



The Territorial Intelligence Process: The Informational Perimeter Study of a 21 Local Agenda for Building an Ecology System of Communication

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Authors' contributions

This work was carried out in collaboration between all authors. Authors YB designed the study, wrote the protocol and supervised the work. Authors YB and PD carried out all laboratories work and performed the statistical analysis. Author YB managed the analyses of the study. Authors YB and PD wrote the first draft of the manuscript. Author PR managed the literature searches and author YB edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Because we have been working for years into the field of territorial intelligence, we'll explain why studying the informational perimeter of a Local Agenda 21 is an important step to design an ecology system of communication through a territorial intelligence process.

Study Design: This specific step of research aimed identifying how, at a regional level, ICTs and communication, are worked, or not, to build an ecology system of communication and organize the required participation in sustainable development policies.

Place and Duration of Study: University of Toulon, Vitrolles town in South Paca Region (France) and College for Teaching and Education ESPE from between 2010 and 2014.

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Methodology: The adopted information retrieval protocol for this research was based on three levels of studies, macro, micro and intermediate (meso). We are here showing how the meso dimension of global research protocol has aimed to analyze the sustainability of ecosystem designed by relationship between territory, in its physical and virtual representations, and local authority to drive component to be linked with ecosystem sustainability and couple "community/territory".

Results: The features provided by collected information through using search engines, listed and then compared to the assumptions of territorial intelligence, indicate the level of territorial formal capital, organic link territory has to set up for the formulation of a development project, is not here sufficient as the study has established so.

Conclusion: We here displayed a case of an ecosystem, shaped within local stakeholders relations, made of physical and virtual relations. This ecosystem has not enough showed potency to allow participation, required by a 21 Local Agenda, to contribute implementation of sustainable development agenda in a long term view.

Keywords: Communication; ecosystem; link; local authority; participation; sustainable development; territory.

1. INTRODUCTION

Research, and the results associated with, we discuss in this paper are part of a research that has received a grant from the Paca Region (South France). The central objective aimed to better identify at a regional level how the Information Technology and Communication (ITCs) contributed, or not, to organize the participatory dimension required by instructions in sustainable development programs. We have to take in consideration what many observers are (and how) qualifying this specific side of sustainable development programs. In participatory engagement of stakeholders, in relation to sustainable development programs related, they noticed discontinuity.

The research protocol of information defined and adopted to conduct the complete research was based on three complementary strands of action, macro, micro and intermediate (meso), i.e between macro and micro. The macro component aimed understanding how regional local authorities, municipalities and inter communality, had seized and implemented ICT (Internet and Social networks). The micro component has established an organizational and communicational diagnosis (in its 'on line' and 'off-line' dimensions) of the local authority in connection with the problem stated above. Finally, for the purpose of restoring intermediate (or meso) dimension, to analyze the sustainability of ecosystem, built or not, by the relationship between the territory and the territorial community in their physical and virtual representations anchor. We have chosen

sustainable development program called "Agenda 21" because its structure integrates the participatory dimension at the heart of efforts. A local Agenda 21 is a territorial sustainable development project, led by a local authority, which takes the form of an action program (action program for the 21st century).

To drive the component associated with the intermediate (or meso) dimension of our research protocol, that is to say, the research component associated with ecosystem sustainability and the couple "community / territory", we first helped to the reading grid offered by the assumptions made by the paradigm of territorial intelligence which we now state the definition [1], [2] and quote [3]: "We can consider the territorial intelligence as an informational and anthropological processes, regular and continuous, initiated by local actors, physically present and / or distant, who intend appropriate land resources of an area by mobilizing and transforming energy of the territorial system energy into a project capacity. The objective of this approach is to ensure, literally and figuratively, providing the territorial level to develop what we have called the formal territorial capital."

This definition [4] refers to the theoretical proposition of Ecology Communication exposed by Moles [4] p.94 and follows in *Structural Theory of Communication & Society*: "Ecology of communication will be the science of relationships and interactions ... / ... first is the knowledge of networks or systems, which are present in a given area. [4] And Perrin [5] p.20 in his thesis "Coexistence of Territories: physical

space to test the virtual specifies "We have to consider territorial intelligence process in its appropriation of resources phenomenon is called social approaches through relational aspects. We will pay special attention to the study of links between the actors, their resonance, their nature or form [5].

