan);

    i) Non physical, and

    ii) Physical

b) Ownership Details (Maklumat pemilik);

c) Comparable Details (Maklumatperbandingan); and

d) Valuation Details (Maklumat penilaian).

The technical terminology standardisations being recommended are as per Tables 7 to 10.

Table 7. Recommended Technical Terminology Standardization on Holdings Details.

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable Detail 1	Detail 2
Maklumat Lawat Periksa	Maklumat Pengurusan Data	Zon	Zon		
			Sub Zon		
			Sub-Sub Zon		
			Jalan		
		Lain-Lain	Pagar	Jenis Pagar	
				Struktur Pagar	
				Elaun Pagar	
			Pintu Pagar	Jenis Pintu Pagar	
				Struktur Pintu Pagar	
				Elaun Pintu Pagar	
			Basic Facilities	Jenis Kemudahan	
				Jenis Kemudahan Asas	
				Elaun Kemudahan Asas	
			Bangunan	Kategori Bangunan	
				Jenis Bangunan	
				Tingkat Bangunan	
			Lot	Jenis Lot	
				Elaun Lot	
	Maklumat Pegangan	Maklumat Rujukan	Rekod Pegangan	No.Fail	
				No.Akaun Lama	
				System Account No.	
				System Auto Generated Accuont No Will Be Use As A Temp Account No.X	
		Maklumat Pegangan (Bukan Fizikal)	Jenis Pegangan	Status	
				Cbk Property Type	
			Zoning	Zon	
				Sub Zon	
				Sub Sub Zon	
				Road/Route	
				Poskod	
				Nama Lorong	

Table 7. Recommended Technical Terminology Standardization on Holdings Details (Contd..)

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable	
				Detail 1	Detail 2
Maklumat Lawat Periksa	Maklumat Pegangan		Alamat Harta	Alamat 1	
				Alamat 2	
				Alamat 3	
				Poskod	
				Bandar	
				Negeri	
	Maklumat Tanah	Maklumat Fizikal Tanah	Lokasi	Dalam Kawasan Pbt	
				Peta/ No Syit	
			Maklumat Pemeriksaan	Di Periksa Oleh	
				Tarikh	
			Pegangan	Pilih Rekod Pegangan	
			Maklumat Tanah	Kod Lot	
				No.	
				Kod Hakmilik	
				No Hakmilik	
				Jenis Pegangan	
				Tempoh	
				Kategori	
				Jenis Lot	
				Kegunaan Tanah	Jenis Tanaman
			Fizikal Tanah	Luas Tanah	
				Luas Tanah Tambahan	
				Paras Tanah	
				Jalan Terdekat	
				Syarat	
				Sekatan	
			Helaian Tanah	Perancangan Yang Di Luluskan	
				Cukai Tanah	
				No. Penyerahan	
				Jilid	
				Folio	
				Tarikh Masa	
			Gambar Lot	Upload Gambar Lot Kosong	
			Cadangan (Jika Tanah Kosong)		

Table 7. Recommended Technical Terminology Standardization on Holdings Details (Contd..)

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable	
				Detail 1	Detail 2
Maklumat Lawat Periksa	Maklumat Bangunan	Maklumat Fizikal Bangunan	Pegangan Maklumat Bangunan	Pilih Rekod Pegangan	
				No.Bangunan	
				Tahun Bina	
				Keadaan	
				Jenis Struktur	
				Tingkat Pemeriksaan	
				Kategori Bangunan	
				Jenis Bangunan	
				Bil.Tingkat	
				Sewa	
				Tarikh Sewa	
		Cont. Maklumat Fizikal Bangunan	Cont. Maklumat Bangunan	Harga	
				Tarikh Harga	
				Cbk Category	
			Gambar Bangunan	Upload Gambar Bangunan	
			Keluasan Bangunan	Jenis Luas	
				Aras Lantai	
				Luas Lantai	
			Maklumat Kemasan Bangunan	Jenis Ruang	
				Jenis Lantai	
				Jenis Bumbung	
				Jenis Syiling	
				Jenis Dinding	

Table 8. Recommended Technical Terminology Standardization on Ownership Details.

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable	
				Detail 1	Detail 2
Maklumat Pemilikan	Maklumat Pemilikan	Persendirian	System Account No.		
			Nama Pemilik Sendiri		
			No I/C Baru		
			No I/C Lama		
			Bangsa		
			Warga Negara		
			Alamat 1		
			Alamat 2		
			Alamat 3		
			Poskod		
			Bandar		
			Negeri		
			No.Tel		
		Syarikat	System Account No.		
			Nama Pemilik Syarikat		
			No.Pendaftaran Syarikat		
			Jenis Perniagaan		
			Alamat 1		
			Alamat 2		
			Alamat 3		
			Poskod		
			Bandar		
			Negeri		
			No. Fax		
			No.Tel		
		Lain-Lain	System Account No.		
			Nama Pemilik Lain-Lain		
			Alamat 1		
			Alamat 2		
			Alamat 3		
			Poskod		
			Bandar		
			Negeri		
			Jenis Pemilik		

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Table 9. Recommended Technical Terminology Standardization on Comparable Details.

