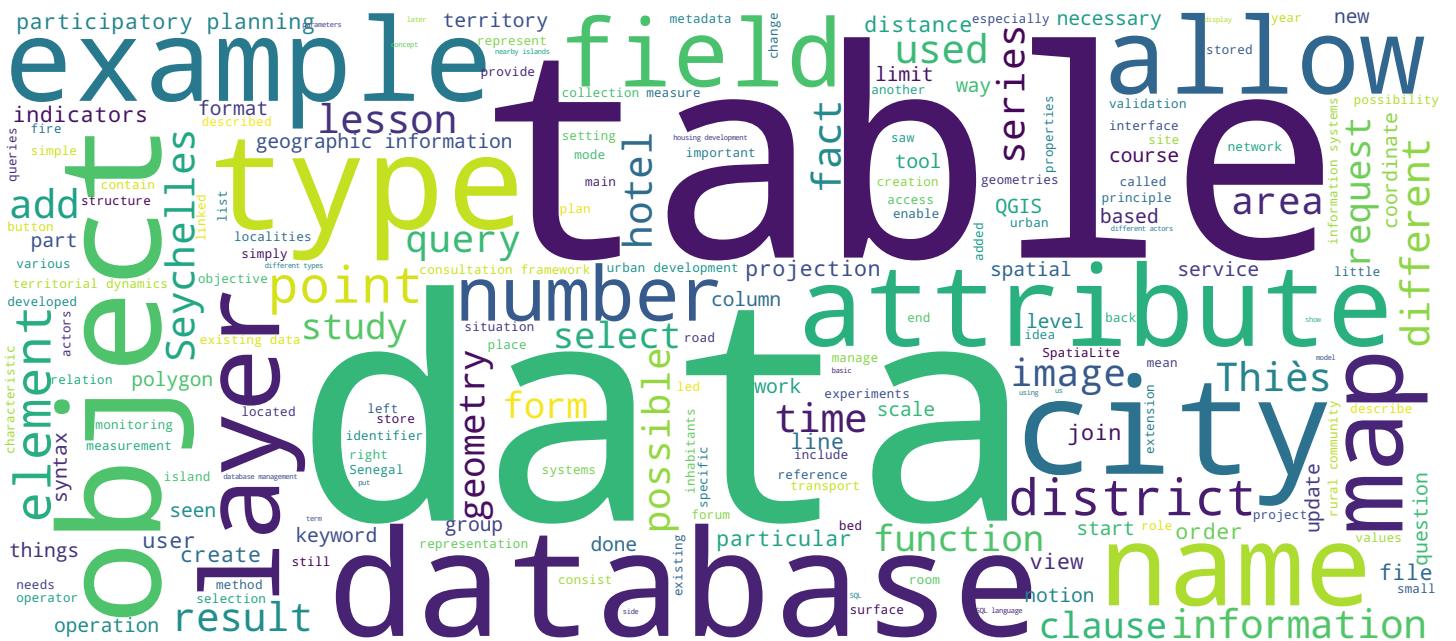


Stéphane Joost, Marc Soutter, Fernand Kouamé, Amadou Sall



Search MOOC



Video

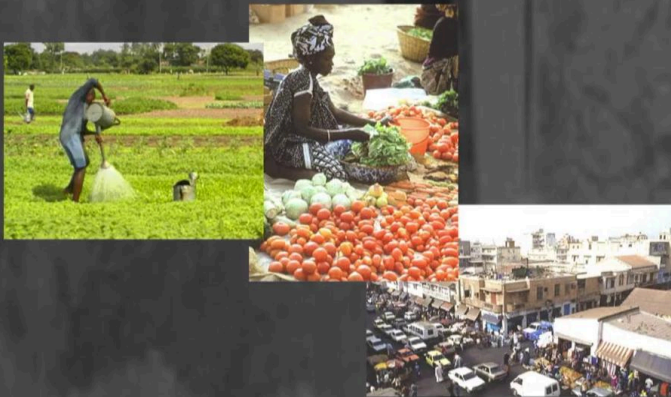


Territorial dynamics

Different problematics

Similar approaches

- Thies, 1998-2008
- Seychelles, 2006-2008



An Introduction to Geographic Information Systems

In this case study, we will take the example of the use of the geographic information system not as a tool of technical management of infrastructures but as a communication tool for services, of dialogue between groups of actors and we will show in 2 similar situations, although very different, how this tool has been used to facilitate the sharing of information in an urban planning context or territorial planning. In the presentation of this case study, we will address successively the question of territorial dynamics at work in the two sites we will be discussing, before addressing the more specific issue of participatory planning and how this participatory planning was put in place. We will then discuss the role of geographic information systems in this context of the constraints to which these systems had to comply and to conclude with some lessons learnt from these experiments. The 2 projects and the 2 sites that we gather in the presentation of this case study are about the city of Thiès in Senegal between 1998-2008. If we take the whole of the project period and on the Seychelles in a shorter period, 2006 to 2008. Different issues but similar approaches which justify putting them somewhat in parallel.

Notes

Summary

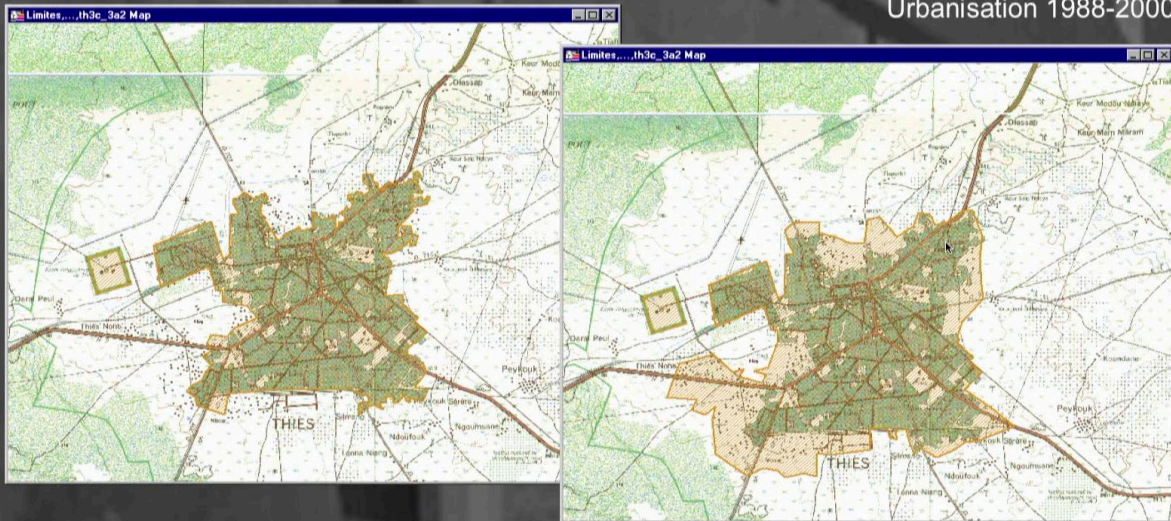


0m 12s

Territorial dynamics

Rapid growth...

