

International Land Measurement Standard

Chris Williams-Wynn

South African Geomatics Institute representative on the ILMS Coalition

With agreement from the

Minister of Agriculture, Land Reform and Rural Development.

“Strong ownership rights are a key factor needed to encourage growth in wealth in African countries”- Africa Wealth Report 2018

International Land Measurement Standard - Beginnings

- FIG Congress in Malaysia – 2014
- FIG Working Week in Bulgaria – 2015
- FIG Working Week in New Zealand – 2016
- Approached by: FIG Deputy President and Chair of the Africa Regional Network, Dr. Diane Dumashie
- Invited to represent South Africa
- Discussions with President of SAGI: Peter Newmarch
- Established as SAGI Representative
- Written permission from Minister



First ILMS Coalition meeting in Rome, June 2016

Contextualise with a South African example:

- With Reference to the South African Cadastral system:
 - Formal land rights are documented by deed and diagram
 - The deed identifies the “who” and “how”,
 - The diagram delineates the “what” and the “where”.
- Example on following slide: Live deed (dated 1874) based on original diagram (dated 1854)
 - Is it accurate? Is it still a true reflection of what is on the ground?
 - The diagram and deed say “Aberdeen”, but in fact they represent an erf in a non-existent town now called “Calderwood”!

Goat's

former title stamped

(39)

DEED OF TRANSFER, BY VIRTUE OF A POWER OF ATTORNEY.

Know all Men whom it may concern,

THAT *Jacobus Petrus de Wet*

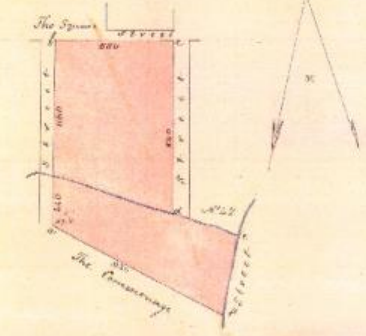
appeared before me, Registrar of Deeds, He, the said *Jacobus Petrus de Wet* being duly authorized thereto by a Power of Attorney, granted to him by *Percy Magister, also full Commissioner of Victoria* who was appointed by Power of Attorney, dated the 17th November 1874, and drawn up at Office by *Wilhelm Adolphus Robert P.M. Munn of the Dutch Reformed Church in the person of competent Witnesses*, which Power of Attorney was exhibited to me on this Day;— and the said *Jacobus Petrus de Wet*

declared that the said *Reformed Church* represented as aforesaid, had authorized the *Magister* to the Colonial Government of the *had truly and legally said*, and that He, the said *Jacobus Petrus de Wet*, in his capacity as Attorney aforesaid, did, by these Presents, Cede and Transfer, in full and free Property, to and on behalf of

The Colonial Government
Heirs, Executors, Administrators, or Assigns,
certain piece of land situate in the Division of Victoria in the Village of Aberdeen on the General Plan No. 1, measuring eight morgen, granted to the Dutch Reformed Church at Aberdeen by the Governor of the Colony, under a Deed of Conveyance dated the 29th day of August 1857

OFFICE COPY

1583/1854
S.O. Dgm. No.



1000 feet

Aberdeen, Del.
ERP 2200 Aberdeen

This above Diagram also represents a morgen of land situated in the Village of Aberdeen (District of Victoria) being Lot 101 on the General Plan, Granted to the Dutch Church, Bounded N by the Commencement, E by the Square and Street, and S and W by Street and Stream.

Witnessed Feb 1854
Amram-father

Calderwood

Laid out as Aberdeen in 1854

Legend

• Calderwood

Calderwood Calderwood

Google Earth

6

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Image © 2018 DigitalGlobe

International Land Measurement Standard (ISU)

9.50 N 20



400 m

The problem with current Land Measurement Standards in Southern Africa:

