



GBA

Land Titling Working Group
BMM Land Titling Supplement



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Government Blockchain Association

Land Titling Working Group



Property Titling Supplement

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Approval

Meiyappan Masilamani	Director, Standards Title	Date
Muhammad Saleem	Land Titling Working Group Lead Title	Date

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1 Introduction

This document is not intended to be a stand-alone document. It is intended to be a supplement to the Blockchain Maturity Model (BMM).

1.1 Purpose

This document is used as a supplement to the Blockchain Maturity Model (BMM) and is used to assess solutions, using blockchain technology to maintain the register of real property¹ record, process transfer of ownership, update record of ownership and notify to all parties concerned.

1.2 Use

Using this document is a two-step process. First, select the features of the solution that are related to this supplement. Then compare the solution to the applicable requirements described in this document.

2 Scope

Solutions in-scope for this supplement are expected to have at least one or more of the following functions. They are:

- Transferring Real Property Rights
- Transferring Digital Property Rights

3 Requirements

The following requirements are defined associated with the features of the blockchain enabled solution.

- Due Diligence Documents
- Environment Information
- Financial Exchanges
- Fractional Ownership
- GIS Data/Record of Surveys Updates
- Interoperability
- Land Transfer
- Land Valuation
- Legacy system
- Legal Compliance
- Paper Record
- Property & Title Ownership
- Property Chain of Custody Verification
- Property Description Verification
- Real Property Asset Types
- Speed of Title Record System
- Title Transfer

¹ See Appendix A for a definition of Real Property
Version 0.1



The detailed requirements for each solution feature is described in the following sub-paragraphs.

3.1 Due Diligence Documents

For solutions that facilitate the storage, analysis, and retrieval of documents for due diligence purposes, the solution shall maintain copies of paper record in the form of high-resolution images to ensure readability and clarity, for accurate store in appropriate digital system within the blockchain.

Examples include:

- Tax certificate,
- deed,
- encumbrances,
- platt maps,
- contingencies
- Inspection Documentation, including but not limited to objections, resolutions, extension on dates and deadlines, receipts
- Any and all public notice documentation
- Any settlement, disputed or contested claims documentation
- Documentation of any certificates, related to the property such HOAs, development plans, platt maps, permits, easements or encroachment documentation
- High Resolution Mapping and zoning information or change of zoning, use permits, special use permits etc.
- County and state measurements in Square Feet, acres - if applicable - or Meters, depending on location.
- Surveys, ILCs
- Property description and breakdown of internal layout (Bedrooms bathrooms, etc), external layout (Sheds, barns etc.)
- Any bill of sale tied to the sale of the personal property of a sale.

3.2 Environment Information

Solutions that record environmental data shall record proof of the data integrity on an immutable ledger.

Examples of nonmental information include:

- **Soil Quality** - Data on soil composition, contamination levels, and suitability for agriculture or construction.
- **Water Resources** - Information on nearby water bodies, water rights, and water quality.
- **Flood Zones and Risk Areas** - Mapping of flood-prone areas and historical flood data.
- **Air Quality** - Data on air pollution levels and sources of air contaminants.



- Topography and Geology - Information on the physical terrain, geological stability, and any seismic activity.
- **Vegetation and Land Cover** - Details on types of vegetation, forest cover, and protected areas.
- **Climate Data** - Historical and current climate information, including temperature, rainfall patterns, and climate change projections.
- **Biodiversity** - Data on local wildlife, endangered species, and ecological importance.
- **Hazardous Materials** - Information on any hazardous materials present on or near the property.
- **Environmental Restrictions and Regulations** - Information on environmental laws, zoning restrictions, and conservation easements affecting the property.

3.3 Financial Exchanges

For solutions that record financial transactions related to the transfer of property on an immutable ledger. This includes:

- Records of the history and details of monetary exchange for property,
- Source of funds to prevent the use or housing of illegal and unreported money in all real estate sectors.

Examples include loan, debt, cash transfer, institution used to facilitate transaction including but not limited to exchange QI fees (Qualified Intermediary), closing fees, DST QI fees, settlement statements from lenders or Title and Bill of Sale tied to transactions.

3.4 Fractional Ownership

Fractional ownership applies to condos, co-ops, timeshare, and equities.

3.4.1 Fractional Rights

The solution shall define the rights being fractionalized that meet regulatory requirements in the jurisdiction of the real property location.

Notes:

Examples include equity, specific rights of use etc. Also proving authority to exercise fractionalized ownership within the rights afforded to the fractional owner.

3.4.2 Fractional Revocation

The solution shall address the revocation of fractional rights by legal authority based on established rules.



3.5 GIS Data/Record of Surveys Updates

A solution that facilitates the data collection, storage, and retrieval of graphical information system (GIS) or survey data shall:

- Integrate with GIS system
- Allow for the update of data
- Record GIS/Survey data to an immutable ledger
- Support the reading of on chain GIS/Survey data to assure data integrity.

3.6 Interoperability

For a solution that interface to external systems it shall:

- Support standardized data formats and protocols for reading and writing data to external systems.
- Have a mechanism to ensure the consistency and integrity of data exchanged with external systems and to detect and resolve data conflicts.
- Be compatible with Geographic Information System (GIS) platforms to accurately manage and represent spatial data.
- Geometric data of properties shall be exchanged in standard GIS formats.
- Include API documentation to facilitate integration with external systems.
- Developer support and resources (e.g., SDKs, code samples) shall be made available to assist in the integration process.