Urbanisation 1988-2000



An Introduction to Geographic Information Systems

The city of Thiès to start with, which is in Senegal at about 80 km from Dakar, inland, which is what can be described as a medium-sized developing town with at the time, in 2000, some 300,000 inhabitants, a fairly high growth, a low literacy rate, a lot of unemployment, many informal jobs, a fairly large poverty and a municipal budget to give an order of magnitude of approximately \$ 2 million per year. Which, for a city of 300,000 inhabitants is still relatively small, since the equipments are still very expensive. The management of the district involves 4 people: one administrator, one engineer two senior technicians, which explains the difficulties to operate this city. To this we can add at the time about thirty or so non-governmental organizations, development aid, world bank, bilateral aid, etc, which were present, which had projects, which had an impact on the territory, all of which were absolutely unconcerted. The city of Thiès, like many medium-sized towns in West Africa, is characterized by a very rapid growth due to the rural exodus during the last 20-30 years, and we see on these 2 maps the comparison between the situation, the development of the city in the years...

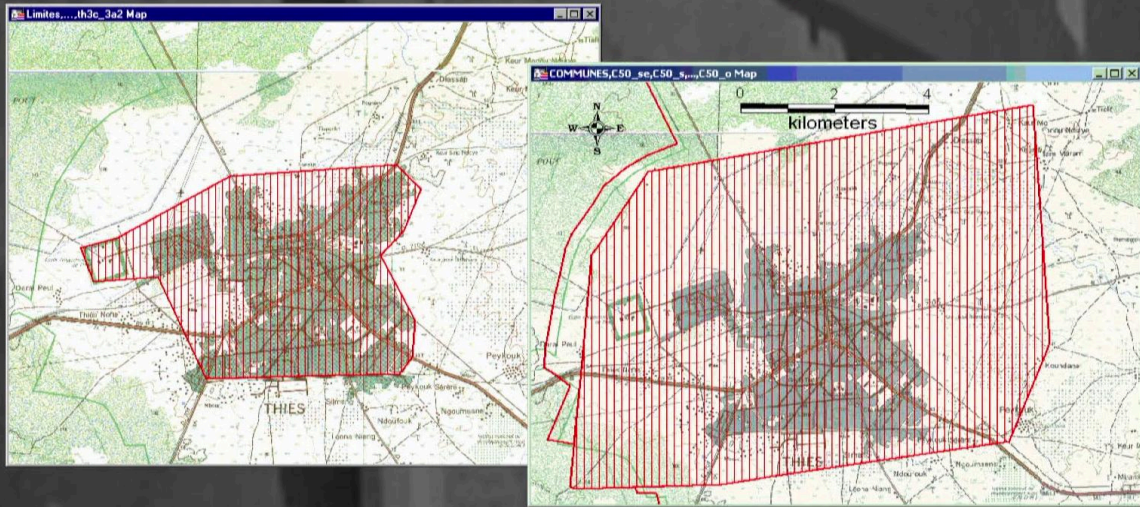
Notes

Summary



Territorial dynamics

... new city limits set by a presidential decree (1978)...



An Introduction to Geographic Information Systems

late 1980s and later in 2000 with the city that developed a lot towards the South-West and the North-East, things being blocked in the North-West by the military base, the airport, these things. The consequences of this very rapid development, the evolution of territorial limits with new limits set in 1978 by presidential decree, limits which actually separate the city of Thiès from the rural community of Fandène that surrounds it.

Notes

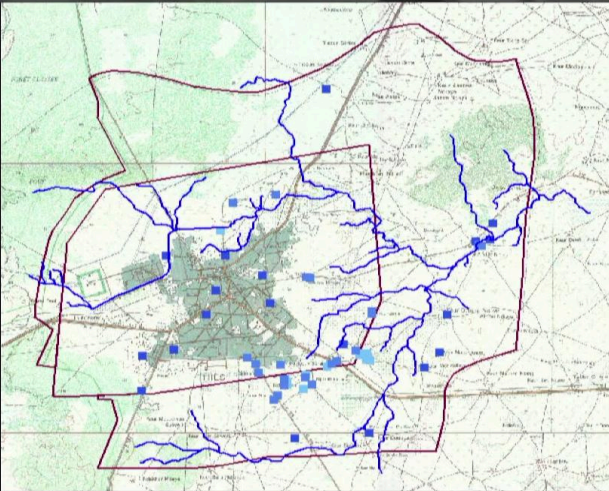
Summary



3m 54s

Territorial dynamics

Springs, wells and hydrographic network



Water management issues

At the city level

- Flooding
- Waste waters

At a larger scale

- Deforestation and erosion
- Drink water supply
- Retention basins for irrigated agriculture

Other common issues

- Urban agriculture
- Waste management
- Land ownership
- Informal settlements
- Transportation
- Decentralization
- Inadequacy of planning tools

An Introduction to Geographic Information Systems

These limits were set on a map stored in a cupboard in a ministry in Dakar and in reality on the ground, there is no basis for judging the presence or absence of these limits, and in certain places we can see that this limit, once it is superimposed on an aerial photograph we see that it crosses a village here. As we can see on this map, the source of the problem that led to reflect on these territorial dynamics in this region of Thies and Fandene, is the fact that the city extends beyond its new territorial limit and starts nibbling on the grounds of the rural community of Fandene. With a lot of stakes related to the housing development, with the economic impacts of the housing development, since we go from the common law to the roman law where the plots become objects of the economic speculation too. So much so that the situation getting worse, the two communities no longer talk to each other, a completely blocked situation and then the idea of trying to find a way to unblock the thing. The need to unblock relationships all the more obvious as... the problems never concern only the city or the hinterland alone.