Our research plan, in connection with this third installment called "ecosystem territory/ sustainable development community", consists of three components: the first will enable us to conduct an exploratory study around key words, a second one will allow us identify, represent reported links between key players within the ecosystem territory/ sustainability community [6,7,8]. Finally, we consider a third axis that will enable us to identify areas and actions to be made for building up the structure of this vital ecosystem to a successful sustainability program. It is, at this stage, which we will call for the assumptions associated with the territorial intelligence paradigm.

2. METHODOLOGY: EXPLORATORY RESEARCH, INFORMATION MAPPING, WEBSITES LINKS, CONNECTIONS

In order to conduct exploratory of all three dimensions of information research protocol and to cover the entire spectrum of this step of research, we selected four search engines Google, Ixquick, Bing and Exalead. Without going into computer and technology considerations (exploration, indexing and search), we chose these four search engines for two main reasons. Because all together they almost cover all the internet available information

and they do not display results associated with requests made in the same way. Exalead has allowed us to add some features and Ixquick is a metasearch engine. We expressed two simple queries in their content to browse the general subject.

Regarding the methodology set adopted for this information research, we deemed it appropriate to start with an exploratory phase to sweep the central object of our research, then, to make a visual representation of existing links between the websites obtained in response from queries formulated with the search engines and finally, to collect additional data allowing us, if exploited in the future, to strengthen the studied ecosystem.

2.1 First Exploratory Query: Vitrolles and Sustainable Development

We chose to combine two generic keywords in relation of evidence to our research object namely "Vitrolles and sustainable development". The number of results indicates a low level of association between the two terms (Table 1).

Table 1. Overall gross result by search engine

Search engines	Results
Google	102 000
Ixquick	64 708
Bing	55600
Exalead	36 514

We now present additional information gathering elements associated with the results achieved in the first query with the Exalead search engine. The spectrum of these results forms a patchwork with no real sense of association (Table 2).

Table 2. Information characteristics associated with Exalead search engine

Year	Type of site	Associated terms
○ 2002	Blog	Specification
○ 2004	Forum	○ departemental councils
○ 2005		○ Renewelable Energy
○ 2006		○ Pond of Berre
○ 2007		○ Marseille Provence
○ 2008		○ Pays de Loire
○ 2009		○ Provence Alpes
○ 2010		○ Puy de Dôme
○ 2011		○ Travail public
○ 2012		○ European Union
○ 2013		
○ 2014		

With the first used query "Vitrolles and sustainable development" we added the expression "Agenda 21" chosen as representative of the sustainable development programs in relation to its panel participation-consultation component.

2.2 Second Exploratory Query: Vitrolles and Sustainable Development and Agenda 21

To continue the exploratory phase of the research protocol, we have chosen to associate the term "Agenda 21" with expression "Vitrolles and sustainable development" of the first query. As we mentioned it in the presentation of our research, we chose the model of sustainable development as advocated by Local Agenda 21, which puts at the heart of its actions, participatory dimension. As done previously, we now present the raw results obtained with all four search engines used. We will complete the raw results obtained with three search engines by those issued with Exalead search engine when they are displayed (Table 3).

Table 3. Results for the second exploratory query

Search engines	Results
Google	8 130
Ixquick	8120
Bing	1.640.000
Exalead	5 155

Besides the fact we do not get much results for the second exploratory query with Exalead engines, we do note a relative quantitative proximity between the number of results displayed by Google and Ixquick search engines. We note an overall discriminating element; In fact, addition of the "Agenda 21" expression decreased number of results.

We now present in Table 4 additional information gathering elements associated with the results obtained at the second request made with Exalead search engine.

The additional terms associated with the second request (Table 4) and proposed by the Exalead search engine, do not enrich the results and do not cover all the results obtained with the first request made using the same search engine. We disclaim that the spectrum designed with these

three main terms linked portends an ecosystem "Territory/Community" segmented.