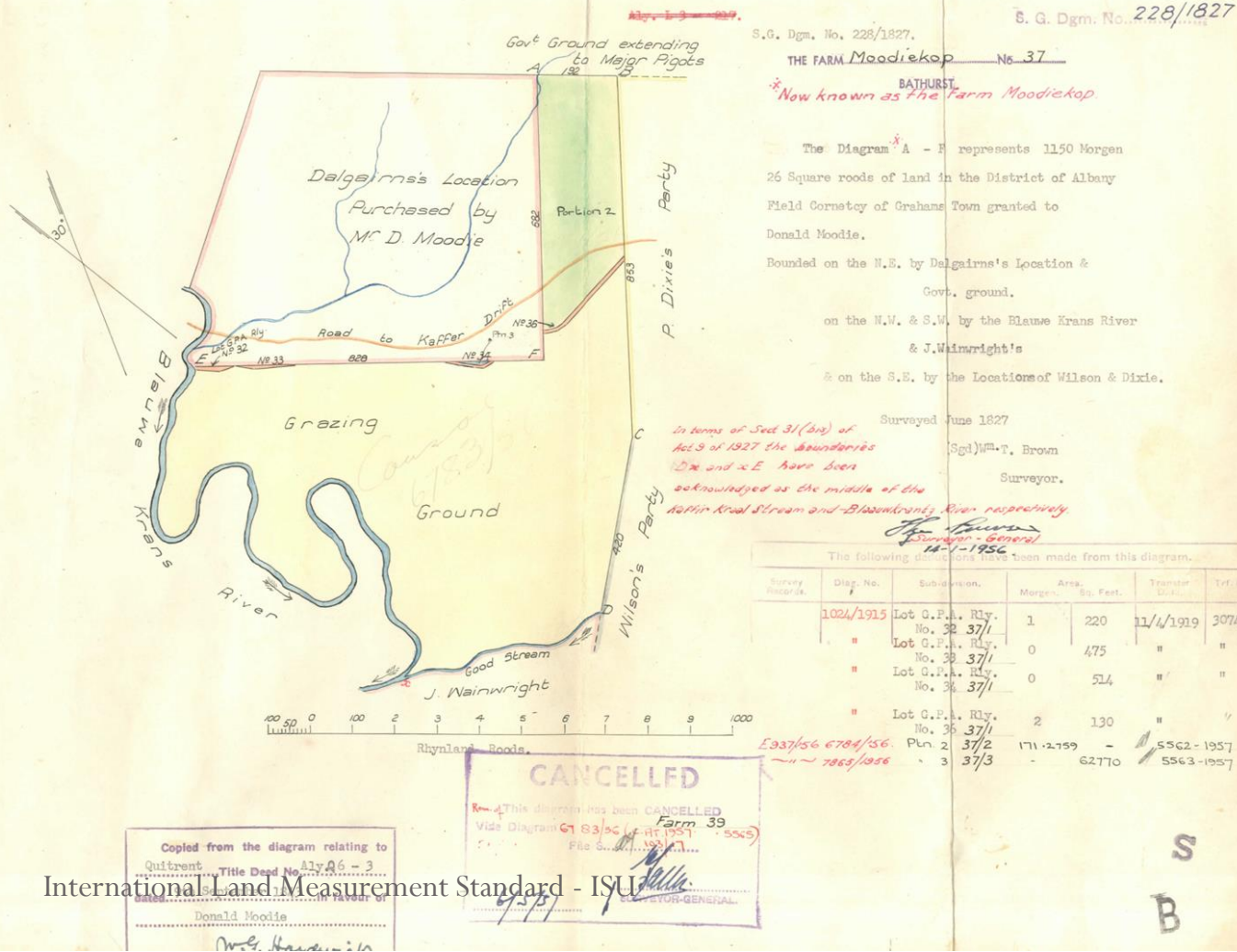
- Land parcels have been created from:
 - Collection of diagrams surveyed over 300+ years
 - Preserved in the Offices of the Surveyors-General.
- Boundary information is only as accurate as:
 - The original diagrams, or
 - Any subsequent re-survey of that existing boundary.
 - (The original document is seldom updated with the new information.)

