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FIG WORKING WEEK 2023
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Protecting Our World, Conquering New Frontiers

Community-based mapping with SmartLandMaps: versatile, simple and inclusive

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Community-based mapping

→ Empowers local residents

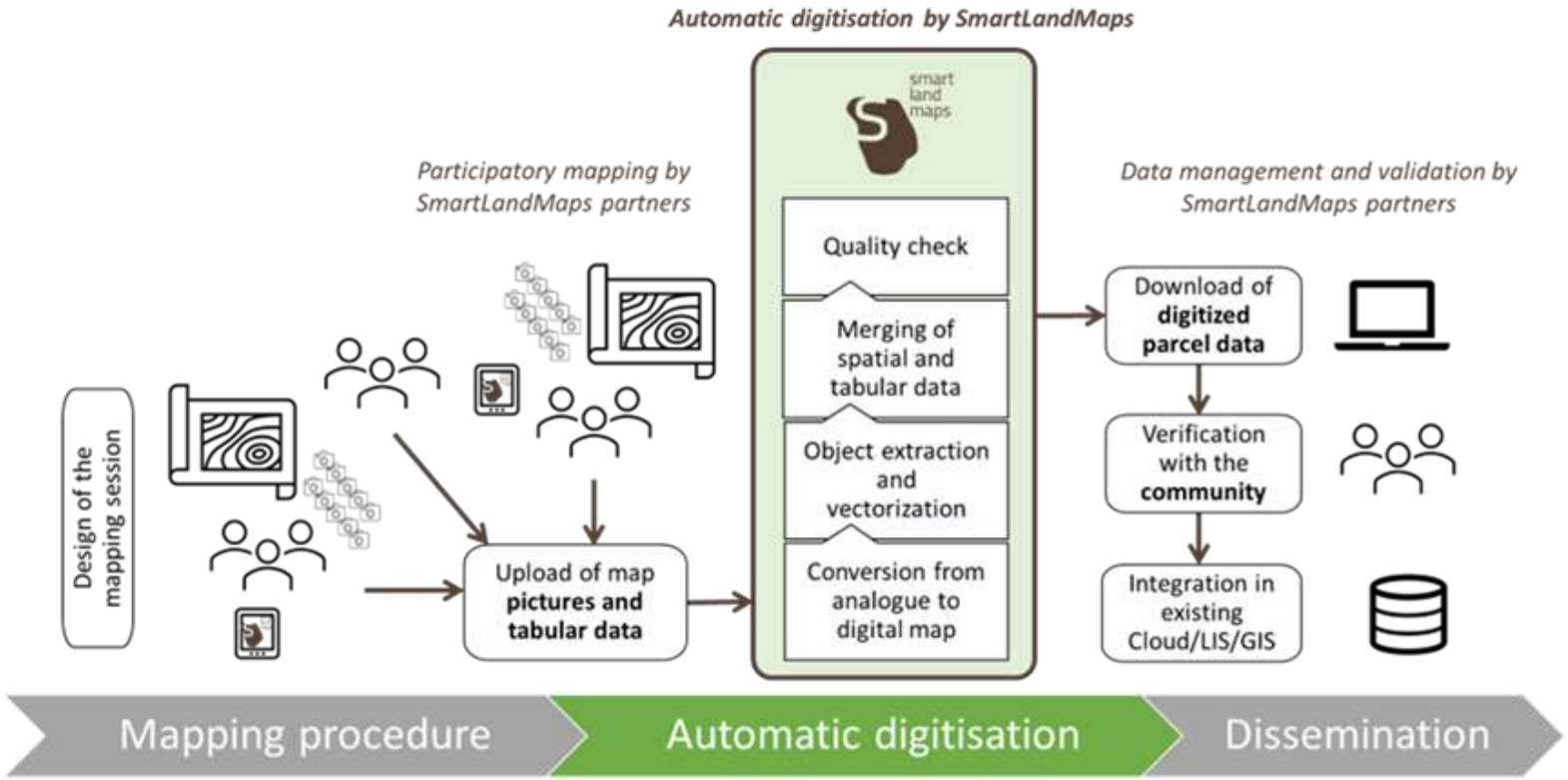
→ Increases spatial knowledge and local engagement

→ Improves decision-making

SmartLandMaps SaaS

→ enables simple conversion of sketches on a map into a digital GIS-ready format

→ combines methods of photogrammetry, computer vision and machine learning



Pilot studies in three different geographical contexts:

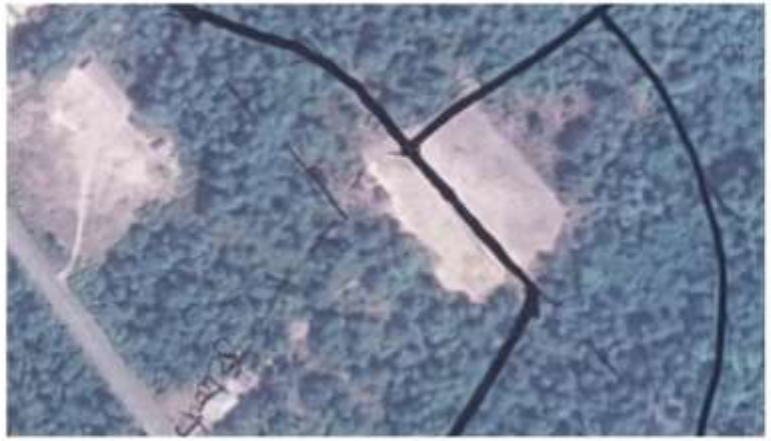
- Benin (Jan/Feb 2022)
- Chad (Oct 2022)
- Sierra Leone (Jan 2023)