Table 4. Additional terms associated with the results obtained with Exalead search engine at the 2nd query

Year	Associated terms
2005	Fine Arts
2006	Specification
2007	Departmental councils
2008	Marseille Provence
2009	Pays de Loire
2010	Public instance
2011	Provence Alpes
2012	Puys de Dôme
2013	European union
2014	

2.3 Information Search: Visualization of Information, Research Links between Websites, Semantic Connections

We will use the TouchGraphTM search engine to allow us to identify the Internet domain names (Top Domain), proximity of content (Related Search) obtained in response to terms used during the various requests made. We have deliberately expressed these requests in a simple way. Internet domain names (Top Domain) will allow us to identify websites matching the query made (Match). We will complete the first part of the results with a map visualizing the existing connection between the request and the identified sites (search results). Then we will present a brief description of the contents of the selected web sites, group of words and expression, to show relations of content between the results obtained (related search). This content, words and phrases, could be used later to further structure the studied ecosystem. The maps obtained with the search engine are showing existence of links between websites and proximity of their content.

2.3.1 The first request done: Vitrolles and Sustainable development

We successively present (Table 5) the websites domain names obtained in relation to query made, number of links they register with the terms of the request, the cartographic representation of these results (Fig. 1).

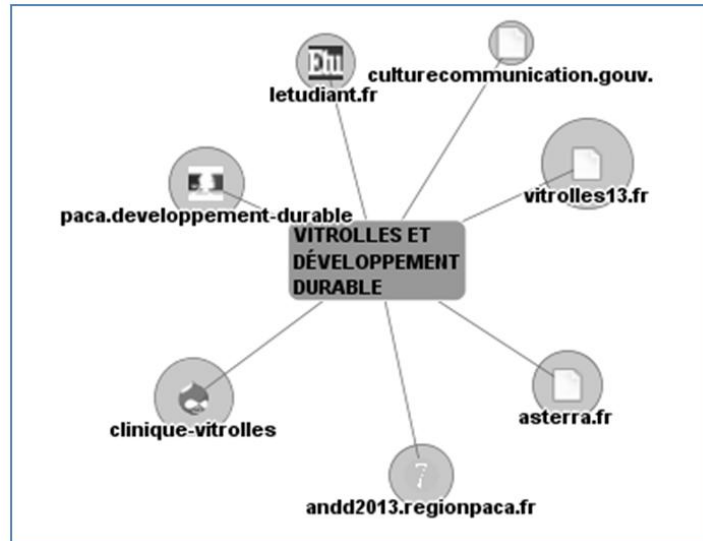


Fig. 1. Visualization of websites obtained in connexion with the first request

2.3.1.1 Top ranking type domains

We now display the search results in connexion with the query "Vitrolles and sustainable development."I.e, Web site, Domain name and number of links.

Table 5. Top domain results & number of links

Web site DOMAIN name	Links (match)
vitrolles13.fr	1
clinique-vitrolles.com	1
paca.developpement-durable.gouv.fr	1
asterra.fr	1
andd2013.regionpaca.fr	1
culturecommunication.gouv.fr	1
abeillesentinelles.net	1
marseille.aeropot.fr	1
arpe-paca.org	1
journalzibeline.fr	1

2.3.1.2 Search results: Vitrolles and sustainable development

We collect information data from a few websites showing hierarchy information returned by the search engine: url of the Web site, the main title to inform readers of results, a brief description of the main object. Here is below *excerpt of results*.

1. Towards Sustainable Development - Vitrolles - You are here> Home> Towards sustainability. Towards sustainable

development. Print Out. Direct access. administrative procedures. Info <http://www.vitrolles13.fr/versun-developpement-durable>.

2.3.1.3 Related search: Vitrolles and sustainable development

We now display the research content, words and expressions, associated with the query and we could used later. We could later characterize this research content.

[SUSTAINABLE DEVELOPMENT Towards sustainable development Towards sustainability Vitrolles is a little-known Green City 13127 VITROLLES Feu Vert Vitrolles (address Delphine Grand Vitrolles Vitrolles Vitrolles INEAD Clinic shuttle bus Transport_Vitrolles_Bandeau Vitrolles Vitrolles Marignane.] (*Excerpt of results*).

2.3.2 The second request done: Vitrolles and Sustainable development and Agenda 21

We successively present (Table 6) the websites domain names obtained in relation to query made, number of links they register with the terms of the request, the cartographic representation of these results (Fig. 2). As we have indicated, we will successively present ranking of domain names related to the number of links they store and exchange with another website, mapping the results.

2.3.2.1 Top ranking type domains

We note that only five websites get two links related to the terms of the request made.