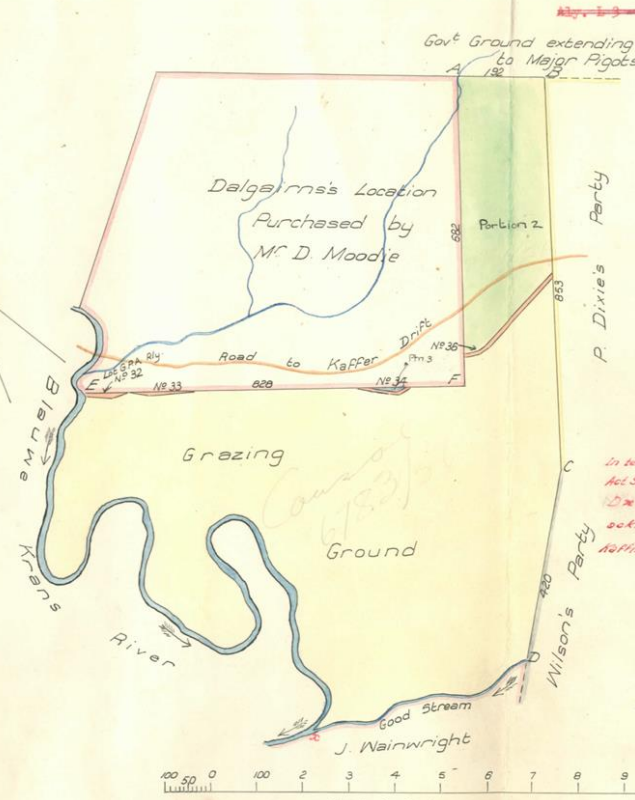
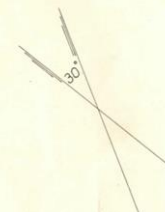
Pre-legislation diagrams:

- Before 1929, standards for the survey of boundary lines were not specifically defined
- Some boundaries have no recorded mathematical data
 - diagram indicates a figure indicating the shape of parcel, with an area;
 - boundaries may be drawn in relation to physical features
 - top of a hill; river; ocean
- Some boundaries were not surveyed accurately
 - paced, ridden, sketched by eye or maybe even from memory;
 - poor survey practice and sub-standard equipment;
- Many monuments (beacons) defining each end of the boundaries have disappeared completely, resulting in uncertainty of legal position

Beginning of standardisation:

- Prior to 1935 most surveys were performed on a local system:
 - national control survey system evolved from about 1860,
 - curvature of the earth and height above sea level was ignored.
- Errors in mathematical data or overlaps of diagrams are discovered
- Let's look at some examples:





CANCELLED
This diagram has been CANCELLED
Vide Diagram 67 83/56 (L.A. 1957)
File 6... 1957

Copied from the diagram relating to
Quitrent Aly A6 - 3
Title Deed No. 1327
dated...
Donald Moodie
Mr. H. H. H. H.



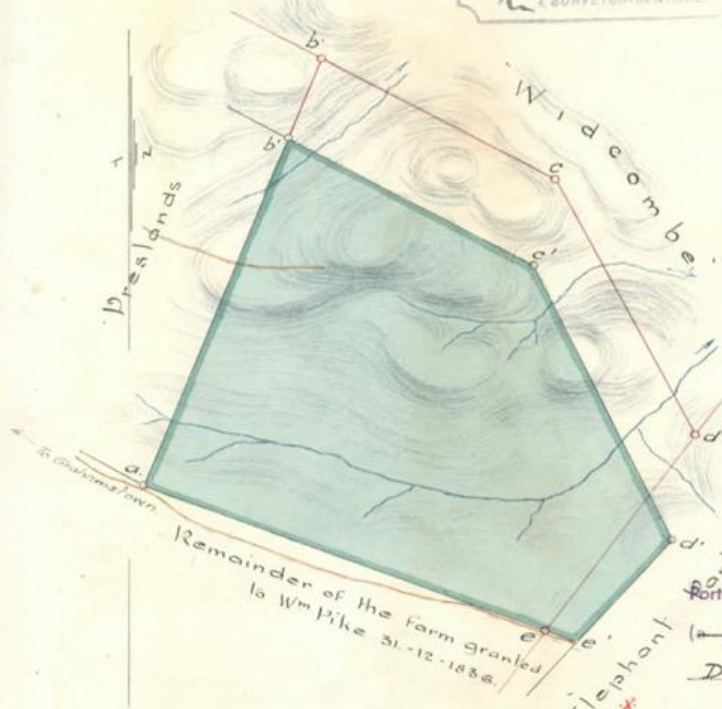
No. 1341, 1917.

Approved

1311

Approved No. 1780A
62 SEP 1917.
H. E. Allen
SURVEYOR GENERAL.

Surveyor General.