Notes

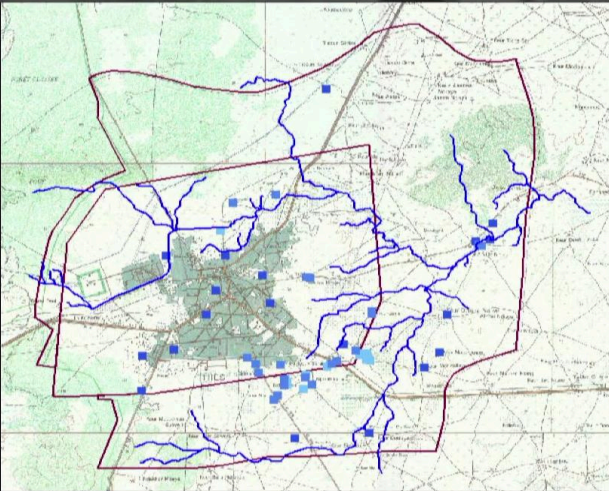
Summary



4m 28s

Territorial dynamics

Springs, wells and hydrographic network



Water management issues

At the city level

- Flooding
- Waste waters

At a larger scale

- Deforestation and erosion
- Drink water supply
- Retention basins for irrigated agriculture

Other common issues

- Urban agriculture
- Waste management
- Land ownership
- Informal settlements
- Transportation
- Decentralization
- Inadequacy of planning tools

An Introduction to Geographic Information Systems

But are in most cases shared problems, starting with the water management problems since at the level of the city there has been several flooding episodes, there is also a wastewater management problem which also arises, floods which are due in particular to a phenomenon, on a larger scale, of soil erosions upstream, of deforestations and erosions upstream. So here in the left part of the map to the West of the city since the water flows from left to right from West to East, drinking water supply issue, for all of the communities in the region, largely through wells and springs, the issue of the futur of water downstream as rural communities are accustomed to collecting water in retention basins and reusing these waters for agriculture and then with flood control works in the city, water can be diverted from its usual natural flow and then prevent the exploitation or exploitation constraint to areas where land is less attractive.

Notes

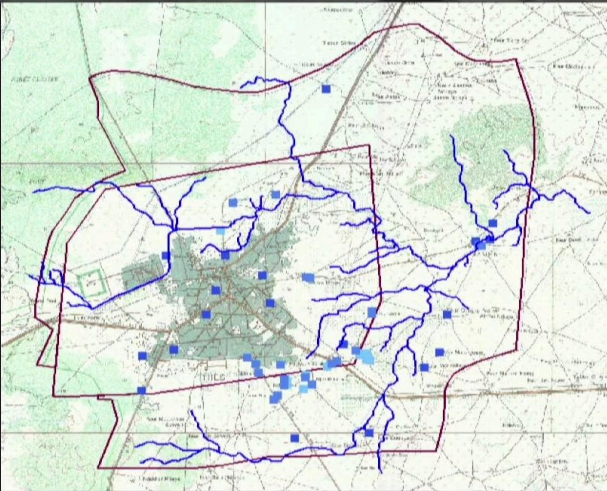
Summary



5m 59s

Territorial dynamics

Springs, wells and hydrographic network



Water management issues

At the city level

- Flooding
- Waste waters

At a larger scale

- Deforestation and erosion
- Drink water supply
- Retention basins for irrigated agriculture

Other common issues

- Urban agriculture
- Waste management
- Land ownership
- Informal settlements
- Transportation
- Decentralization
- Inadequacy of planning tools

An Introduction to Geographic Information Systems

Amongst the other common themes, of course the upkeep of agriculture in a city that is spreading very rapidly, the issue of waste management which is very crucial since ultimately in the absence of organized management, waste is simply taken out and distributed in the countryside, in the outskirts of the city and so like many African cities, a blue plastic belt that surrounds the city of Thiès, the question of land ownership, which I have already mentioned, the spontaneous habitat, many people arrive due to lack of housing development, preparation, supervision, people settle in a destructured way with in fact the creation of future slums lacking public spaces, lacking traffic lanes, which would allow quite simply for example a garbage truck to pass, an ambulance and things like that. A shared transport problem also, problems related to decentralization with the administrative decentralization, the communities inherit many competences especially in the urbanism, land planning, environment management fields, competences that are delegated by the central ministries but that the communes are often... they feel helpless in front of these new responsibilities. And finally the inadequacy of the planning instruments at the time in Thiès, the master plan that had been designed to try to control urban development took over a decade to be realized and when it was finally validated...

Notes

Summary



7m 17s

Territorial dynamics

Seychelles 2006, reconcile preservation and development

115 islands (of which 32 are granitic) spread over 400'000 km²
95 % of the population in the inner islands: Mahé, Praslin and La Digue

25 districts

Population:	82'000 inhabitants
Growth rate:	0.5% per year
Ressources:	fish, tourism (30% of employment, 70% of GDB)

An Introduction to Geographic Information Systems

I mean, it was never validated because at the time of validation it had already become obsolete. The Seychelles are a group of islands located in the middle of the Indian Ocean at 1'000 km of any coast, and made up of a set of 115 islands of which 32 are granitic, scattered over 400,000 km². 95% of the 82,000 inhabitants are concentrated in the nearby islands which we have here in front of us with Mahé, Praslin, La Digue, a relatively low population growth and resources concentrated on fishing and tourism which represent 30% of employments and 70% of GDP.

Notes

Summary



9m 12s

Territorial dynamics



Challenges related to territorial dynamics

- Except for a thin coastal strip, slopes are steep
- ➔ Usable land is limited and undergoes strong pressures
- Development and diversification of economy
- Changes in lifestyle: more space needed for housing and mobility
- Preservation of the environment to preserve biodiversity, but mainly to maintain tourist attractiveness

An Introduction to Geographic Information Systems

In the Seychelles, the stakes of the territorial dynamics are linked to the topography, since the nearby islands are granite islands with rather marked landscapes, in fact the only truly "useful" land are the small coastal strip which is suddenly subjected to very strong pressures. The pressures are partly coming from the needs for development and diversification of the economy, we would like to develop agriculture to increase the indigenous production, change of lifestyle also where the family home that groups several generations is supplanted by the individual house of the industrialized countries model so more space needed for housing, more needs for mobility therefore also more space necessary for the roads and then at the same time a strong pressure for the preservation of the environment which is an essential element of the tourist attraction which, as we have seen, represents a significant part of the country's GDP. A systemic analysis approach of these dimensions of territorial dynamics has led to describe the functioning of these dynamics by separating a physical plan which is the plan in which...