Table 6. Top domain results & number of links

Web site DOMAIN name	Links (match)
vitrolles13.fr	2
asterra.fr	2
arpe-paca.org	2
abeillesentinelles.net	2
andd2013.regionpaca.fr	2
developpement-durable.gouv.fr	1
paca.developpement-durable.gouv.fr	1
agenda21-cluses.fr	1
cg13.fr	1
agglo-paysdaix.fr	1
pennes-mirabeau.org	1
territoires-durables-paca.org	1
marseille.aeroport.fr	1
atd13.fr	1
culturecommunication.gouv.fr	1
maritima.info	1

2.3.2.2 Search Result: Vitrolles and sustainable development and Agenda 21

We get a few websites information presentation retained on hierarchy returned by the search engine i.e, url of the website, the main title informing reader of results, a brief description of the main object. To future research information we can isolate some keywords that could be later used in order to recreate the ecosystem "Territory / Community" that we will present in the second part. (Excerpt of results)

1. Agenda 21 - Vitrolles - Taking action at the local level. Such a sustainable development project should be implemented gradually and in a sustainable manner. <http://www.vitrolles13.fr/les-outils-du-developpement-durable/agenda-21>.

2.3.2.3 Related search: Vitrolles and sustainable development and Agenda 21

Here are some words, expressions making "chain", that is to say, the words, expressions emerging from the results generated in relation with the query, showing potential relationships and semantic connections between terms of our request and which could be used in a later complementary query.

[Agenda 21 and sustainable delegate Sustainability Sustainable Development towards sustainable development tools Sustainable Development Sustainable Development What is Sustainable Development Tools Towards Sustainability Vitrolles Vitrolles City Mayor of Vitrolles is a sustainable green city development unrecognized mayor of Vitrolles Great work exchange website of the city of Vitrolles in Vitrolles Vitrolles Delphine Mayor of Vitrolles. Sustainable Territories PACA and requires that the Grand Vitrolles Vitrolles Vitrolles INEAD Clinic Department of Development Transport_Vitrolles_Bandeau bus shuttle Vitrolles Marignane AGENDA 21 Agenda 21 Agenda 21s become the recognized DD Charter Agenda 21 Local Agenda 21 in 2014 became Agenda 21 and renewable energy agenda that is Agenda 21]

2.3.3 The Third request done: vitrolles and consultation and Agenda 21

As we have already explained, we will successively display the ranking of domain names related to the number of links they store and exchange with another website then mapping the results.

Into the request made, we introduce the word "consultation" in our motion because it lies at the heart of actions registered into a sustainable development approach, on the one hand, and the successful type of program in our information retrieval protocol i.e "Local Agenda 21". We have positioned the word consultation at the intersection of Vitrolles words and Agenda.

2.3.3.1 Top ranking type domains

We note that only three websites got three links related to the terms of the request made while three other websites reveal two. We will see later in the article that this indicates a crucial failure in building eco sustainable development of the local government system we are studying the informational perimeter (Table 7). We see in Fig. 3 connected web sites through number of links.

2.3.3.2 Search results: Vitrolles and Consultation and Agenda 21

We got a few websites presenting information retained as restored hierarchy (Top Domain) given by the search engine to get the url of the website, the main title to inform the reader about the results and finally a description summary of the main object.

1. Download the action plan Agenda 21 Vitrolles - Vitrolles - environmental, Vitrolles action centue its sustainable development through the first action plan. Agenda 21. The submission. http://www.vitrolles13.fr/fileadmin/agenda_21/agenda21-web.pdf *

2.3.3.3 *Related results: Vitrolles and Consultation and Agenda 21*

We got here making "chain" between terms of our request, which could be used in a complementary request. We here got the setting relationships, potential connections we need to qualify the query request made with the search engine.

Table 7. Top domain results & number of links

Web site DOMAIN name	Links (match)
vitrolles13.fr	3
asterra.fr	3
arpe-paca.org	3
cg13.fr	2
laprovence.com	2
agglo-paysdaix.fr	2
territoires-durables-paca.org	1
paca.developpement-durable.gouv.fr	1
agenda21france.org	1
13.agendaculturel.fr	1
ijhssnet.com	1
developpement-durable.gouv.fr	1
andd2013.regionpaca.fr	1
abeillesentinelles.net	1
maritima.info	1
agenda21.lespennes.fr	1
foret-mediterraneenne.org	1
culture-13.fr	1
mairiedefuveau.fr	1
culturecommunication.gouv.fr	1
regionpaca.fr	1
agenda21.comite21.org	1
marseille.aeroport.fr	1
fesj.org	1