SIDES		ANGLES	
ab	722.14	a	92° 4' 10"
bc	373.26	b	79° 25' 40"
cd	446.55	c	146° 8' 20"
de	373.42	d	121° 7' 20"
ea	600.22	e	101° 10' 30"

CO-ORDINATES

	y	x
a.	- 32.62	+ 142.26
b.	+ 495.16	+ 635.14
c.	+ 695.54	+ 320.23
d.	+ 684.69	- 126.19
e.	+ 360.42	- 311.58

Area of fig. as per beacons

abcde = 673 M. 195. Sq R.

Portion 4 (a portion of Portion Dundas) of the farm No 13

BATHURST

Now known as Portion 4 of the farm Dundas

Scale: 0 200 400 500 Cape Rods = 1 inch.

The above diagram a b c d e

represents

547 Morgen 16 Sq. rods

Sq. feet of ground situate in the

The result:

- Enormous variances in the accuracies of boundary information
- Surveys performed and deeds transacted over 300+ years.
- Surveyors-General's Cadastral Information of land assets is little more than a “pretty picture”.
- Cadastral Information defining immovable property assets is an approximation of the actual position on the ground.
 - Data is inaccurate, missing, subjected to movement, overtaken by events ...
- Not only is the accuracy a problem, many rights to land are not documented.

Complexity of Land Rights (legal, de facto or perceived) affecting Fixed Property Assets

- Rights of original title holder and successors (freehold, quitrent, leasehold)
- State “owns” land occupied by communities (communal land, held “in trust”)
- Superimposed with “Registered Permissions to Occupy” (officially issued)
- “Unregistered Permissions to Occupy” allocated by traditional authority
 - (king, chief, headman, council)
- Land allocation under agricultural initiatives
 - “Betterment Scheme”
- Community registers
- “Informal allocations” by political structures
- I.e., every person residing on any parcel of land, no matter how they got there (birth / voluntarily / forcibly)

Application of International Land Measurement Standard.

- International Finance Reporting Standards (IFRS) Foundation established in 2001
- In 2010, the accounting profession worldwide succeeded in adopting the IFRS as a single world-wide set of standards
- Governments of 123 countries have required or permitted IFRS to be used (including South Africa)
- 70 – 80% of the entire world's wealth recorded is based on land and fixed property assets
- 70% of land and property in the developing world is outside of any formal tenure system

History to ILMS

- World Bank, International Monetary Fund
 - Standardisation of land and property assets appearing on accountants' balance sheets
- Comité de Liaison des Géomètres Européens (CLGE).
 - International Property Measurement Standard (IPMS) Coalition
- First IPMS issued in November 2014 — <https://ipmsc.org/standards/>
- Royal Institution of Chartered Surveyors (RICS)
 - Initiated proposals for land and land tenure standards
- ILMS Coalition was formed
 - Proposed to FIG member organisations: FIG Working Week Christchurch, May 2016
 - First meeting: Rome, June 2016



MEMBERS OF THE STANDARD SETTING COMMITTEE PRESENT AT THE MEETING IN BERLIN:

BACK ROW: ANIL KASHYUP, CHRIS WILLIAMS-WYNN, JAMES KAVANAGH, SARAH SHERLOCK, KATE FAIRLIE AND ALEXANDER ARONSOHN.

FRONT ROW: THOMAS JACUBEIT, ROB MAHONEY, DUNCAN MOSS

International Land Measurement Standard - ISU

What ILMS is:

- A framework for reporting on “land assets” and land asset transactions;
- A basis for collecting asset and transactional information to identify what is on the ground, what information is available and the quality of available information;
- A set of principles for transparency, integrity and consistency in land asset reporting;
- Flexible and non-prescriptive recommendations, which can be adopted incrementally in harmony with the fit-for-purpose land administration principles;
- A due diligence process for creating investment analysis documents, by which known unknowns can be exposed and risks assessed or costed;
- A basis for determining fair compensation.

What ILMS is not:

- A new Land Administration system;
- A replacement for any existing guidelines or standards;
- Instructive of governments for the development of new legislation;
- Designed to track national progress towards “Sustainable Development Goals”;
- About the collection of data to create or update national or international databases.

