Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

FIG Working Week 2023

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers

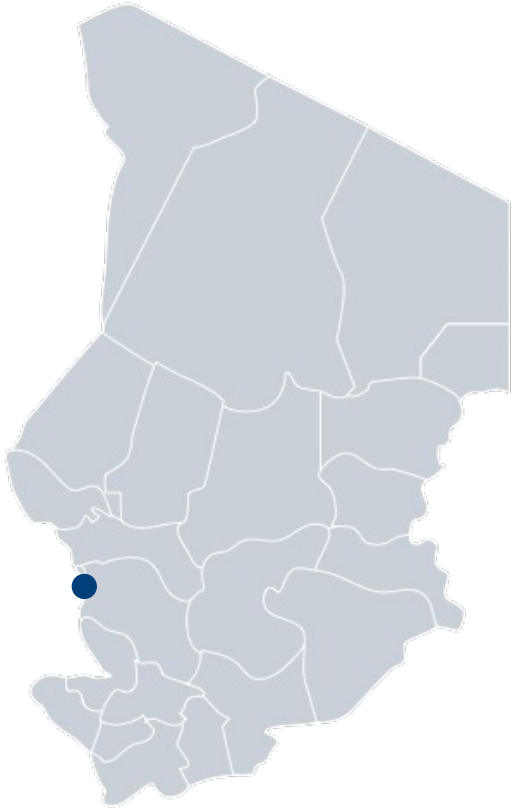
Fit-For-Purpose Land Administration (FFPLA) and the Framework for Effective Land Administration (FELA) in Chad

Eva-Maria UNGER, Rohan BENNETT, Mahamat Abdoulay MALLOUM, Christelle VAN DEN BERG, Claudia STÖCKER, Kaspar KUNDERT, Dina NAGUIB, Markus KOPER, Divyani KOHLI, Mila KOEVA

Organized By NSPS FIG International Federation of Surveyors

Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

Context - Chad



- Statistical Information
  - Population: app. 17 million (app. 2 million in N’Djamena
- Landlocked country (desert north - Sahara, Sahelian belt – center, Sudanian Savanne south)
- Chad's land legislation dates back to 1967 and the body of law is poorly applied
- Reflected in no. of land conflicts in both urban and rural and also reflected in low no. of existing land titles
- Instable political situation – change of leadership

Partnership and Collaboration

Government

- Ministère des Affaires foncières du Développement de l'Urbanisme et de l'Habitat (MAFDHU)
- Ministère des Finances et du Budget (MFB)
- Ministère de l'Enseignement Superieur,de la Recherche et de l'Innovation (MESRI)
- Ministère de la Justice

CSOs

Conseil des collectivites autonomes et des chefferies traditionnelles (HCCACT)

WenakLabs

Associtaion des Femmes Juristes du Tschad - AFJT

Voix de la femme

NGOs

Conseil National de Concertation des Producteurs Ruraux du Tchad

Plateforme Pastorale

Community & Municipality

Mairie de la Ville de N'Djamena

Donor/Government (int.)

Rijksdienst voor Ondernemend Nederland

kadaster

Academia

ITC UNIVERSITY OF TWENTE.