Examples:

Standardized formats include JSON, XML, RESTful APIs

GIS formats include shapefiles and GeoJSON)

Developer support and resources include SDKs, and code samples

3.7 Land Transfer

A Property Transfer is the act of changing the ownership record of a parcel of land between two entities.

The solution shall:

- Provide proof of property transaction certified by a third-party
- Import and record spatial information.
- Prohibit the transfer of property without the consent of the property stakeholders or the lawful order from the legal authority with jurisdiction over the property.



- Describe the specific rights associated with the property.
- Update the chain of custody records.
- Notify property stakeholders of any change to the property ownership status.
- Identify and report any related encumbrances on the property.

3.8 Land Valuation

For solutions that determine market-based land valuation based on comparable in the identified property market, staying within a certain perimeter.

The solution shall:

- Record the minimum transaction value
- Record the collection of duties and taxes
- Record the market value payment by Government upon compulsory land acquisition or private equity, individual or institutional buyers.
- Calculate for accurate taxes, duty, liability and encumbrances as evidenced in the public record.
- Record the last transferred sales price of property, and acquisition or private equity, individual or institutional buyers.

3.9 Legal Compliance

The solution shall:

- Inheritance Law – The solution shall be able to incorporate inheritance law and any other applicable valid law of the land, the system should have further capacity to accommodate special court orders on account of inheritance transfer.
- Court Orders – The solution shall record the orders issued by the court of law about the real estate asset e.g. stay order, transfer order, ban on transfer, acquisition order etc. etc.

3.10 Property Chain of Custody Verification

Property Chain of Custody Verification is the process of verifying the historical ownership of a land parcel sufficient to establish a legal, just title is held by the purported owner.

The solution shall:

- Include geographic and physical attributes (coordinates, beacons, landmarks, etc.) of the property
- Include the legal description including the title/deed information.
- Maintain a date/time stamped image of previous ownership records.
- Certify duplicates of the applicable documents for best practices immutable evidencing.



Notes:

1. Best practices include the incorporation of Geographic Information System (GIS) data and use by assessors, appraisers, and modelers.
2. Computer Aided Mass Appraisal (CAMA) software is used to support chain of custody verification.

3.11 Property Description Verification

For solutions that identify unique properties, the solution shall record:

- Geographic and physical attributes (coordinates, landmarks, etc.) of the property.
- Legal description if applicable and incorporate GIS data
- Identification of property stakeholders.

Examples:

1. CAMA software is used by assessors, appraisers and modelers to record property descriptions.
2. Property data can include a court ordered transfer, purchase or sale, gifted or next of kin, or anything that would result in a change of ownership.
3. Property stakeholders may include the buyer, seller, insurer, bank, and governing authorities

3.12 Title Transfer

A Title Transfer is the act of transferring ownership interests of a property.

The solution shall:

- Record the following details of a title transfer:
 - **Property Description** - The metes and bounds of the property to be transferred, providing a precise legal description of the property's boundaries and characteristics.
 - **Parties Involved** - The identities of the grantor (current owner) and grantee (new owner) along with the verification methods for the identities of both parties, including the stakeholders involved in the verification process.
 - **Jurisdictional Compliance**
 - Compliance with the specific legal requirements of the jurisdiction where the property is located, which may vary for different types of transfers, leases, or other real property rights.
 - Accommodate various jurisdictional requirements, such as notarization, witnessing, and other legal validations.
 - **Transfer Details** - The method of transfer, such as sale, gift, inheritance, court order, or government acquisition along with the date and time stamp of the transfer, ensuring a verifiable record of when the transfer occurred.



3.13 Real Property Asset Types

The solution has the capability to identify and record the attributes of a real property including the corresponding rights, encumbrances, and constraints for:

- a. Agricultural Property
- b. Commercial Property
- c. Residential Property
- d. Government Property

3.14 Property & Title Ownership

The solution shall be capable of recording the details of the chain of ownership, including the ownership type and the instrument(s) used to prove chain of ownership.

The solution shall also record the rights, encumbrances, and constraints described in instruments used to demonstrate, change or transfer ownership that are used to show, alter, or transfer property ownership.

Examples include general warranty deed, special warranty deed, inheritance transfer, gifts, court order

Examples of ownership types include Life estate, Leasehold agreement, Cooperative Ownership, Condominium Ownership, Joint Tenancy, Tenancy in Common, Trust Ownership. Community property

Examples of rights include (but not limited to): ownership, usage, fruits² and mineral.

Examples of encumbrances and restrictions include (but not limited to): servitudes, easements, restrictive covenants, mortgages, liens, and judgements.

² Fruits include the results yielded by the property which may include agricultural and other types of outputs.



3.15 Legacy system

System must be able to inherit all features and functions of legacy system and new system should not limit or eliminate the feature and productivity provided by the existing system, but instead improve it's capabilities.

3.16 Paper Record

The solution shall be capable of providing printed record of title with system generated endorsed stamp or special mark.



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Appendix A: Definitions

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Appendix B: Land Title Data Standards

Category	Attributes	Description	Format
	Fractional Rights		
Property Attributes	Easements		
	Utilities		
Imagery			
Geological			