Notes

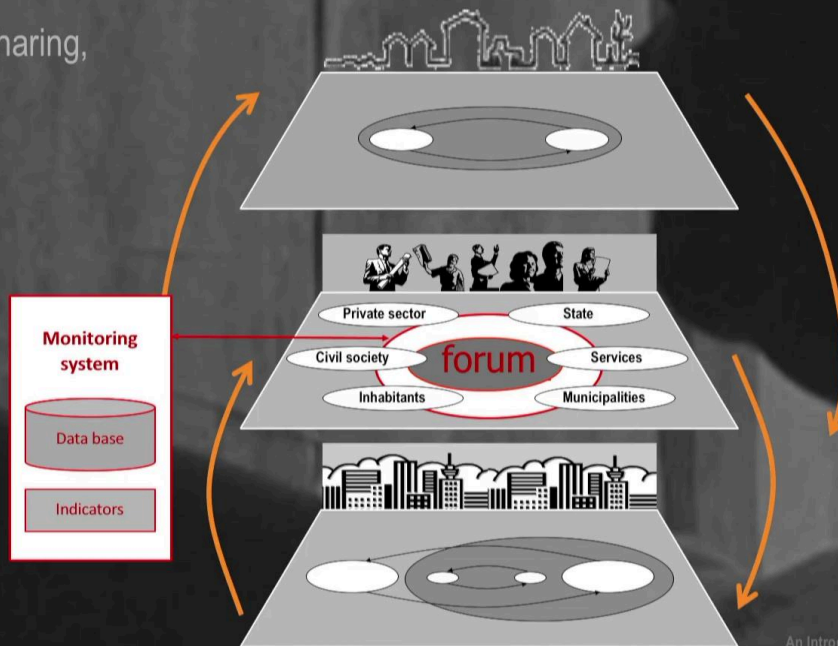
Summary



9m 59s

Participative planning

Informations sharing,
Concertation



An Introduction to Geographic Information Systems

the material plan in which the objects, infrastructures, etc. are located of a logical plan, in which actors evolve whether it is the civil society, governmental / non-governmental organizations etc. and above these two plans, a holistic plan which is the plan of the ideas in which the projects are located which are the real engines of the territorial dynamics. the strong idea behind this concept of participatory planning starts from the observation that in the logical plan we have all this series of actors: the state, the services, the districts, the inhabitants who each have their own visions of what the territorial development, the urban development must be with different priorities from one of the other and especially the strong idea of participatory planning, idea maybe a bit naive for some and to encourage and stimulate communication between these different actors in order to reconcile their vision of the city and its future, the territory and ultimately to achieve common objectives, so that all the actors who have a real action on the physical plan pull the same rope and that the boat sails in a direction agreed by all. So the idea of this participatory planning is to establish a forum in which...

Notes

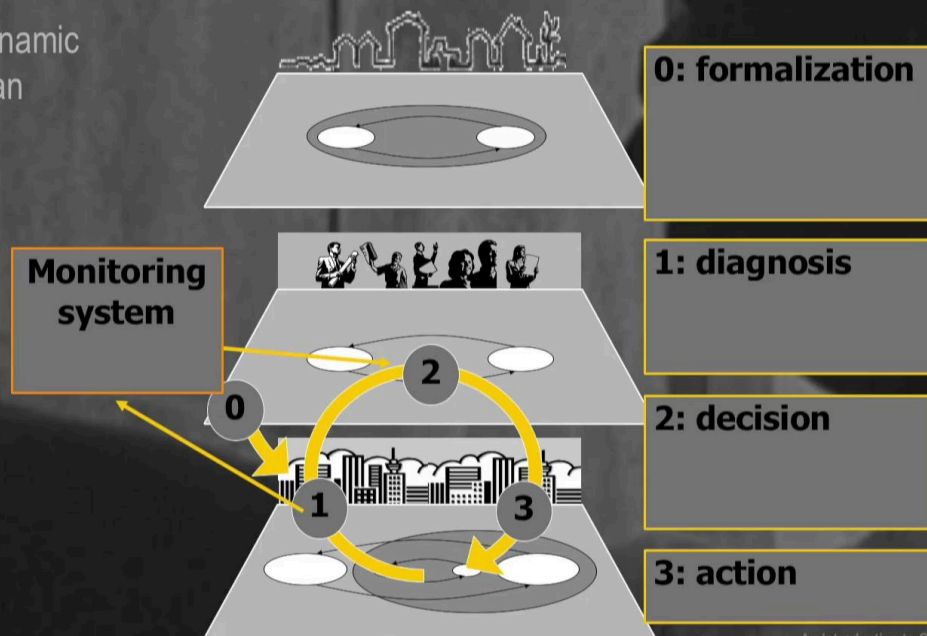
Summary



11m 38s

Participative planning

Towards a dynamic territorial/urban management



An Introduction to Geographic Information Systems

a discussion forum which will enable the different actors involved, to exchange ideas and information and this is where we see the geographic information system, this forum must be supported and boosted by an information sharing space which should facilitate the dialogue, sharing of information that should group the existing data within a database and then bring in indicators that allow to measure the state of the urban or territorial management problems that arise. This look focused on the urban or territorial management (INAUDIBLE) a first phase of formalization of the device and implementation of the monitoring system leads to go to a management process in 3 steps: a first step of participatory diagnosis on the strength, weaknesses, SWOT analyzes which is about the city itself, about the territory. A second phase of discussion in the forum which consists in setting priorities and identifying possible actions. A third phase consists of carrying out these actions and then repeating the diagnostic step, decision-making step, etc. and to go gradually this way towards a dynamic urban management cycle in a short space of time of the order of 2 to 3 years which is in fact adapted to the very rapid evolution of these cities and which could substitute itself for the planning, the traditional planning instruments that are the master plans.

Notes

Summary

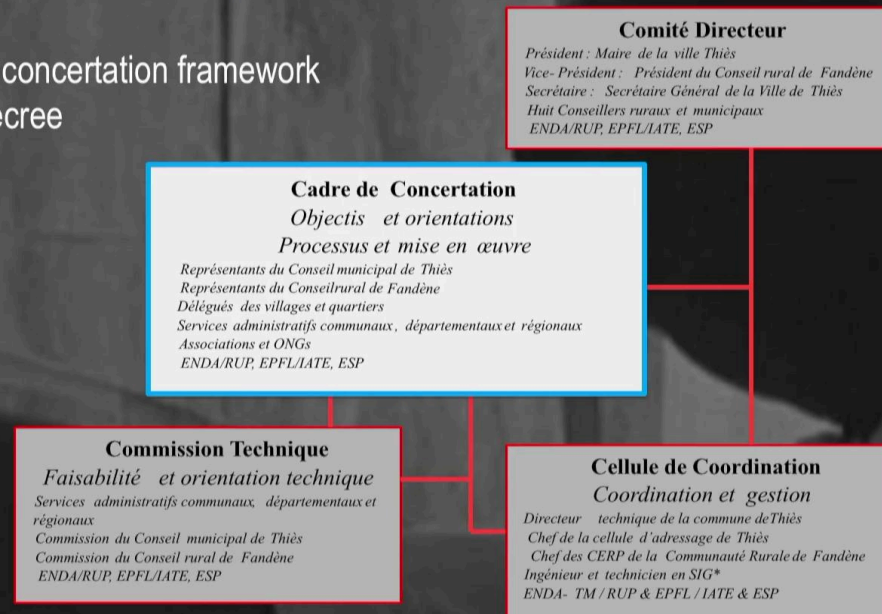


13m 19s

Participative planning

Thies

- Formalization of a concertation framework by a prefectural decree



In the facts, these ideas of participatory planning were realized in the case of Thiès by the formalization of a consultation framework which was established by a prefectorial decree so by an authority that is above the district as well as the rural community. This very broad consultation framework gathers representatives of the municipal council of Thiès, the rural council of Fandène, delegates of the villages, the districts, the administrative services of the districts, regionals, associations, NGOs, etc. etc.

