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International Workshop

TOWARDS SCENARIOS FOR URBAN ADAPTATION PLANNING
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Urban Environment Planning. Problems and Solutions in Providing Sahelian Local Governments with GIS

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Summary

Why promote GIS application at local government ?
Situation 2010 GIS components
People (2010-2013)
Data (2010-2013)
First outcomes Senegal
Problem/Solution
Conclusion

Why promote **GIS use at local (urban) government ?**

- Most GIS originate at a national or regional level, with GIS not being used sufficiently for routine decision-making.
- However, West-Africa has achieved political and administrative decentralization
- Decentralization is important to urban environmental planning where poverty is prevalent and resources limited.
- The environmental knowledge management processes, as spatial data creation, should be decentralized.

Bottom-up GIS process in Sahelian local governement

Base line 2010 → **2013 (end)**

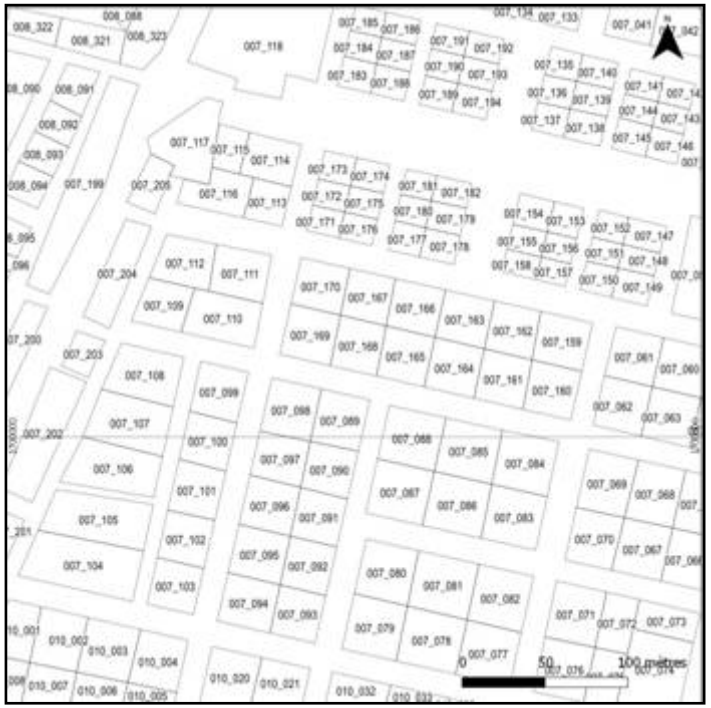
GIS Component	Senegal (Louga, Kebemer , Linguere)	Niger (Niamey)
People 	4 technicians without GIS skills	6 technicians without GIS skills
Data 	Georeferenced subdivision plan (updating 2006) for each city	48 georeferenced subdivision plans (local Spatial reference system) partially as Autocad partially as GIS
Tecnology  Hardware/Software	Inappropriate Hardware to run GIS software No GIS software (proprietary and free/open source) in use at local government	

	People
2010	10 technicians of the local government without GIS skill
	• 2 basic GIS training (Italy) • training in data collection technique of positioning (GPS) and surveys of alphanumeric data (Senegal, Niger) continuous training support whit : italian expert in GIS techniques and data collection (in Senegal phase addressing) private sector consultants in GIS and GPS to control data acquisition quality (Niger)
2013	**• 10 technicians of the local government whit basic GIS skill** **• involvement of private consultants that will ensure its support for the local government even when the external project will be completed**