smart land maps

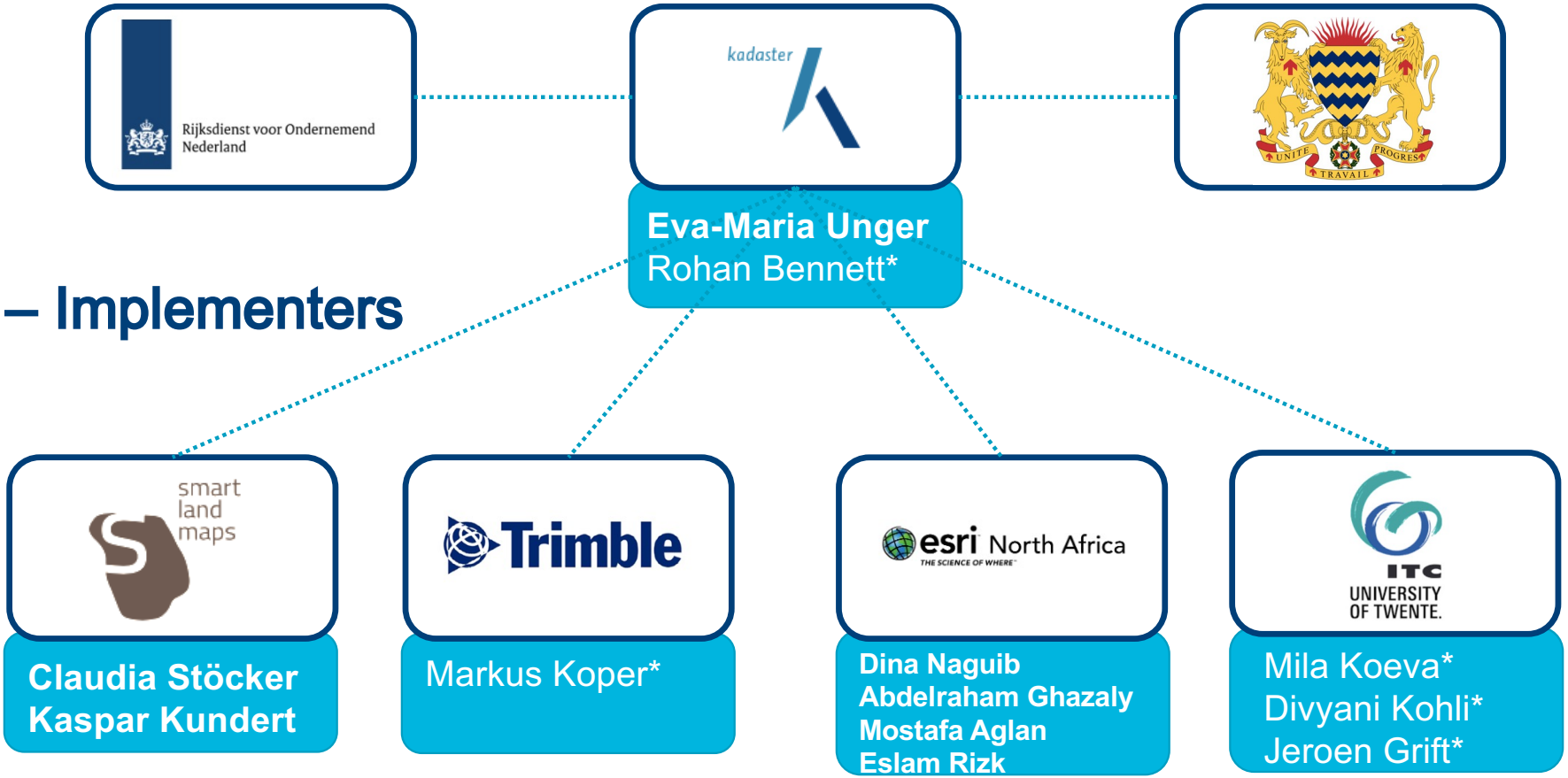
Private Sector

esri North Africa THE SCIENCE OF WHERE

Trimble

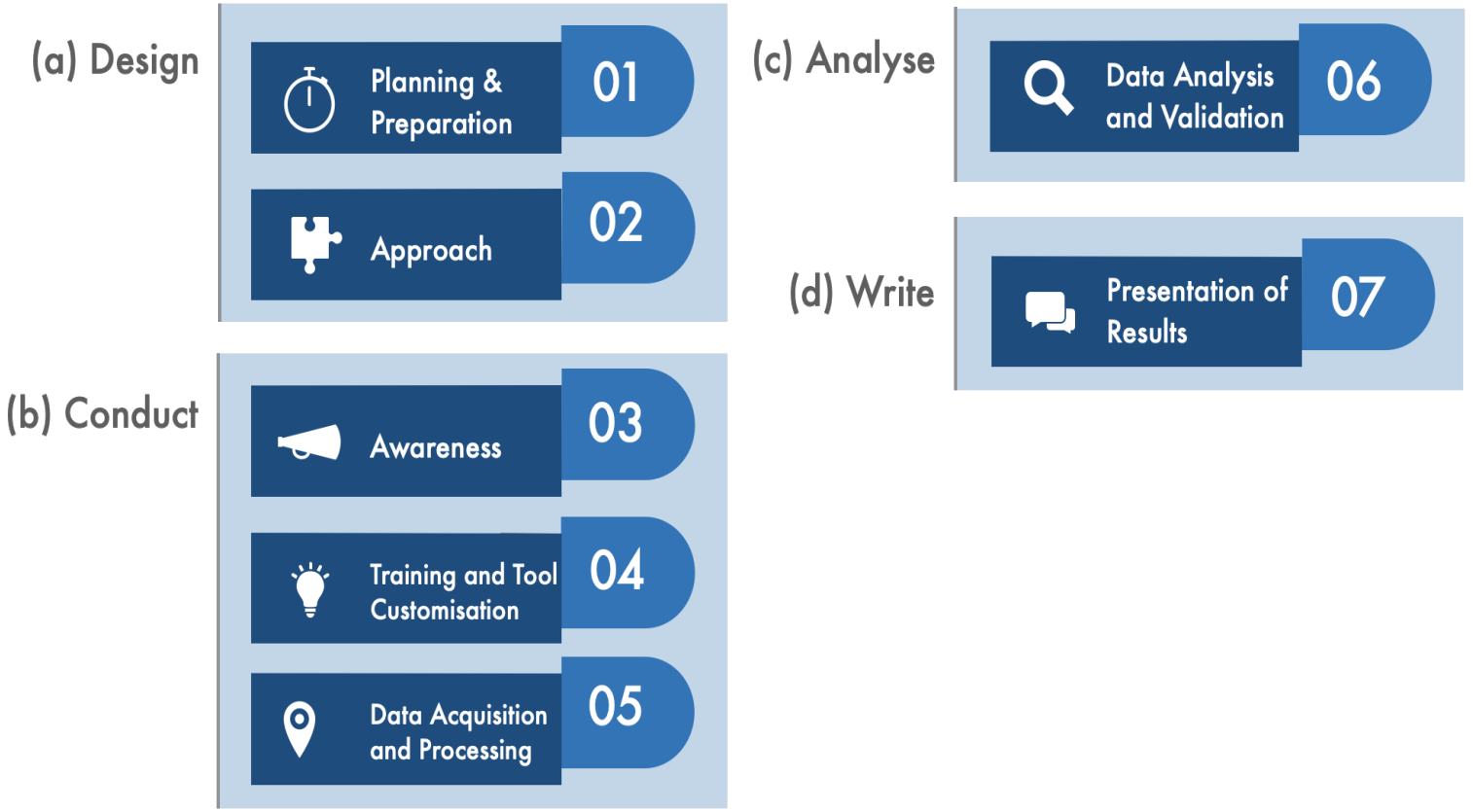
Project Set Up

Mission 3 – Implementers



* supporting from the distanc

Approach


(a) Design
Planning & Preparation
01
Approach
02
(b) Conduct
Awareness
03
Training and Tool Customisation
04
Data Acquisition and Processing
05
(c) Analyse
Data Analysis and Validation
06
(d) Write
Presentation of Results
07

Attributes

Party	Right	Spatial Unit
• Prenom [text] • Nom [text] • Numero d'identification [integer] • sexe [list: M/F] • Data of Birth [date: dd/mm/yyyy] • Nationality [text] • Representante [Y/N] • Type de personnage [list] • Etat civil [list]	• Type de droit foncier [list] • Source du droit foncier [list] • Pourcentage de propriete [%] • Statut [list] • ID d'unité spatiale	• ID d'unité spatiale • Coordonnees • Nom du collecteur [text] • Methodologie [list] • Utilisation des terres [list] • Conflit [Y/N]

Since the attributes serve **only** demonstration purposes - no attributes (except for Spatial Unit ID) shall be mandatory.

IMPORTANT: This is **not** a proposal for a data model for Chad - it serves only demonstration purposes.