Notes

Summary



15m 13s

Participative planning

Seychelles

Ministry of local communities

- Workshops to define the shape and content of the information and data sharing platform
- 25 district administrations of the inner islands
- Implementation of the platform
- Training workshops
- Participative planning workshops in some pilot districts

And this consultation framework is surrounded by a management committee for the general steering, a coordination unit for the monitoring of activities and a technical committee that is more in tune with the realities and possibilities in the field. This consultation framework generally meets 3 - 4 times a year to carry out all kinds of activities in particular the users and trainers training to the use of the monitoring system that has been set up, to the development of this monitor, to the validation of the data and to the operations more closely related to the planning, to the urban management, so the diagnostic steps by SWOT analysis the discussion and identification of the action priorities and project development and so on.

Notes

Summary



16m 13s

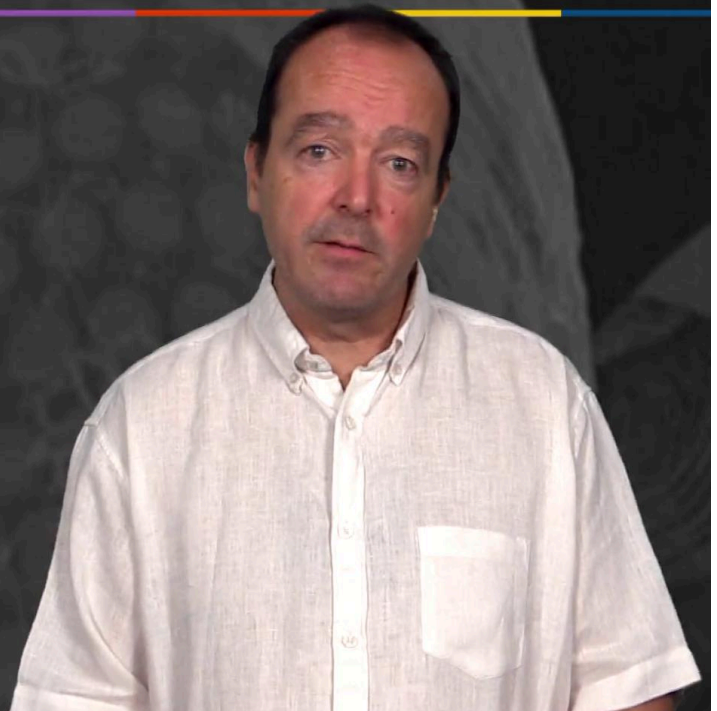
Role of GIS and constraints

GIS as a communication tool,
more than a technical management tool

For what purposes ?

- For the stakeholders, facilitate access and sharing of information and knowledge,
- ➔ Self-appropriation of the land
- ➔ Improved understanding of each other's viewpoints and thus eased dialogue
- Eased communication towards a broader audience

Support of an urban diagnosis
and strategic planning approach



In the Seychelles things were a little different, the actions took place at the level of the ministry of local government with workshops gathering several interlocutors which was destined to define the contours of the monitoring system which would be set up and then at the scale of the 25 district administrations the nearby islands that were the beneficiaries of this platform and who were going to use it to hold participatory planning workshops. The works consisted of setting up the platform, training the users during several workshops and finally participatory planning workshops held in a series of pilot districts. In this type of situation and I have already said it in the introduction the role of the geographic information system is more of a communication tool role than a technical management tool role as we are used to with an objective at the level of the different participants, the different actors to provide a simple and easy access to information so as to enable them to take ownership of the territory, the information and the knowledge, as well as perhaps a better understanding of the various other interlocutors' points of view and to facilitate the establishment of a positive and constructive dialogue. The simple GIS tool, easy to access, should also facilitate communication towards a wider audience in a general way.

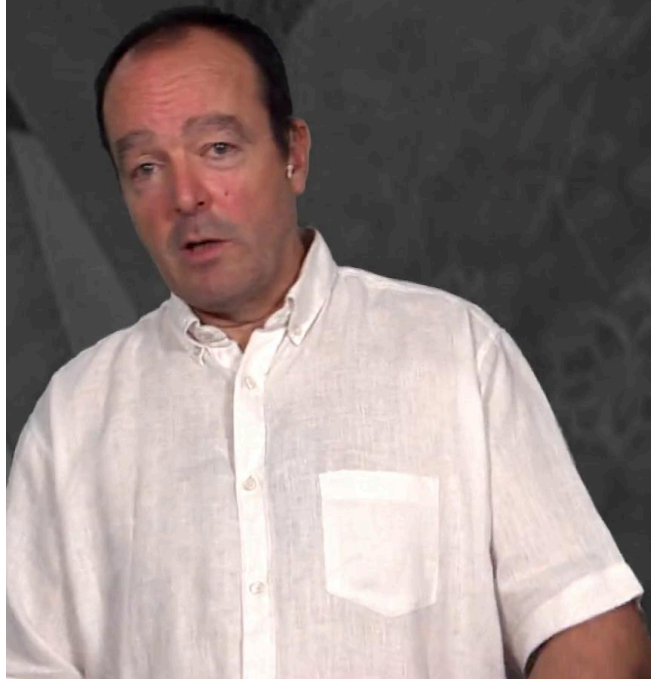
Notes

Summary



17m 40s

Role of GIS and constraints



Make information accessible to a large number of stakeholders with sometimes very limited computer skills,

What are the specific constraints ?

- Low complexity and low cost
- Data updating
- ➔ Targeted datasets, as small as possible
- ➔ Implementation of a participative data updating process

An Introduction to Geographic Information Systems

So this instrument must be used as a support and a boosting element, the functioning of the participatory platforms. Beyond the complexity and the cost, well...it is also linked to the cost, the question of data maintenance arises since for a system like this to live, for it to be used, the data it contains must be relevant and must be updated. This means that we have to be able to ensure a periodic updating of data and in situations where there is no budget to hire teams who will do field surveys to update the data, the only other resource available is to use voluntary work, the goodwill of actors in the first place and then of people in a broader way who could be interested in documenting these databases. So for this system to work, I think there are 2 simple rules: first of all, the database should be as small as possible which can sometimes seem a little counterintuitive because we could easily say : "ah, we have a database so woop, we put everything in it"! No, you have to have as little data as possible and with the most relevant data possible so that the work, the effort to update the data is as small as possible and so that it can be done by a reasonably low number of people.