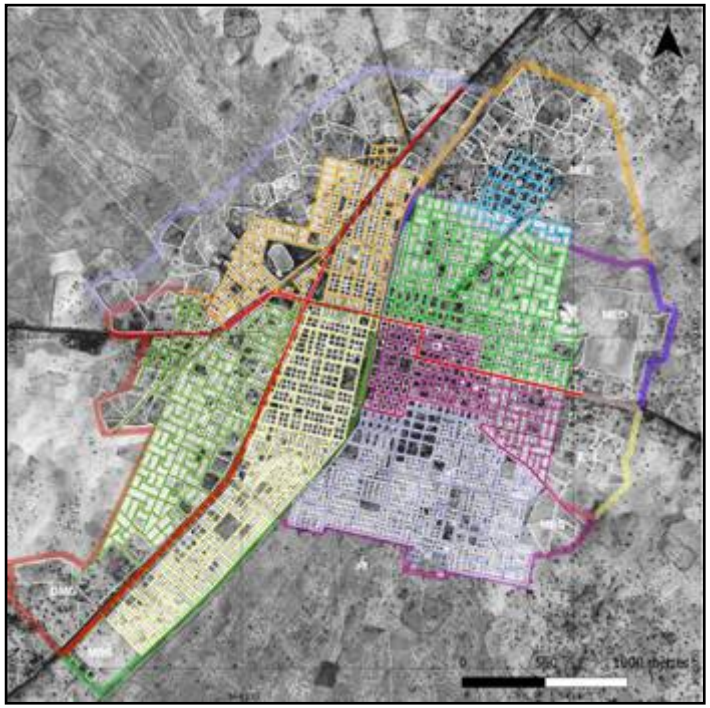
Senegal Data

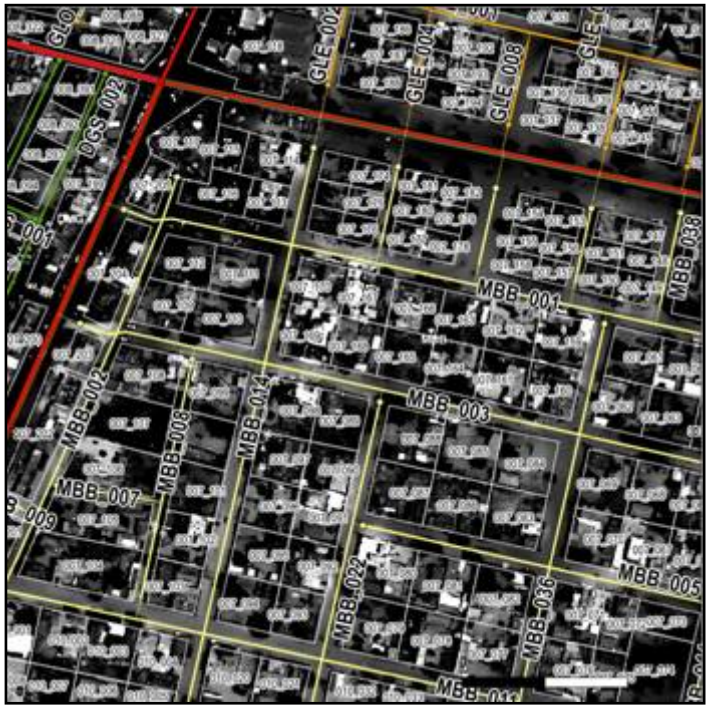
2010

- Georeferenced parcel plan (.shp) for each town (Output Projet Politecnico di Torino / Provincia di torino 2006)
- vector type : polygon
- parcel code data