[Sustainable Development and Agenda 21 towards sustainable development Sustainability report Towards Sustainable Development Towards Sustainable Development Tools Sustainable Development Sustainable Development What is Sustainable Development Tools Concert Vitrolles in Vitrolles website of the city Vitrolles Vitrolles ...) - 2014 concerts in Vitrolles is a little-known green city Vitrolles exchanger this morning in the town of Vitrolles Vitrolles Vitrolles between Les Pennes-Mirabeau in Vitrolles Vitrolles Delphine Festival in Vitrolles snu.vitrolles@snuipp13.fr March 25 Recycling center 2013 Grand Vitrolles Vitrolles Vitrolles INEAD Clinic Vitrolles Transport_Vitrolles_Bandeau shuttle bus Marginane Vitrolles Vitrolles Music Festival 2014 Agenda 21 Agenda 21 Performance Hall Guy Obino Cultural Agenda Agenda 13 Agenda 2014 A loaded agenda mission 21 Agenda 21 Agenda 21 France Pennes 2012 Nbreuses Agenda 21 experiences the action plan Agenda 21 Agenda 21. Agenda 21 is the list Diaries consultation has taken several forms Territories Sustainable PACA Evaluation - Consultation Training Development Department]

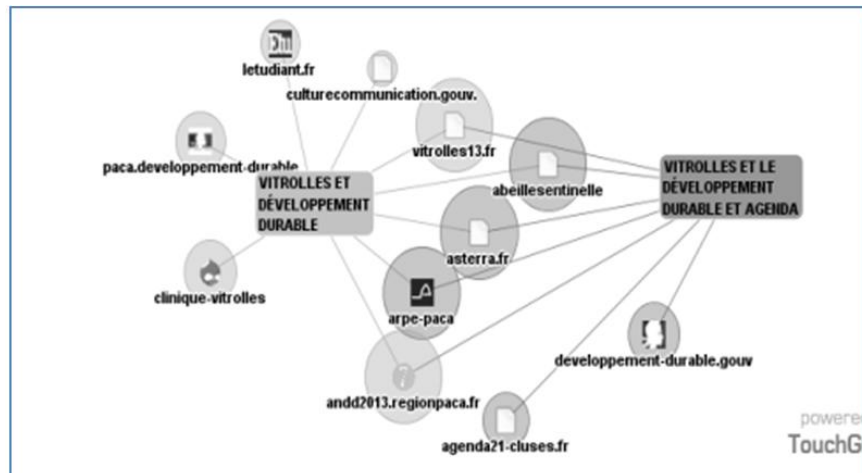


Fig. 2. Visualization of websites obtained in relation to the second request

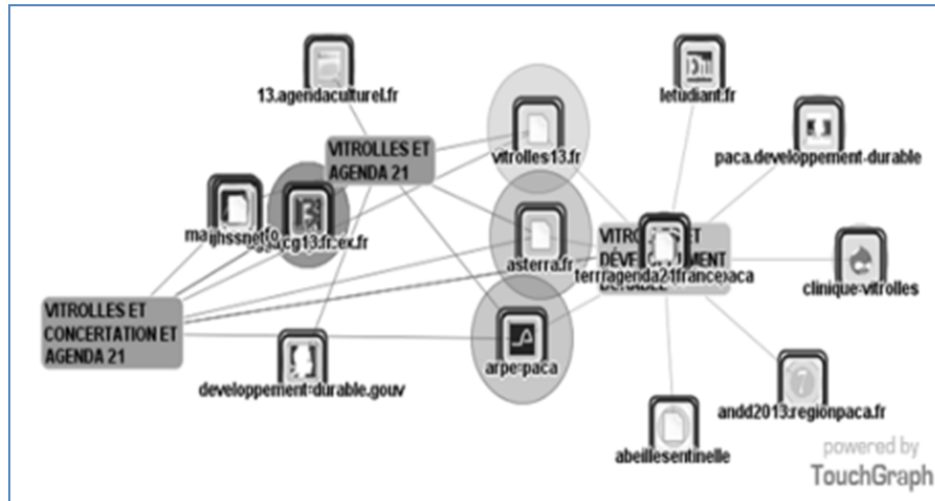


Fig. 3. Visualization of websites obtained in relation to the 3rd request

2.3.4 The Fourth request done: Vitrolles and Cooperation and Sustainable development

As we have before indicated, we will successively display the ranking of domain names related to number of links they store and exchange with another website and then mapping the results.