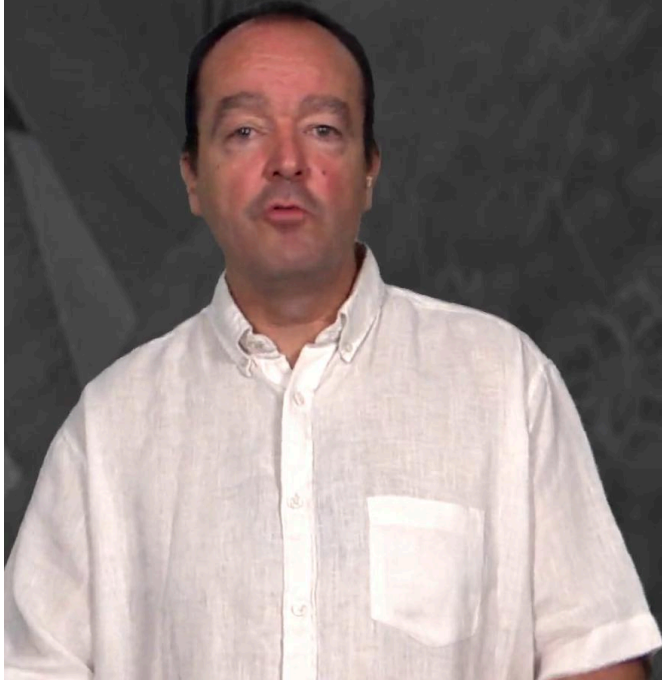
Notes

Summary



18m 59s

Role of GIS and constraints



Make information accessible to a large number of stakeholders with sometimes very limited computer skills,

What are the specific constraints ?

- Low complexity and low cost
- Data updating
- ➔ Targeted datasets, as small as possible
- ➔ Implementation of a participative data updating process

An Introduction to Geographic Information Systems

The second consequence of this situation is that the system that is set up should enable lambda citizens to add information and if we do not want to... to end with a mess in the database, it is necessary to separate, it is necessary that technically the information entry is separated from the validated information and stored in the database so it is necessary to set up, from a technical point of view, a process that facilitates data entry its validation by the consultation framework by the collective framework before its addition to the real database. So it should be technically possible and then things need to be organized at the collectivity level for this updating process to work so it is necessary to designate responsible people by thematic fields, to instruct them to take care of this update using the technical tools provided.

Notes

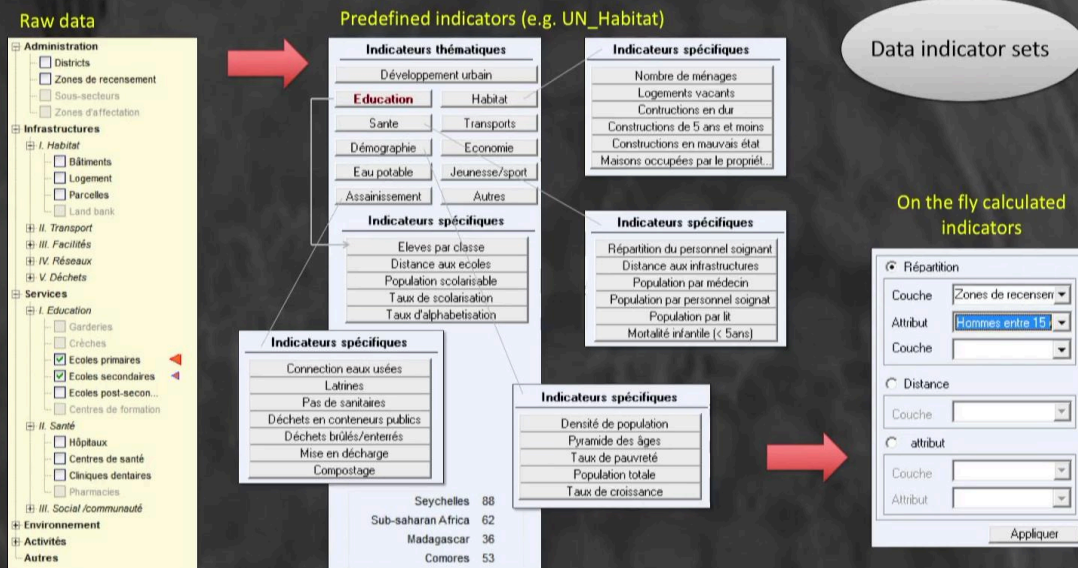
Summary



20m 44s

Role of GIS and constraints

Management/planning: needed **data** and functionalities ??



The urban monitoring systems which must accompany the management and urban or territorial planning steps should be based on data from which indicators can be constructed which should be able to guide and orientate the management and planning options and on a number of functionalities that we would like to be able to use. So here we have the example of what has been done in the Seychelles where, with the various actors involved, we started by making an inventory of the existing raw data by rubric : administration, infrastructures, etc. and beyond the existing data it is also asking the question of complementary data which in the medium or long term was desirable and which would be useful to integrate into the tracking device.

Notes

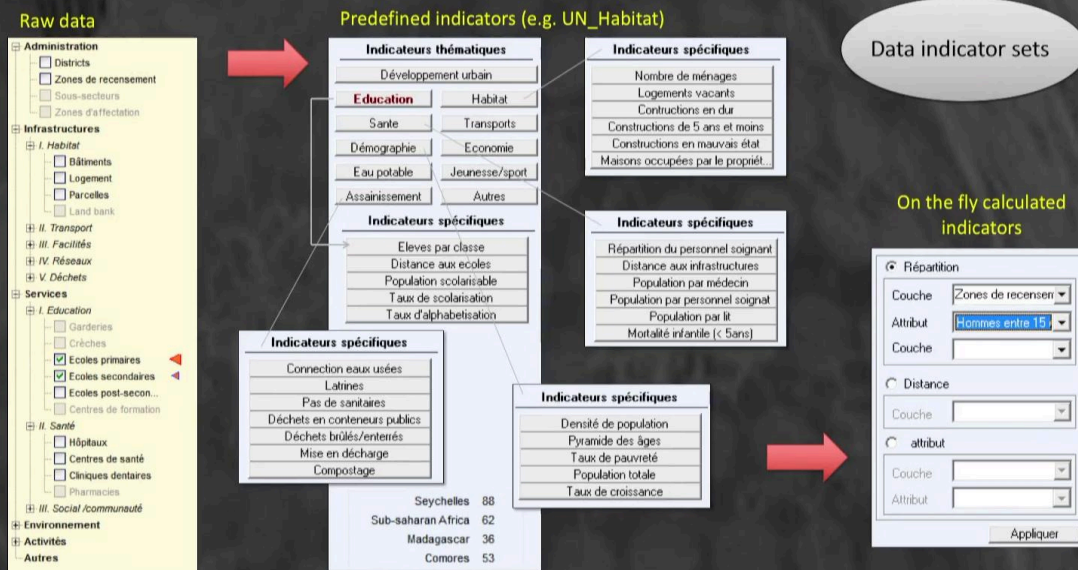
Summary



21m 51s

Role of GIS and constraints

Management/planning: needed **data** and functionalities ??