ILMS key elements:

- Land Tenure
- Site definition/Land Area
- Parcel Description (Boundary delineation)
- Land Use – single or multiple purpose
- Buildings and development
- Services (existing or available)
- Land Valuation
- Rights on Access to Land

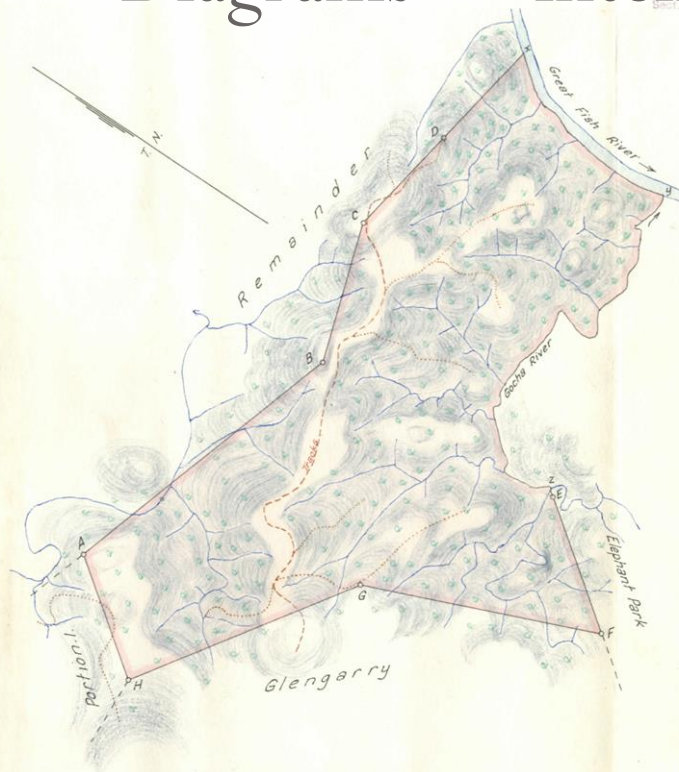
ILMS Principles

- Bring consistency to an often opaque process;
- Add transparency to land transaction;
- Help strengthen land security and property rights by helping legitimate owners and occupants realise the economic value of their rights;
- Bring land professionals closer to the investment community;
- Bring connectivity between 'soft law' and 'hard' standards;
- De-risk the internal and external investment in land and property
- Improve efficiency and fair compensation
- Help deliver infrastructure and sustainable urban expansion

How is this relevant to Surveyors and Land Economists?

- Improve records of land and fixed property assets
 - Remove inaccuracies
 - Remove doubt
 - Give more detail
 - Align with the requirement for accurate data
- Recommends that records of fixed assets should be updated at every transaction
 - Link back into IFRS
- “Smart technology” and intelligent information can provide far more than a “silent diagram”- a blank figure and co-ordinates

Diagrams — Intelligent or Simple?



SIDES Cape Feet	ANGLES OF DIRECTION	SYSTEM L27° CO-ORDINATES y	z
AB 6706.3	287.14.20	A + 18577.6	+ 1853
BC 3190.3	251.57.40	B + 12172.6	+ 2053
CD 2545.6	279.06.20	C + 9139.1	+ 1953
DE 8249.3	39.27.20	D + 6625.6	+ 1994
EF 3165.1	36.25.40	E + 11867.7	+ 2631
FG 5361.2	157.32.40	F + 13747.2	+ 2881
GH 5418.6	123.41.10	G + 15795.1	+ 2396
HA 2922.7	216.12.20	H + 20303.9	+ 2085
Dx 279.06.20			
Ez 216.25.40			

The figure ABCD right bank of Great Fish River
z E F G H
represents 853.1990 Morgen

Portion 2 of the farm Widcombe

situate in the Division of Bathurst

Surveyed in July 1948 by me

This diagram is annexed to D.T.
No. 7986 d.d. 14/4/50

The original diagram is
No. 127/887 annexed

Beacons

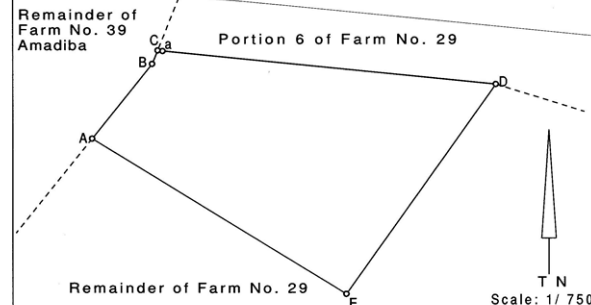
- A = $\frac{3}{4}$ " x 24" iron pin & cairn 3' x 3' & witness marks.
- B = Monolith 11" x 7" x 14" high with witness marks.
- C = Monolith 10" x 7" x 16" high with witness marks.
- D = Monolith 18" x 7" x 20" high with witness marks.
- E = Monolith 18" x 7" x 20" high with witness marks.
- F = Sneezehead cor fence post with cairn & witness marks.
- G = Monolith 12" x 7" x 33" high with witness marks.
- H = Monolith 8" x 6" x 36" high with witness marks.