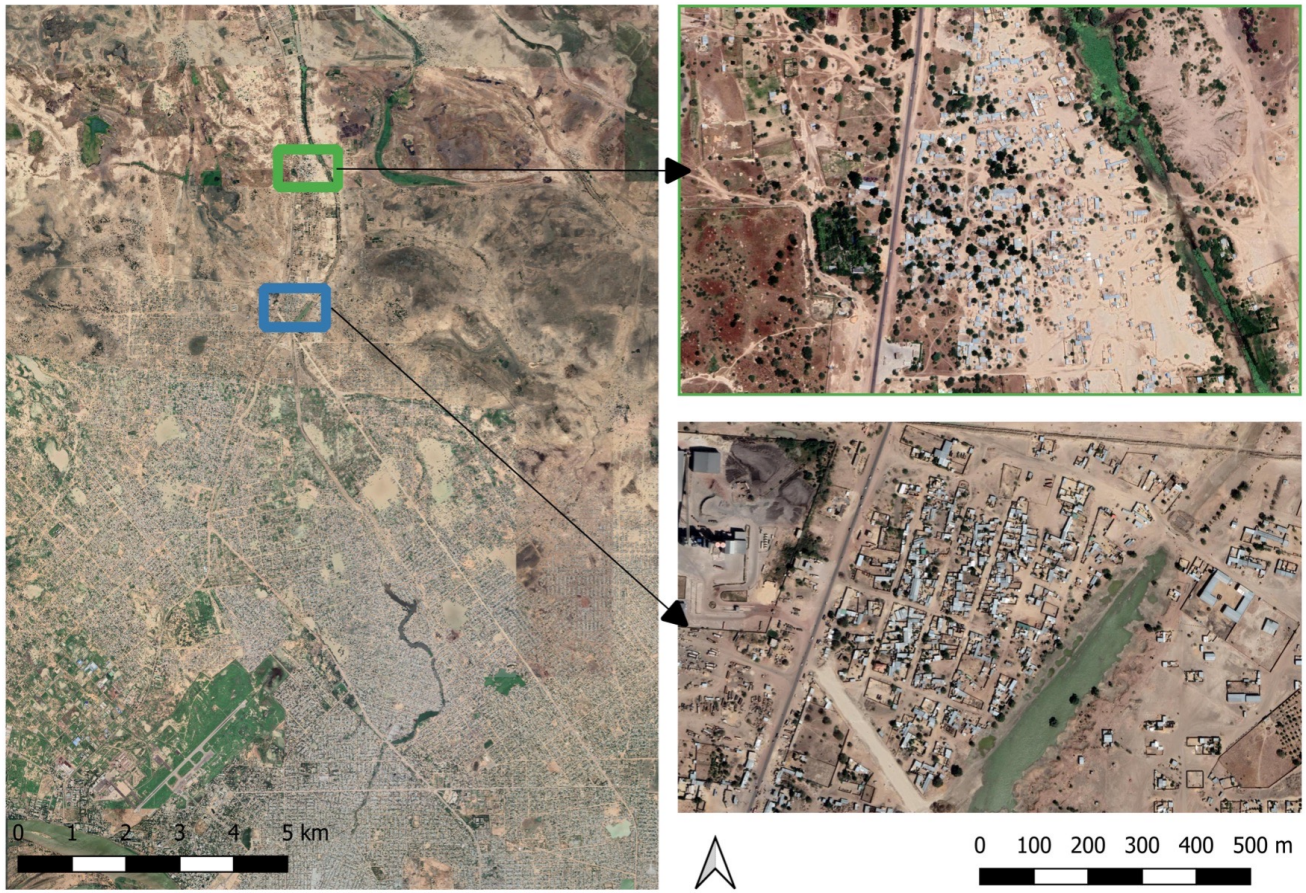
kadaster

Fit-For-Purpose Land Administration

Overview – different Demonstrations/Methodologies

1. Conventional Total Station Survey
2. Paper Based Participatory Mapping
3. Participatory Mapping and Processing - SLM
4. Field Apps with GNSS
5. AFE – Automated Feature Extraction

Case Study Area

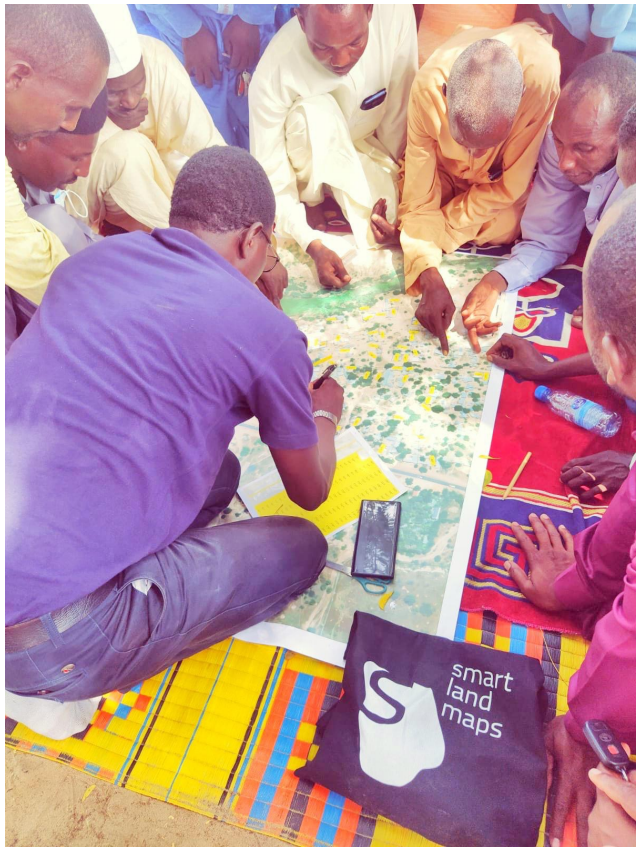


Case Study Area 1:
Sadjéri Koukaye

Case Study Area 2:
Lamdji

Demonstration 1: Conventional Total Station Survey

Demonstration 2 and 3: Participatory Mapping (SLM)



Demonstration 4: Field Apps with GNSS

kadaster

Demonstration 5: Automated Feature Extraction (just ad hoc simulation)

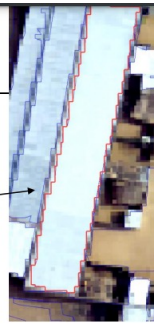
Special Thanks to Mila Koeva

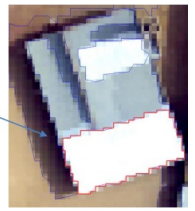
ITC UNIVERSITY OF TWENTE.