We introduce the word "dialogue" in central position of the request made of words describing sustainable development process, in general, and listed actions for the "genetic" structure of a "Local Agenda 21". We position our request at the intersection of the main words Vitrolles and sustainable development.

2.3.4.1 Top ranking type domains

We only note that five websites get two links related to the terms of request made (Table 8) and we see in Fig. 4 connected web sites through number of links.

2.3.4.2 Search results: Vitrolles and cooperation and sustainable development

We got information about websites selected by the search engine i.e, URL of the Website, the main title and a brief description of the main object. (Excerpt of the results).

1. Sustainable Development - Vitrolles - So many questions Vitrolles sustainable development approach responds to. In Vitrolles, consultation has taken many forms.

[http://www.vitrolles13.fr/fileadmin/agenda_21/agenda21-web.p df.](http://www.vitrolles13.fr/fileadmin/agenda_21/agenda21-web.pdf)

Table 8. Top domain results & number of links

Web site DOMAIN name	Links (match)
vitrolles13.fr	2
paca.developpement-durable.gouv.fr	2
asterra.fr	2
andd2013.regionpaca.fr	2
marseille.aeroport.fr	2
clinique-vitrolles.com	1
echoplanete.com	1
cg13.fr	1
abeillesentinelle.net	1
arpe-paca.org	1
crpv-paca.org	1
culturecommunication.gouv.fr	1
agglom-paysdaix.fr	1

2.3.4.3 Related search: Vitrolles and cooperation and sustainable development

We got here some expressions, words possibly making "chain" between terms of our request, that is to say, later offering potential connections between obtained web results that could be used in a complementary request.

[Sustainable Development Tools Sustainable Development Sustainable Development What is Sustainable Development Tools Towards sustainable development Towards sustainable development towards sustainable development AND SUSTAINABLE it April 5 Vitrolles is a little-

known green city Vitrolles) City Vitrolles Charter GUSP April 2007 in Vitrolles Vitrolles Vitrolles Delphine, 2013 Grand Vitrolles Vitrolles internet as elsewhere in the city of Vitrolles Vitrolles INEAD Site Clinic shuttle bus Transport_Vitrolles_Bandeau Vitrolles Vitrolles Vitrolles Marignane mag No. 64 Participation in consultation consultation Folder CONSULTATION FILE consultation has taken many forms Archives consultation. 2011 consultation]

We will now proceed to the analysis of observed eco system *i.e.* the couple Community / Territory.

3. RESULTS AND DISCUSSION: ECOLOGY SYSTEM OF COMMUNICATION "COMMUNITY/TERRITORY"

We now necessarily recall our article is to study how at a regional level Information Technology and Communication contributed, or not, organizing participation required by instructions of sustainable development programs that so many observers see as difficult to be gained or to be maintained in a long-term view or subject to discontinuity in participatory stakeholder engagement [9,10].

We now display the intermediate (meso type) level of analysis of the overall adopted information retrieval protocol according to the research problem. That, *in fine*, carries place of consultation in building relationship that enters into a territorial community with actions of sustainable development.

Meso dimension will analyze the sustainable development ecosystem designed, or not, by the relationship between territory and territorial community, in their physical and virtual representations anchor. We have chosen sustainable development program "Local Agenda 21" because its structure integrates at the core a participatory approach dimension as capacity tool on mobilizing local stakeholder.

To drive the associated component with meso dimension of our research protocol, that is to say, the related research component named ecosystem sustainability, *i.e.* the couple "community / territory," we helped the grid reading offered by assumptions of the territorial intelligence paradigm. We will specify what mobilized research tools were used, and will present the results and will deduct a number of recommendations.

Our research design and data collection in relation to this third installment called "ecosystem Territory / sustainable development community" consisted of three points: a first one which allowed us to conduct an exploratory study around key words; a second has allowed us to identify, represent the reported links between key players as identified ecosystem Territory / sustainability community; and finally, a third axis has allowed us to identify areas and actions to be made considering the structure of this vital ecosystem for success of the dialogue dimension of sustainable development program.