International Land Measurement Standard - ISU

SHEET 1 OF 1 SHEETS		SUBDIVISIONAL DIAGRAM		OFFICE COPY	
SIDES metres		ANGLES OF DIRECTION		CO-ORDINATES Y System: WG 31° X	
		Constants		0.00	0.00
A B	19,77	218.35.30	A	+78 355,53	+3 439 375,83
B C	3,00	201.46.50	B	+78 343,20	+3 439 360,38
C D	69,88	275.42.40	C	+78 342,09	+3 439 357,60
D E	53,21	35.19.50	D	+78 272,55	+3 439 364,55
E A	61,30	121.36.30	E	+78 303,32	+3 439 407,96
INDICATORY DATA					
a C	1,03	95.42.40	a	+78 341,06	+3 439 357,70

BEACON DESCRIPTIONS

- A, D, E, a : 20mm Iron peg
- B : Planted stone
- C : Not Beacons



The figure A B C D E represents 2 300 square metres of land being
PORTION 5 OF FARM NO. 29

Situate in the Mbizana Municipality
Administrative District of Bizana
Eastern Cape Province
Surveyed in July 2017
by me

C Nxumalo (PLS 1252)
Professional Land Surveyor

This Diagram is annexed to
No.

The original diagram is
S.G. No. TR68/1980

S.R. No. 335/2018

Registrar of Deeds

Transfer No.

Comp DT-1A (TR557)
LPI C0860000

Portion 5 of Farm No. 29

Some options to include in the proposed ILMS record of land and fixed property assets:

- Satellite or aerial photo of the land parcel.
- National Reference Framework Coordinates of each boundary corner.
- Recent survey dimensions of each boundary line or arc in length and grid azimuth.
- Area of land parcel or volume of fixed property asset confirmed as being current and correct.
- Restrictions on, over, in, or under, the land parcel (leases, servitudes, by-laws etc.).
- The extent of any known legal claims that exist in relation to the land parcel (including legitimate, informal, de facto or perceived rights).
- Record of differences between documented boundaries, legal boundaries and physical boundaries.
- Site plan of the overall land parcel – 3D, 4D image?
- Topological relationship of the asset in relation to all relevant land parcels nearby.
- Description of development on the land parcel
- “Street view” – e.g., photograph of front façade of any buildings and other improvements

ILMS aims to establish international best practice:

- What information is needed for recording fixed property assets?
- What is required for land transfer reporting?
- How can these requirements evolve into land measurement standards?
- What will support a sustainable future both for people and legal entities?
- Therefore, ILMS has been created to:
 - Improve the reporting process for the parties to a transaction.
 - Set out a land and real property transaction reporting framework.
 - Provide consistency by promoting transparency and standardisation.
- ILMS is recommended and capable of implementation irrespective of whether or not a functioning LIS exists.

Contact - ILMS

- ILMS Coalition officers:
 - Chair : James Kavanagh jkavanagh@rics.org
 - Vice Chair: Maurice Barbieri maurice.barbieri@clge.eu
 - Secretary General: Pedro J. Ortiz pjortizt@gmail.com
- ILMS Standards Setting Committee SSC
 - Chair: Rob Mahoney robmahoney@mahgeo.com
 - Vice Chairs : Duncan Moss Duncan.Moss@os.uk
 - Thomas Jacubeit Jacubeit@jacubeit.de
 - Executive Sec: Alexander Aronsohn aaronsohn@rics.org
- Join the ILMS coalition: James Kavanagh jkavanagh@rics.org

Conclusion

- Land Professionals need to see beyond the creation of the rudimentary and start producing “smart land asset information” based on International Land Measurement Standards.
- For more information, please visit:
Website: www.ilmisc.org
- Asante Sana – Thank you.