kadaster

Demonstration 5: Automated Feature Extraction (just ad hoc simulation)

Building Boundaries detected – zoomed in



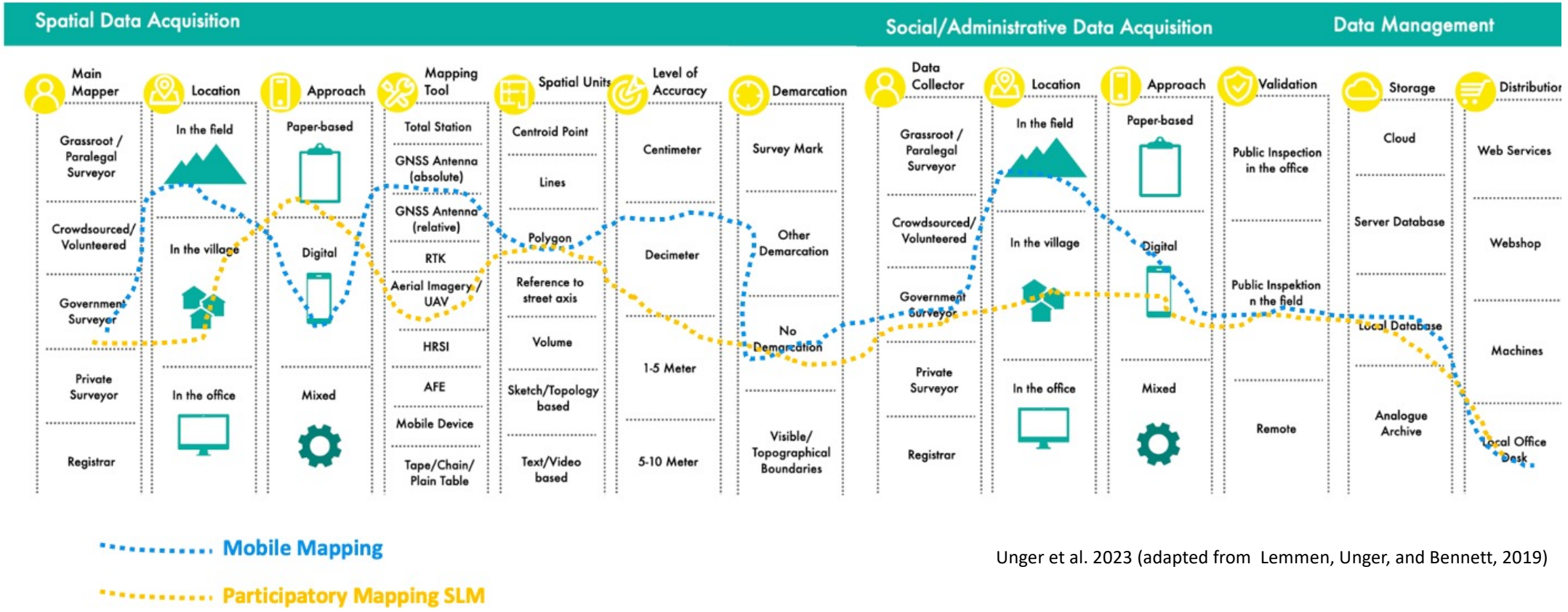


Special Thanks to Divyani Kohli

ITC UNIVERSITY OF TWENTE.

kadaster

Fit-For-Purpose Land Administration



Unger et al. 2023 (adapted from Lemmen, Unger, and Bennett, 2019)

kadaster

Overview – different Demonstrations/Methodologies… many more Options

1. Conventional Total Station Survey
2. Paper Based Participatory Mapping
3. Participatory Mapping and Processing - SLM

Many more possibilties…
Combining with other technologies e.g.
Fingerprints, QR Codes etc.

4. Field Apps with GNSS

- Trimble Catalyst DA2 – Trimble PenMap
- Trimble Catalyst DA1 – Esri FieldMap
- Esri FieldMap
- Qfield

… many more possibilties in regards to Hardware (Trimble, Leica, Topcom etc.)
Software (FieldMap, PenMap, Qfield, MapIt etc.)

5. AFE – Automated Feature Extraction

Fit for Purpose!!!