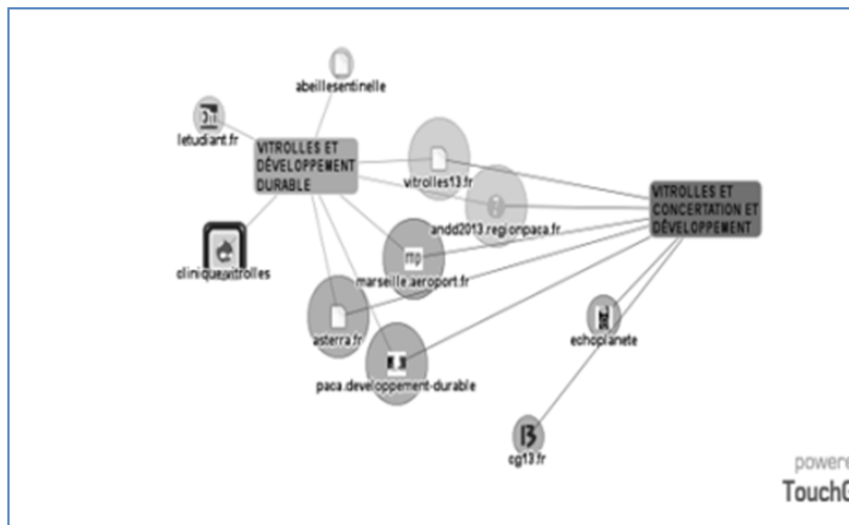


Fig. 4. Visualization of websites obtained in relation to the fourth request

At this stage we will call for assumptions associated with the territorial intelligence paradigm in order to compare obtained results with. Except considering that participatory dimension is not a key for such action, a sustainable development program or the required level of local participation, is already a satisfactory level that our observations *in situ* belie.

We will, in this third part, gather key information obtained from the two previous phases of queries, exploratory phase and information mapping, to point to gaps ecosystem "Community / Territory" through participatory dimension.

We now recall the fundamental characteristics of territory, eco "territory" system in meta-model, analyzing plans of a territory and special place of the information plan we interviewed in this article derived from some authors contribution in general [11,12,13] and others, in particular, we evoke later in this paper.

3.1 The Territory: Basic Characteristics and the Information Plan

Bernard Poche [14] quotes Scivoletto [15] who distinguished three types of space:

- Organic: This proceeds from the situation and the organic conditioning, behavioral or ethological, and is an enlightening experience of territoriality;
- Perceptual resulting from sensory processes;
- Symbolic, who identifies with abstraction.

These spaces can be interpreted as follows: the organic space can be compared to the physical dimension (space as it is); perceptual space of the cognitive dimension (space as it is understood); the symbolic space of the normative dimension (space as abstract based on specific standards actor). The course of these three areas can lead to the construction of a territory.

As a system, territory can be seen as not isolated, non linear, self-organizing. It is not isolated as it is subject to the flow of energy and matter that tend to renew its elements [16]. It is obviously nonlinear because it is the place of multiple interactions, creating a complex behavior that cannot be reduced to a simple and deterministic model. A fortiori, the evolution of a territory, with its multiple components, is not

placed on a predetermined path. In well defined limits, the territory is also a self-organizing system [17,18].

Atlan [19] stated "the creation of meaning of information is central to phenomena of self organization." Following him we can see that territory is composed of meaningful elements. These meaningful elements are vectors of territoriality. We can therefore define territoriality as the agent for transforming space into territory. Our approach proceeds from the identification of the Vitrolles ecosystem via search engines such meaningful agents in territorially information plan. This is therefore a semantic analysis will focus on producing processors territorial sense. This analysis will allow us to evaluate whether particular the three types of Vitrolles plans are consistent with the production of a sustainable territorial consequence of a structured ecosystem or to be structured.

3.2 The Integration of the "Territory" Ecosystem in a Meta-Model

Given our object, the territory and its characteristics, it seemed particularly appropriate to establish a model of eco "territory" system that reflects both the materiality of territorial objects, different cognitive approaches players who perform a specific reading and "territorial" meaning that transforms the space into shared resources.

Because the territorial organization studied is not subject to a dual mechanistic approach such as Newton [17] has made in the observation of movement of objects in time and space, but rather the ability to make sense of observable complex spatial phenomena using a limited number of concepts, universal invariants and reporting relationships between them.