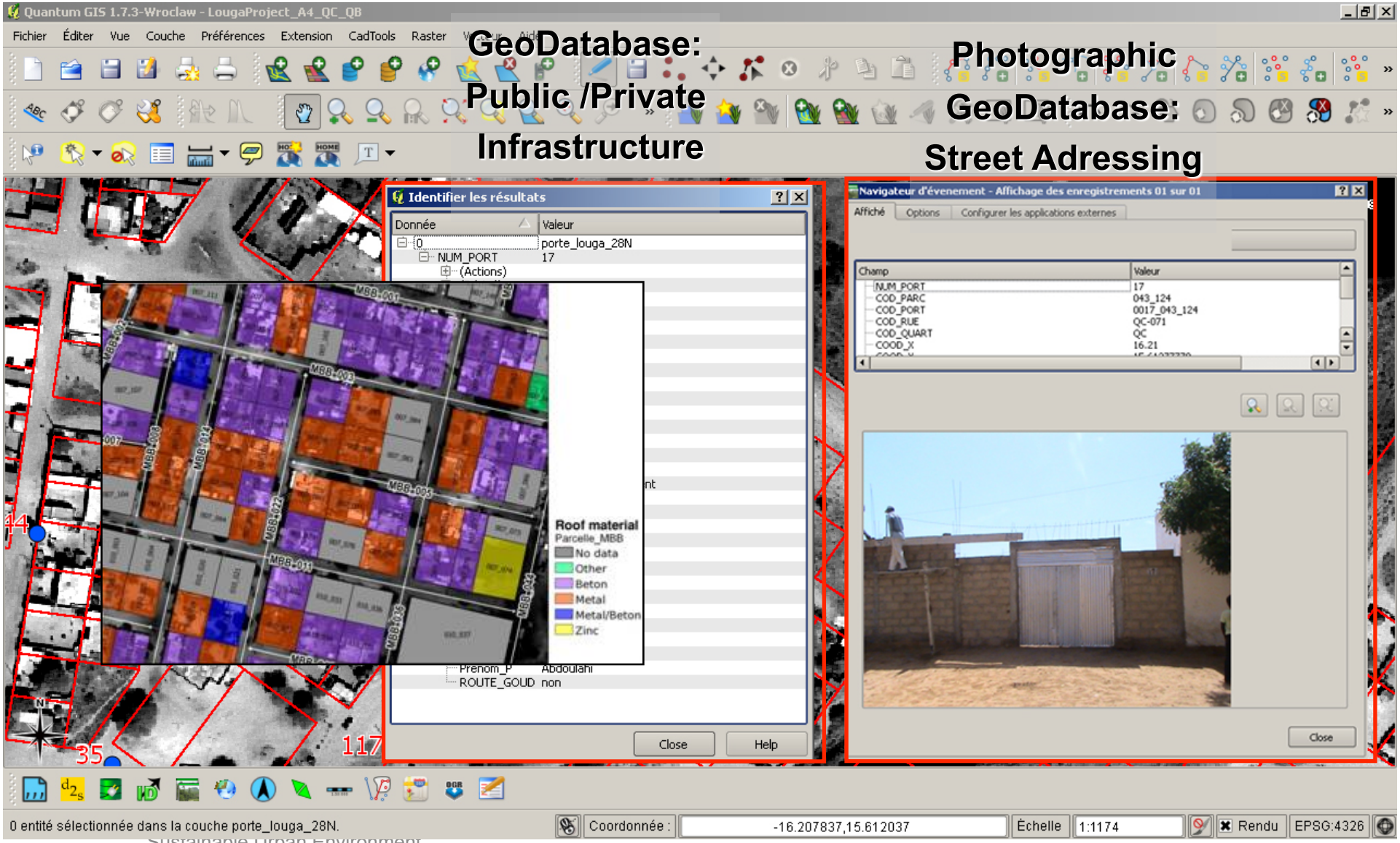


Senegal	Data
2013	Georeferenced subdivision plan complete
	+ Satellite image hight definition (reference scale 1:10 000)
	+ Street map (coded)
	+ Infrastructure survey (database)
	+ Street addressing





