

# CADASTRAL STUDIES (MGHU 1514)

## WEEK 2 - CADASTRAL STUDIES WORLDWIDE

SR DR. TAN LIAT CHOON

07-5543157

016-4975551

# OUTLINE

- Cadastre 2014
- Cadastre 2034
- Cadastre 2.0
- Cadastral Fabric

# CADASTRE 2014

# Cadastrre 2014

Intended as the replacement for traditional cadastral institutions, Cadastrre 2014 is the result of a study by the Working Group 7.1 (Commission 7) of Federation Internationale de Geometres (FIG), and a land recording system. Developed between 1994 and 1998, it took into consideration social, legal, economic, and technical developments in the domain of cadastral systems worldwide. The mission was to develop vision statements, where the cadastrre as a concept might be in 20 years' from 1994 (Kaufmann and Steudler, 1998). It sought to deliver certainty of rights and peaceful coexistence as well as wider economic aims of internationalisation (Ting, 2002).

# Cadastre 2014

- Statement 1: Show the complete legal situation of the land. Private and public rights and restrictions on the land will be systematically documented;
- Statement 2: The separation between maps and registers will be abolished;
- Statement 3: The cadastral mapping will be dead. Long live modelling;
- Statement 4: Paper and pencil-cadastre will be gone;
- Statement 5: Highly privatised. Public and private sectors will work closely together;
- Statement 6: Cost-recovering.

# Cadastre 2014

Kaufmann (2004), in elaborating on Cadastre 2014, states that the three-dimensional aspect is not of primary interest. From the point of Cadastre 2014, the introduction of the three-dimensional aspect depends on the legal framework. If the law defines land objects as being three-dimensional, it is represented in the Cadastre 2014 concept simply with its three-dimensional coordinate values. If the effects of the right or restriction have a spatial significance, the three-dimensional objects should define clearly the space of impact, describing the outlines of the effect of a right or restriction. If spatial impacts are to be evaluated, the functions of spatial exploitations should be developed and used for analysis.

# Cadastre 2014

According to Tse and Gold (2003), Cadastre 2014 introduces a more general definition of a land object with homogeneous conditions inside its boundaries. It matches representation of the real world, where one land parcel may have one or more different ownerships, especially for multi-storey buildings and constructions at the underground surface where people need to have access to some part of its visible exterior.

# Cadastre 2014

According to the report of Cadastre 2014 by Kaufmann and Steudler (1998), future cadastres will show the complete legal situation of land, including public rights and restrictions. All these rights, restrictions and responsibilities (RRR) related to land are often overlapping. Current legal cadastre systems have shown limitations in some 3D situations. In areas with an increasing pressure on land, there is a growing interest in using space under and above the surface. Therefore, three-dimensional information has become increasingly important in registering today's world (Stoter, 2004).



# Cadastre 2014

Since the beginning of the twenty-first century, three-dimensional registrations in both technical and institutional issues of multi-storey developments and complex constructions have become more widespread. Purcell, Murray and Prendergast (2006) believe that many countries such as Norway have looked into the various components associated with three-dimensional registrations. In this regard, Malaysia should also start to look into the legislative aspects of these limitations and come up with a principal framework for 3D property objects.

# CADASTRE 2034

# Cadastral 2034

At the FIG 2010 Congress in Sydney, Australia, Bennett and co-authors from University of Melbourne described six design elements relating to the role and nature of future cadastral, as presented in Cadastral 2034. One of these design elements was 'survey accuracy'. However, Cadastral 2034 has still a long journey to go before implementation and circumstance are bound to change.

# Cadastre 2034

- ❑ Cadastre 2034 outlines a vision for a broader cadastre where information is readily accessible and people have confidence in the spatial extent of the various rights, restrictions, and responsibilities related to their land and real property.
- ❑ Cadastre 2034 will guide the evolution of jurisdictional systems and ensure a coordinated and consistent approach to future policies, legislation, standards, models and research; and provide clear direction for the sector as a whole.

# Cadastre 2034

- ❑ Fundamental to land and property ownership and is sustainably managed;
- ❑ Multipurpose, truly accessible, easily visualised, and readily understood and used;
- ❑ Fully integrated with broader legal and social interests on land;
- ❑ A representation of the real world, which is survey accurate, 3-dimensional and dynamic; and
- ❑ A national cadastre based on common nationwide standards.

# CADASTRE 2.0

# Cadastre 2.0

- ❑ Be multipurpose in nature, meeting a wide range of needs beyond simply recording land ownership of defining parcels for taxation;
- ❑ Enable the full spectrum of rights and parcel definitions to be modelled and managed within the system;
- ❑ Be truly three-dimensional, to reflect better the real three-dimensional overlapping rights, and the registration of multi-level properties.

It may be concluded that future cadastre is a methodically arranged public inventory of data concerning all legal land objects in a certain country or district, based on a survey of their boundaries. Such legal land objects are systematically identified by means of separate designations. They are defined either by private or by public law. The outlines of the property, its identifier together with its descriptive data, may show each separate land object in nature, size, value and legal rights or restrictions associated with the land object.



# CADASTRAL FABRIC

# Cadastral Fabric

- A **cadastral fabric** (or parcel fabric) is a continuous surface of connected (map) parcels.
- Parcel polygons are defined by a series of boundary lines that store recorded dimensions as attributes in the lines table. Parcel polygons are also linked to each other by connection lines, for example, connection lines across roads.
- Because each and every parcel is either linked or connected, a seamless network.
- Parcel lines have endpoints, which are the parcel corners. Parcel corner points are common between adjacent parcel boundaries, establishing connectivity and maintaining topological integrity in the network.
- In the geodatabase, topology is the arrangement that defines how point, line, and polygon features share coincident geometry.

# Cadastral Fabric

- A cadastral fabric is a representation of the record of survey for an area of land. Parcel boundary line dimensions in the cadastral fabric match the dimensions on the survey record. Dimensions in the cadastral fabric are edited in response to a change in the survey record, for example, a parcel split or resurvey. Parcels that are edited or replaced by new survey records are retained as historic, thus always preserving the original survey record.
- The cadastral fabric acts as a base map for overlying feature classes. Feature classes such as building polygons and utility lines are constructed in relation to parcel boundaries. Standard feature classes using parcel boundaries as a base map will fall out of alignment with an adjusting cadastral fabric.

**THANK YOU**