From these existing data and just like in Thiès, we developed a set of thematic indicators which are the indicators advocated by the UN Habitat conference to measure the urban development with a series of global indicators which we can't see here and then a series of specific sub-indicators by domain with indicators in the field of education: the number of students per class, the distances to schools, the educable population, things like that. So specific indicators of health, demography, drinking water management, sanitization in fact all the themes that are central from the point of view of the urban or territory management. In the case of the Seychelles here the setting up of a tool enabling to calculate indicators on the fly with 3 types of indicators so by distribution, by distance or based on attribute data has been added. Regarding the expected functionalities something relatively simple with a map area in which we display the various inventory objects, the possibility to consult the attributes, the characteristics of these objects by an information tool and then on the left the various modules: there is the consultation to the edition of data, etc.

Notes

Summary

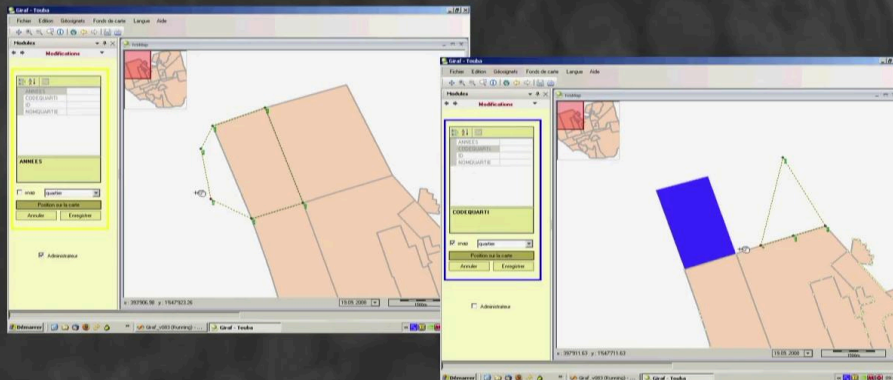


22m 48s

Role of GIS and constraints

Management/planning: needed **data** and functionalities ??

- **Viewing** objects and **exploring** their attributes
- **Visualization** and/or **creation** of indicators
- **Edition** of spatial geometries and attribute data



Beyond the simple consultation of the raw data, we would like to be able to create thematic maps based on the indicators that have been integrated to the system so the different types of indicators, here on the left a population density map per census area so it is the data that come from the statistical census, a map of the distance to primary schools which enables to characterize, to identify the areas more poorly equipped with school infrastructures and with a crossing with the educable population data would give some clues on the orientation of investments in the field of education and finally an attribute map which represents the hotel offer of the island of Mahé. The possibility of editing the geometries and attributes of the objects and as I said earlier to edit them either directly with administrator rights to manage the database or a form of provisional edition which stores the editions made, the additions made by the lambda citizen before validation and integration into the database.

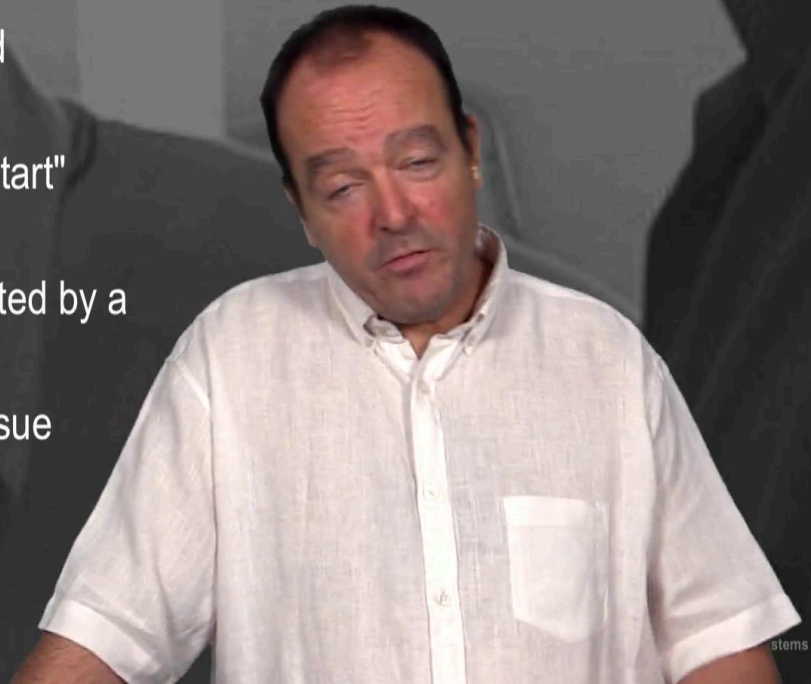
Notes

Summary



Some lessons gained

- Importance of simplicity, and therefore of "tailor made"
- Importance of the "back to start" button
- Participative dynamics boosted by a simple aerial image
- Perpetuation and internet issue



The two experiments of quite similar natures presented in this case study in Thiès and the Seychelles have led to reflect about the following elements : the first of these elements is maybe the notion of simplicity, often GIS softwares offer a whole range of very complex functionalities which are not at all adapted to the needs of the vast majority of users and it is clear, particularly in this type of context, that if we want to be really efficient, it is necessary to arrive with some customized tools that answer specifically to the needs of users.

Notes

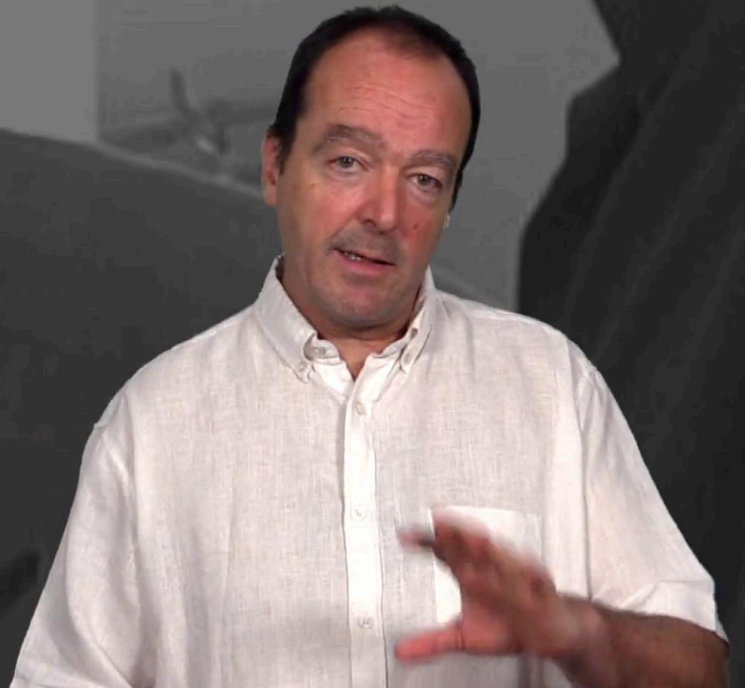
Summary



26m 09s

Some lessons gained

- Importance of simplicity, and therefore of "tailor made"
- Importance of the "back to start" button
- Participative dynamics boosted by a simple aerial image
- Perpetuation and internet issue