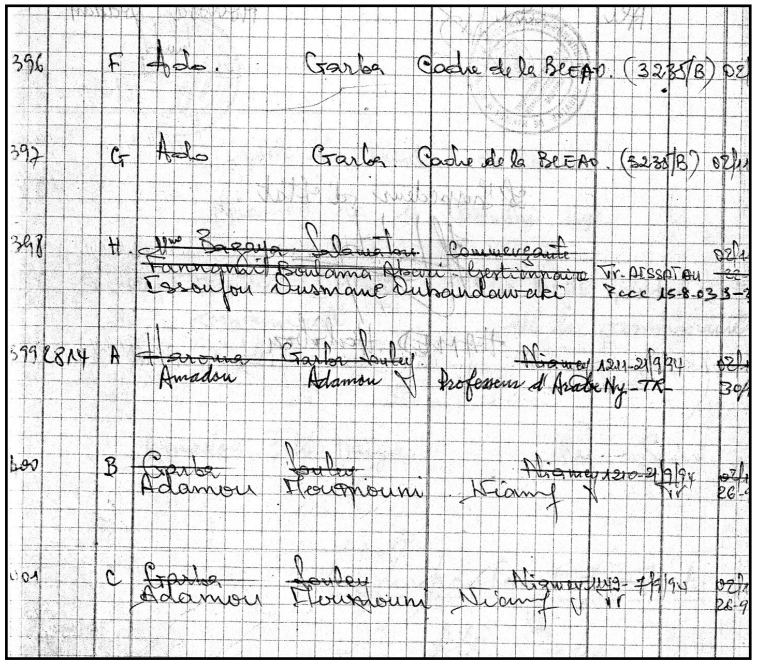
First outcomes Senegal



Niger Data

2010

- •Georeferenced subdivision plan (local Spatial reference system)
- •48 subdivision plans (.dwg; .dxf)
- • vector type : lines
- •2 different types of spatial reference system (local, global)
- • Building plot data (owner) as paper archive



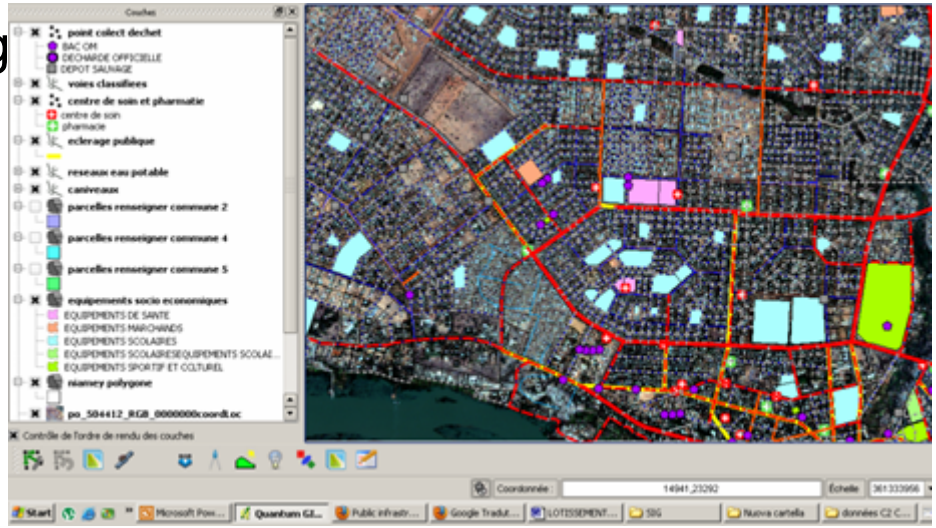
Niger	Data	
2013	+ Georeferenced subdivision plan (.shp):	•polygon vector type • building plot code data • global Spatial reference system

+ Satellite image hight definition (Reference scale 1:10 000)

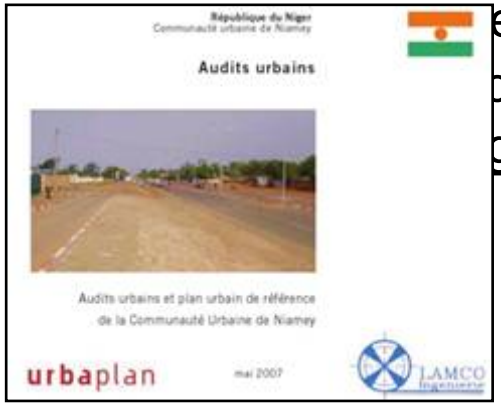
+ Building plot data (owner) in **digital** archive (ongoing)