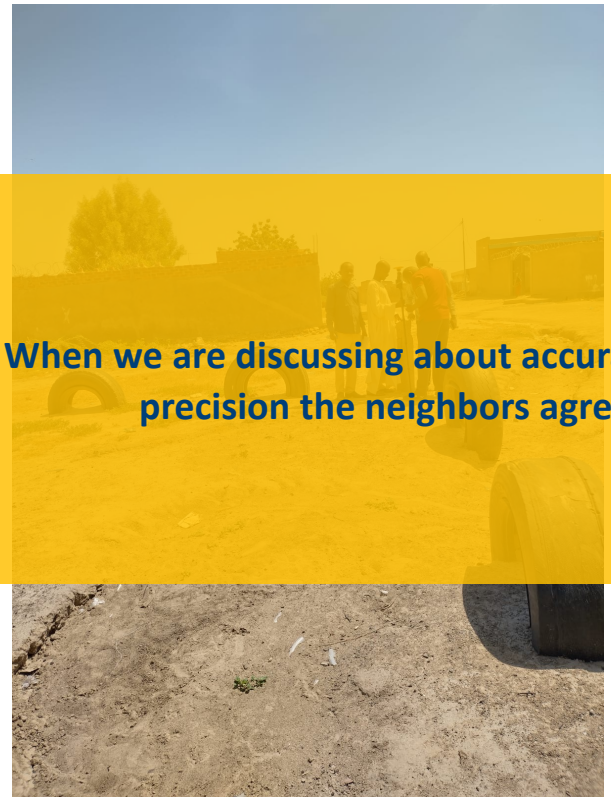
Fit-For-Purpose Land Administration - Observations

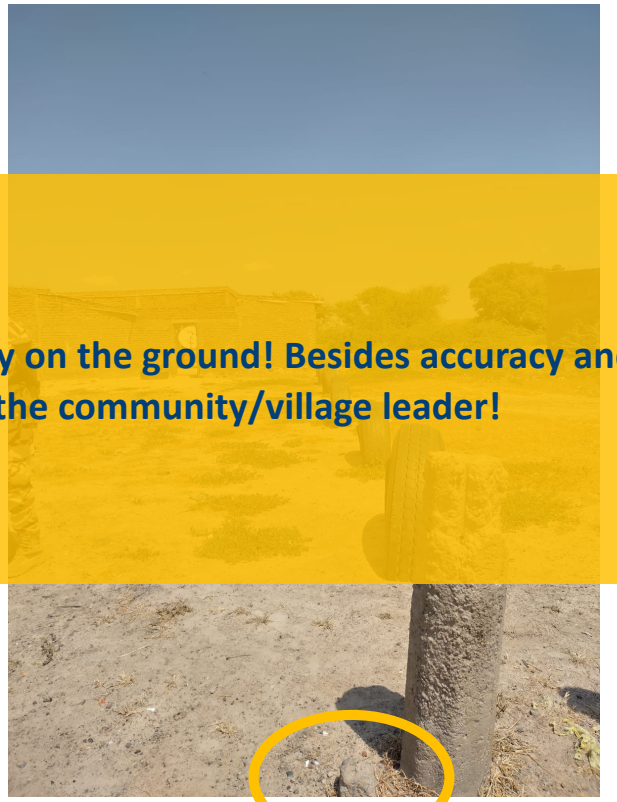
- No one approach fits all
- Combination of different methodologies needed
- Choices need to and can be made based on limitations (battery, Wifi/Cloud connection, hardware, capacity etc.)
- Participation is key - Sensibilisation and Community involvement is key
- Political will and therefore timing is important
- Creating opportunities through particular attention to vulnerable groups (women, landless, nomadic…)
- Capacity and Institutional and Legal framework is crucial
- ….

kadaster

Data Collection – Observations

Data Collection – Observations





When we are discussing about accuracy and precision let's not forget about the reality on the ground! Besides accuracy and precision the neighbors agreement is the key! In the case of Chad the role of the community/village leader!

Data Collection – Observations

Attributes

- Polygamy needs to be reflected
- Sources of rights in line with legal framework/land policy
- Much more discussion needed amongst our colleagues in Chad
- Examples from other countries can be used to guide the discussion but in the end up to Chad which data is collected and this needs to be backed up by the legal framework!

General

- Female participation - coordination with other project
- Timing of mapping activities to support women participation - e.g. Indonesia
- Special Sensitisation
- Suggestion from colleagues in Chad to have 2 mapping places - one for male and female – was discussed and concluded that this could risk different results but good to think solution oriented
- More in detail training on Methods