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable	
				Detail 1	Detail 2
Maklumat Perbandingan	Maklumat Perbandingan (Bukan Fizikal)		Maklumat Rujukan Perbandingan	No. Rujukan	
			Maklumat Lokasi Perbandingan	Kod Lot	
				No.Lot	
				Seksyen	
				Mukim	
				Bandar	
				Daerah	
				Pelan Lokasi Perbandingan	
	Maklumat Perbandingan (Fizikal)		Maklumat Bangunan	Jenis Bangunan	
				Kegunaan Bangunan	
				Tarikh Pembinaan	
				Rekabentuk	
				Bahan-Bahan	
			Maklumat Kemasan Bangunan	Bumbung	
				Siling	
				Dinding	
				Lantai	
				Pagar	
			Maklumat Luas	Luas Tanah	
				Luas Bangunan Utama	
				Luas Bangunan Sokongan	
	Maklumat Analisis & Nilaian Perbandingan		Maklumat Kelulusan	Nama Pelulus	
				Tarikh Kelulusan	
			Maklumat Nilaian Perbandingan	Maksud Nilaian	
				Tarikh Pindah Milik	
				Tarikh Nilaian	
				Balasan	
				Nilaian	
				Analisis Tanah (Smp)	
				Analisis Bangunan Utama (Smp)	
				Analisis Bangunan Sokongan (Smp)	
			Maklumat Analisis Perbandingan	Analisis Balasan	Bangunan
					Tanah
					Smp (Tanah)
					Smp (Bangunan Utama)
					Smp (Bangunan Sokongan)

Table 10. Recommended Technical Terminology Standardization on Valuation Details.

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable Detail 1	Detail 2
Maklumat Penilaian	Kaedah Nilaian	Add Value	Rate Level	Year	
				Name	
				Description	
				Tone Date	
				Default	
			Rate On	Zone	
				Sub Zone	
				Sub of Sub Zone	
			Rate Value	Land Scheme	
				Building Scheme	
				Tax Rate	
		Rent Value	Rate Level	Year	
				Name	
				Description	
				Tone Date	
				Default	
	Tone Of List		Rate On	Zone	
				Sub Zone	
				Sub Sub Zone	
			Rate Value	Building Category	
				Building Type	
				Building Level	
				Tax Rate	
	Penilaian	Mass Apprisal	Add Cluster	Zone	
				Sub Zone	
				Sub Sub Zine	
				Sub Sub Zine Road	
				Hold Account	
				Item	Category
					Zonning Name
					Identifield
			View/Edit Cluster	Cluster Appraisal Name	
		Jalani Penilaian	Add Value	Rate Level Add Value	
				Zone	
				Cluster	
			Rent Value	Rate Level Add Value	
				Zone	
				Cluster	

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Table 10. Recommended Technical Terminology Standardization on Valuation Details (Contd..).

Main Menu	Menu	Sub Menu	Sub-Sub Menu	Final Variable Detail 1	Detail 2
Maklumat Penilaian	Cont. Cetak	List Of Appraisal	Add Value	Appraisal List	System Account
					Lot No.
					Property Address
					Owner Address
					Use Of Land
					Status Of Land
					Building View
					Wide Of Land
					Land Value
					Building Value
					Total Appraisal
					Tax Rate
					Tax
					Adjustment
					Process Date
			Rent Value	Appraisal List	System Account
					Property Address
					Owner Address
					Building View
					Building Value
					Total Appraisal
					Tax Rate
					Tax
					Adjustment
					Process Date
Maklumat Penilaian	Cont. Cetak	Senarai Akaun	Add(Discounted Cluster)	Zone	
				Sub Zone	
				Sub Sub Zone	
				Sub Sub Zone Road	
				Hide Account	
				Item	Category
					Zonning Name
					Identifield
					Discount
			View/Edit	Discounted Name	
		Permohonan Diskaun	Discounted Appraisal	Discounted Cluster	
				Appraisal List	
		Cetak Salinan Penilaian	Appraisal Name		
		Cetak Borang 5	Group		
			List Hold Account In Group	System Account Number	
				New Account Number	
				Old Account Number	
		Cetak Borang 6	Group		
			List Hold Account In Group	System Account Number	
				New Account Number	
				Old Account Number	

8. CONCLUSION

The barrier that hinders the standardised green computing practise in Mass Appraisal is due to lack of technical terminology standardisation and various parameters being used for mass appraisal. This study identified the non-hormonious terminology commonly used by various valuation authorities into four categories namely a) Ownership details; b) Owners Details; c) Comparable Details; and d) Valuation Details. Subsequently, this work recommends a rational technical terminology standardisation based on major practices by local authorities and national organisations in order to implement Mass Appraisal in standardised and integrated environment.

9. ACKNOWLEDGEMENT

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