+ Street map classified

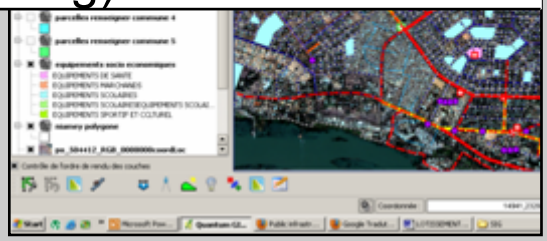
+ Community services geodatabase

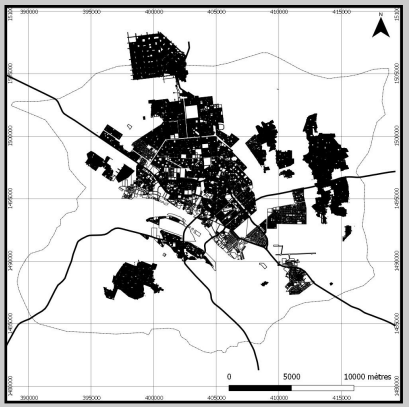


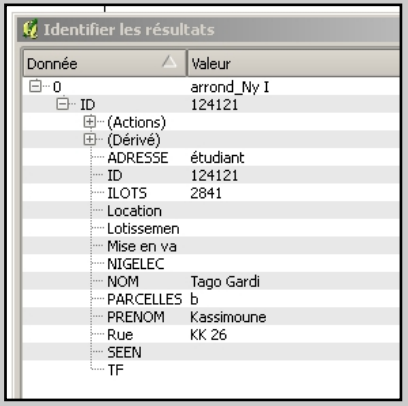
Niamey
Before and After Project



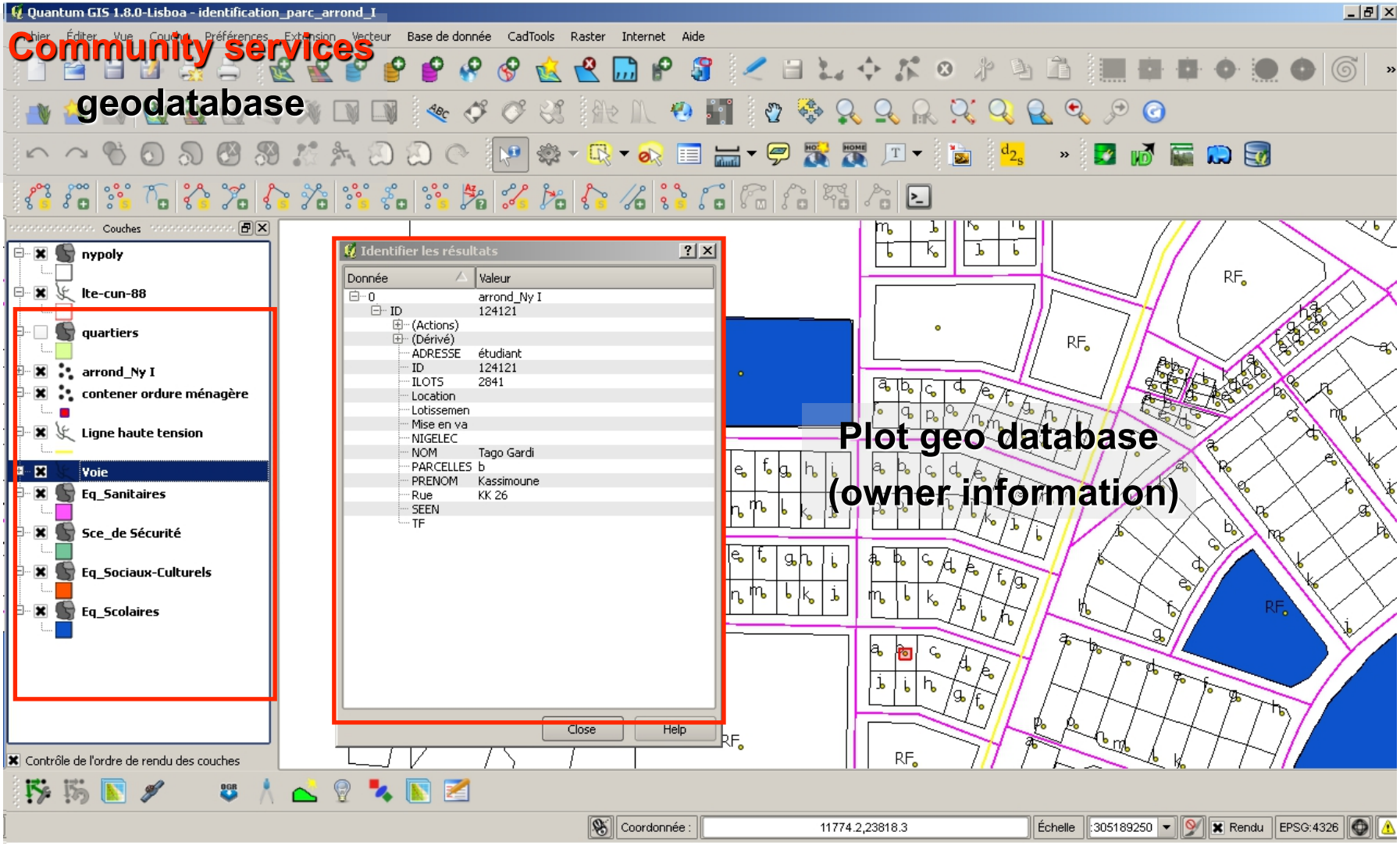
2010	Item	2013
Dgw, dxf, paper	Subdivision plans	shp
Lines	Vector type	Polygon
Local	Spatial ref system	Global srs
Unknown	Plot state	Developed/ not
Paper	Owner info	Digital
Paper 2007	Infrastructure	Digital 2013
Paper 2007	Community ervices	Digital 2013
	osks (on going)	Digital 2013