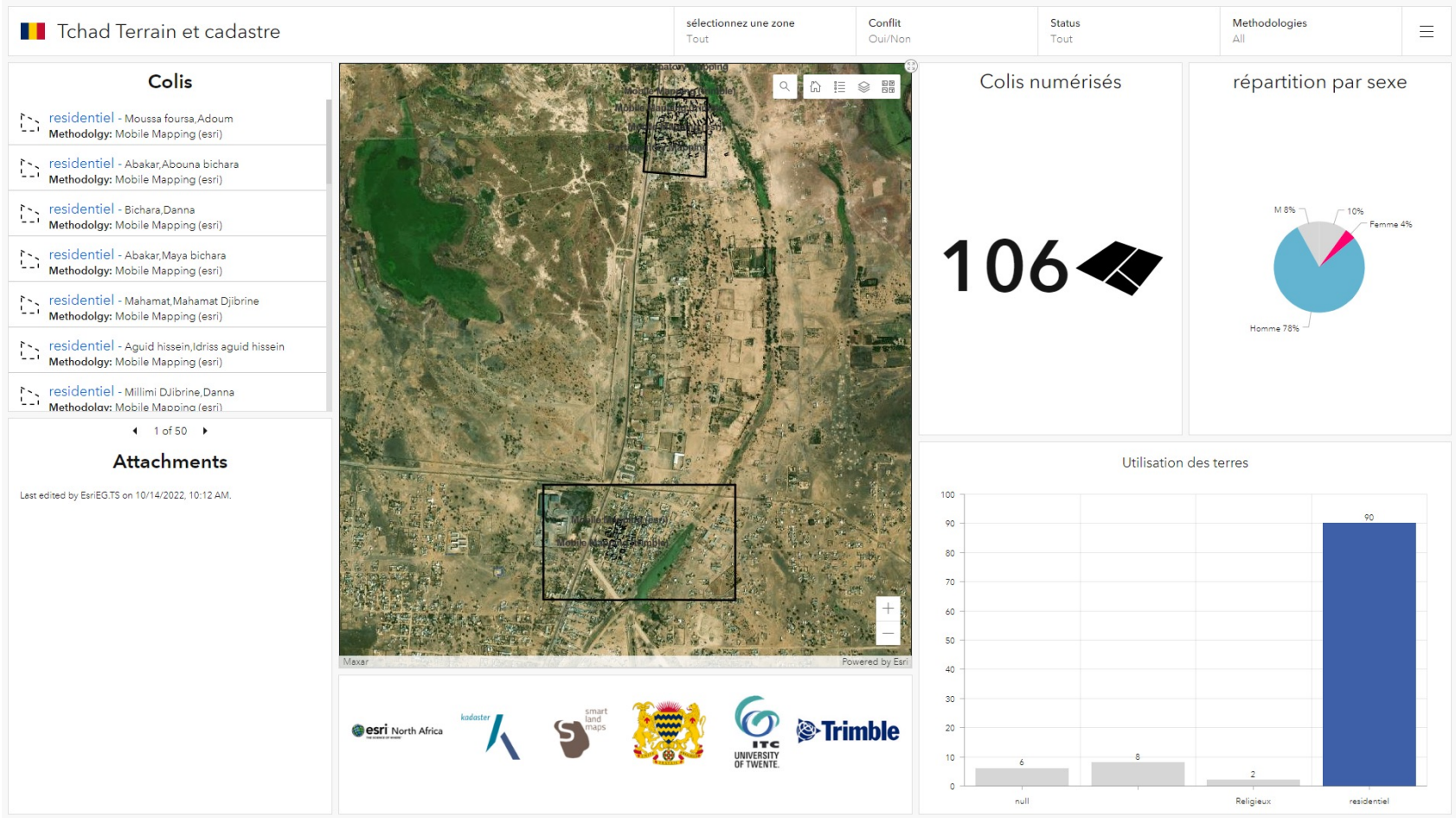
To Conclude…

Aim of the week **Achieved** - everybody was using and witnessing different methodooglies

- Each methodolgy Pros and cons
- Each methodolgy different time needed for preparation, data collection, processing, validation, re-processing
- Each methodology comes with a different price
- Each methodology needs different hard and software
- Each methodology different validation and participation of Community
- Each methodology has different levels of accuracy/spatial Resolution/reliability
- Each methodology needs different level of expertise
- Each methodology has different ways to collect the data - but also depends on the community
- Many more…