We noticed that the acquisition of a certain good command of the computer tool is possible, which is reassuring, but in some cases training workshops at the start where the computers were on a series of central tables with chairs around the room, the people who came to take part in this workshop began by sitting on the chairs on the side as far as possible from these devices that they did not know very well and so it took a little time and persuasion to overcome this chasm. and one of the elements that proved to be extremely useful here is the back to square one button, to have somewhere in the interface a button on which the user can click to go back to the starting point. And this simple element allowed to, it is a bit stupid to say it but it allowed the users to gain confidence, to feel free to make all the possible and imaginable mistakes knowing that the spare wheel was always present. Another element that has been particularly instructive in these experiments is the importance of aerial photography as a boosting element of the discussion within these participatory groups. The simple fact of having...

Notes

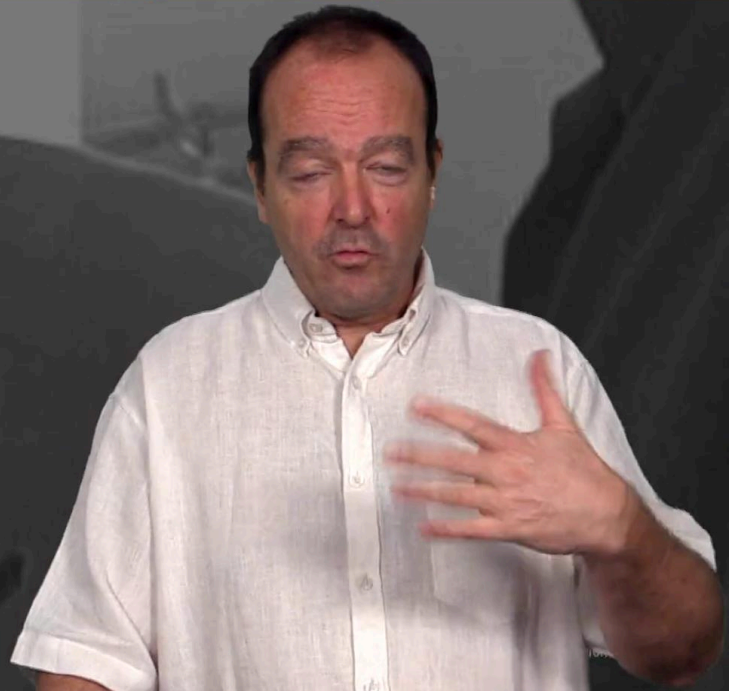
Summary



27m 00s

Some lessons gained

- Importance of simplicity, and therefore of "tailor made"
- Importance of the "back to start" button
- Participative dynamics boosted by a simple aerial image
- Perpetuation and internet issue



and the map, we realize that the map is a more abstract, more difficult thing to internalize. Aerial photography speaks to everyone, everybody starts by looking at where their house is and then "Ah, you are here" then the discussion starts very quickly and it really creates a very strong dynamic and that was a very interesting lesson from these exercises. The last point which deserves to be mentioned is that of the sustainability, when these experiments were carried out as much in Thiès as in the Seychelles the Internet network was not working neither in one case nor the other, I am not certain that it really changed a lot, I think that in the Seychelles now they have pulled a cable but never mind. The fact is that the local software solution so not having a client-server architecture makes the whole exercise of data updating extremely difficult so it is important to be very organized to have a person who is appointed for that, who goes round the 25 district administrations of the Seychelles or in Thiès round all the services that use the common platform so go round, collect the information which have been added by one another, organize a meeting of collective validation, once these things are validated to update the database and go round again all the actors to distribute the new version of the database.

Notes

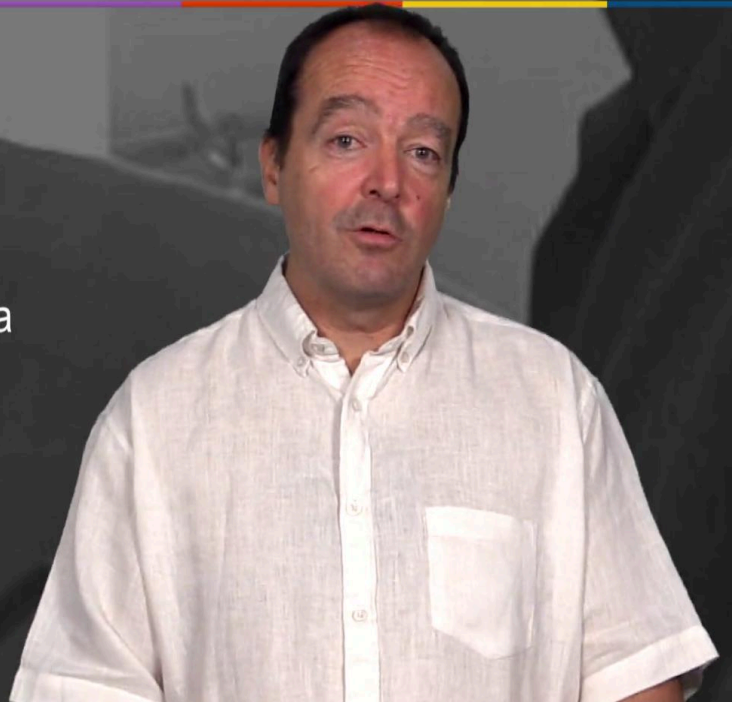
Summary



28m 43s

Some lessons gained

- Importance of simplicity, and therefore of "tailor made"
- Importance of the "back to start" button
- Participative dynamics boosted by a simple aerial image
- Perpetuation and internet issue



So this operation is complicated and restricting to set up and to my knowledge has never really worked. And that element, the need to go towards relevant current data is an essential element if we want the system to continue over time. And from this point of view, the use of Internet with a solution of a central database accessible via the network or by customer stations facilitate things a lot. There we go, that will be all for this case study.

Notes

Summary



30m 32s