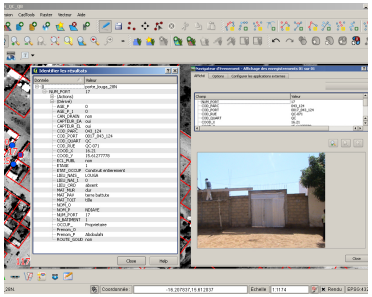




First outcomes Niger



In practice
Niamey, Louga,Kébemer, Linguère

2010	Item	2013	
no	Connection Parcel Plan – Street Adressing Database	yes	
no	Update GIS data whit low cost Software System (QGis, Google Earth)	yes	
no	Use spatial data (GIS) in Urban Planning and Financial Program (Evaluation, Scenario)	yes	
no	Control of informal settlements	Yes	

	Problems	Solutions PRIN / INS projects
People	Low priority for staff training (Bishop et al. 2002)	•2 basic GIS training • continuous training support
	Lack of awareness of senior management (Kundi & Ngeria 2003)	• continuous involvement of public administrators on project outcomes
	Poorly developed self-help networks (Beerens, 2004)	• one Italian technician in Senegal during street adressing (3 months) • one local GIS expert supporting the 6 technicians in Niamey
Data	Limited availability of data (Burrough 1992)	Acquisition of new data (remote sensing, on site surveys)
	Lack of adequate base mapping (Mtaroni 2002)	Acquisition high definition satellite image
Tecnology	Equipment, hardware and software problems (Borrero 2004)	Use of GIS Free and Open Source Supplying technicians in new hardware equipment (PC, GPS, Printer,...)

Conclusion

No	Yes
report	operational tools (GIS)
pilot projects	complete projects
periodic training	continuos training
only foreign consultants	involve local consultants
starter solutions	find solutions using the skills of all partners
change the management system of urban land	provide new tools and new information to evolve

Many thanks for your attention