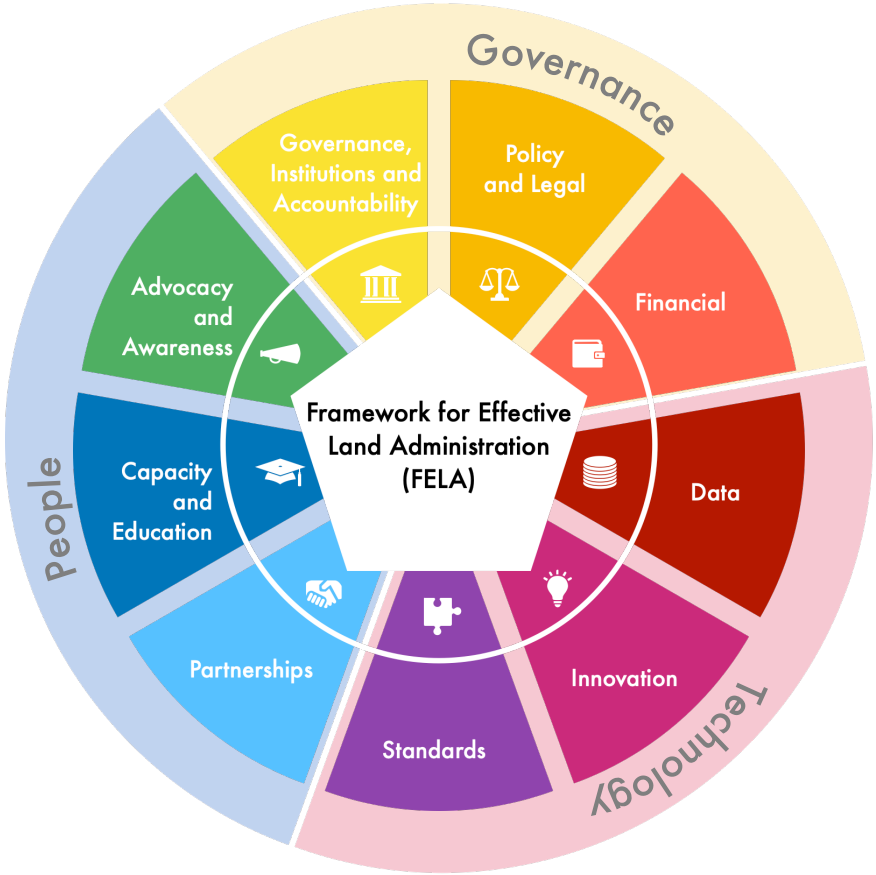
To Conclude…

Data collection result after 2 days in the field



kadaster

FELA – the Framework for Effective Land Administration



- Adopted at 10th Session of UN-GGIM
- Global Framework for Land Administration

Application in Chad

- Used to raise awareness within leadership (link to SDGs and 2030 Agenda
- Used to develop guidance (baseline assessment prior and impact assessment post field work)
- Supported assessment As Is Situation and the Wants to Be Situation

kadaster

FELA Pathway		Opportunities and Challenges in Chad	
	Governance, Institutions and Accountability	• Political stability is needed for a holistic transformation towards a sustainable land administration; • Unclear mandates and changing leadership in ministerial posts;	• Political will is existing and can be leveraged • Networks amongst different ministries established;
	Law and Policy	• Absence of Land Policy causing lengthy processes; • Legal framework to be in place for piloting/a complete role out in Chad;	• Int. examples on successful land policies can support developments; • Development of policy can consider lessons learnt from case study;
	Finance	• Sustainable business model for land administration is not existing; • Donor support in the future is likely;	• Governmental interest to explore Public Private Partnerships is given;
	Data	• Available data is segmented and paltry; • Lack of vision for data governance and geospatial data strategy across ministries;	• Developing and implementing data quality and open data standards; • Establishment of a robust IT infrastructure;
	Innovation	• Combination of different methodologies to address the various land realities on the ground envisioned;	• Innovation limitations based on hardware, electricity, connectivity, etc.
	Standards	• Lack of data standardisation program; • Capacity around standards;	
	Partnerships	• Donor-working groups coordination; • Extension of the network of partners (NGOs, CSOs, private sector etc.);	
	Capacity and Education	• Capacity and level of literacy in specific areas; • Capacity development programs will be needed for piloting;	• Enthusiasm of the local team; eagerness to learn; • Agreement on the need to involve the local team in the implementation of future initiatives;
	Communication and Awareness	• Communication and awareness programs needs to consider differences • Monitoring and evaluation indicators may vary for the pilots	• Gender responsive approach and particular attention to vulnerable Awareness at all ministerial/governmental level that community involvement is imperative;

Conclusions

Government officials and communities in the case study areas are aware of the possibilities of the FFPLA approach and tools to further develop the land administration system in an urban and rural setting in Chad. Chad is making significant progress in terms of awareness and commitment. Whilst there are significant challenges in terms of logistics and political stability, the case study and analysis using the FELA reveal the importance of future piloting as a step towards a holistic approach for Chad.

FIG Working Week 2023

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers

THANK YOU!!!

Eva-Maria UNGER, Rohan BENNETT, Mahamat Abdoulay MALLOUM, Christelle VAN DEN BERG, Claudia STÖCKER, Kaspar KUNDERT, Dina NAGUIB, Markus KOPER, Divyani KOHLI, Mila KOEVA

Organized By NSPS FIG INTERNATIONAL FEDERATION OF SURVEYORS

Diamond Sponsors esri THE SCIENCE OF WHERE Trimble