	Chad	Benin		Sierra Leone
Partners involved	Kadaster International, Esri North Africa, Trimble, diverse local partners	Kadaster International, VNG International, YILAA		FIG YSN VCSP, Trimble, Ministry of Land, Housing and Country Planning
Orthophoto, resolution	MAXAR, 50 cm	UAV-based orthophoto 1,8 cm	2,3 cm	MAXAR, 50 cm
Land use class	Peri-urban	Urban	Rural	Rural agriculture, forestry
Parcels mapped	74	202	232	12

Different tenure arrangements

Different background images

Different ratios visible / non-visible boundaries



Family lands in Sierra Leone

Private ownership in Chad

Individual and group ownership in Benin

Private ownership in Benin

0 25 50 75 100 m

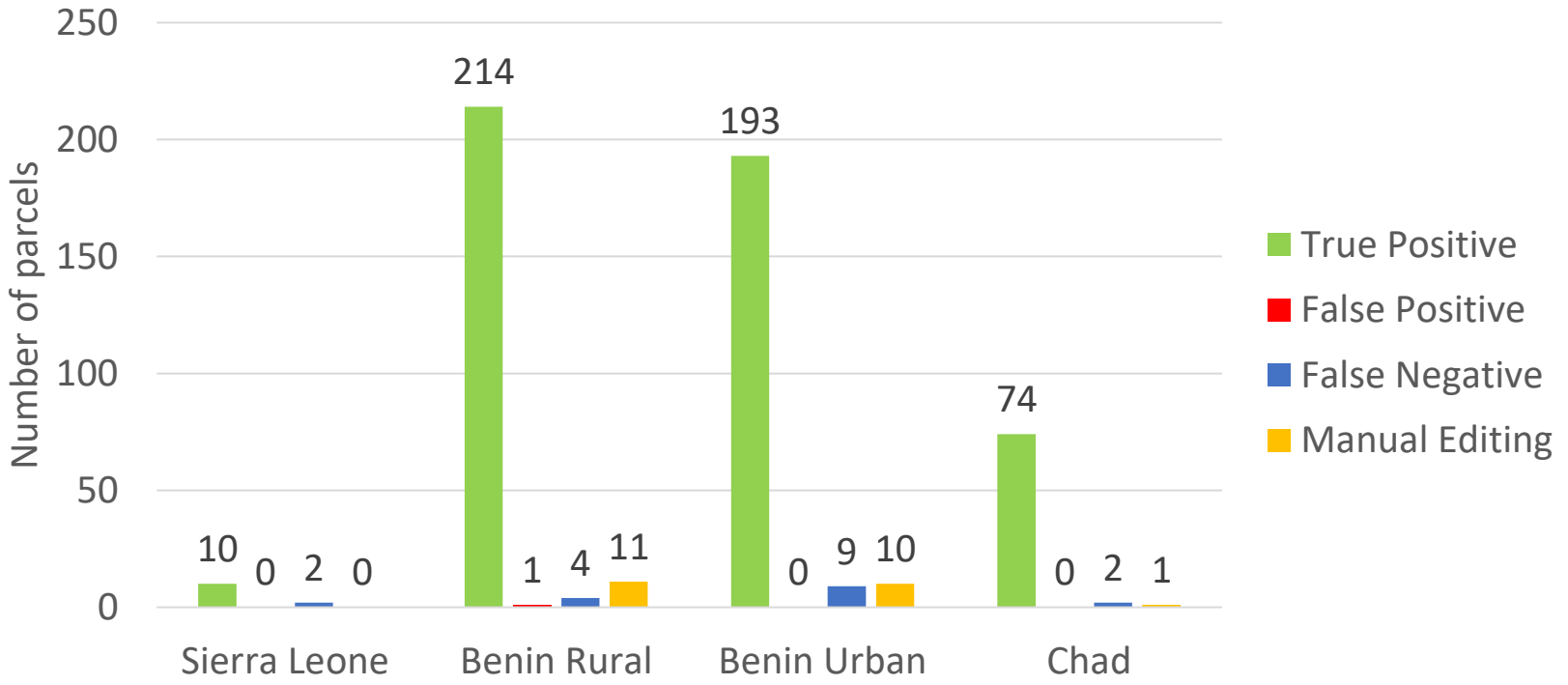
Results of the community-based mapping:

- Almost all participants were able to read the maps very well and orientate themselves on the map
- Situation-sensitive and well-trained mapping assistants are essential to facilitate communication, discussion and consensus building
- More time for delineation is needed when less visible boundaries are there
- Different accuracy dimensions depending on the ratio of visible / non-visible boundaries

Results of the SmartLandMaps digitization:

Error of omission / commission:

- Benin Rural: 2% / 5%
- Benin Urban: 4% / 5%
- Chad : 3% / 1%
- Sierra Leone: 17% / 0%



Conclusion

Versatility	Simplicity	Inclusivity
• Application within diverse land use contexts • Flexible to combine with other survey methods	• No expensive hardware needed • The mapping process is easy to implement across different contexts	• Different tenure arrangements can be sketched and digitized • Accessible for all people

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Thank you!!

smart land maps

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