We use a meta-model which breaks down into three levels closely interwoven and inseparable from each other: the physical matter (first level); that of information (second level); that of identity (third level). We do not consider these levels as layers but as nested sets of different nature. This model is a representation of complexity of a system by explanation of the dynamics of complexity that can make it evolve towards increasing levels of complexity [20].

The territory can be considered to meet these criteria. Two complementary approaches

characterize this meta-model or holistic language such as presented [17,18,21] and onwards:

- A descriptive approach based on a description of three irreducible levels: physical objects, that of quantitative and qualitative information, the all-or-emergence;
- A dynamic approach reflecting the evolution of the system over time. The operation of this entity is based on the interaction of many direct and indirect actors still to mobilize.

We will describe the analysis plans of territory.

3.3 The Territory: Different Levels of Analysis

For Bailly [22] the area is in first consideration first "a land space, real and concrete, (which) is given, experienced and perceived." It is given as concrete and real, lived through confrontation of identity with our intentionality and our goals, perceived by close contact and dimensions of our interaction with it. The relationship to the territory is perceived through roles of actor [23]. Conversely, the area can be seen as a set of relational constructs, a kind of spatial externalization of a social group as proposed Poche [14].

Through social play, actors define a human-built system with territory [24]. Major [21] after Schwarz [18] proposed to establish a model of the "territory" as a system that reflects both the materiality of territorial objects, different cognitive stakeholders approaches who carry a specific reading, and "territorial" meaning which transforms space in shared resources. The systemic model these authors have developed consists of three closely interwoven and inseparable planes of the others:

- (first level); of physical matter
- (second level); of information (second level);
- (third level); of identity (third level)

These levels are considered as nested sets of different nature. This model is also a representation of the complexity of a system [25]. In this perspective, we describe each of three plans and define their content: physical and tangible objects in the foreground; relations and information, but also aggregation or composition of objects in the background concepts; finally, the

territory as a space for meaningful actor and as a place of multiple interactions between players in the third plan.

3.3.1 The territory: physical / organic plan

We start describing the systemic model with a vision of physical plan, that of matter and all that is constructed from this material. Pre and after Prelaz Droux [23], we identify three types of objects elements in the territory. These elements are:

- The building objects, which correspond to a reality of the territory. To classify them Prelaz-Droux [23] are shown three generic areas: infrastructure equipping the territory civil engineering networks and structures; the natural environment (soil, water, air, flora, fauna) and the anthropogenic environment; economic, social and cultural activities.
- Virtual that we can classify into two types: normative and symbolic virtual. They will be presented later when we study the representations of the eco system on the Internet.
- Factors and facts objects: without developing these specific items, we can indicate that factors elements require interpretation and may lead to the emergence of facts. On the one hand, to appear or disappear, the factual use one or more constituent objects. On the other hand, in order to interpret its meaning, we must refer to an explanatory model that will function as a context for interpreting it.

3.3.2 The territory: The information plan

The second level of the model highlights circulating information and relationships between objects in the foreground. Study of the internet relationships of certain entities, links between websites inform us about this relational built. Always following Schwarz [18] we can retain the one hand, identifying elements and secondly, the relationship between objects.

Regarding constituent objects, we see the information plan: topological relations among elements of notions of neighborhood, adjacency, intersection, belonging, inclusion; the use or occupation relations: vehicles using roads, companies using supplies to produce or networks to distribute their products; but also buildings occupy a certain volume and a surface

area, as the vegetation. Study of the information plan could be developed theory of objects and objects factors. We suggest reader to be part of the approach practical observation information flows between entities components of the eco system that interests us to qualify. We now present the query plan submitted to search engines.

3.4 Query Plan Submitted to Search Engines

We present below the requests plan when using the four search engines. We here recall that we divided into two parts this query plan. The first was intended exploratory; the second purpose was to visualize the information exchanged between actors and count number of links between the websites obtained in response to our requests. Finally, we wanted to reconstruct the chain of potential semantic connections between the results displayed by the search engines for future explorations.

3.4.1 Exploratory search

This is intuitive nature of queries, deliberately simple to enable a stabilization of results, and focused on our research object, formulated with 4 search engines: Google, Exalead, Ixquick, Bing.

- Vitrolles and sustainable development.
- Vitrolles and sustainable development and Agenda 21.

3.4.2 Mapping of information and links Search

These requests for map and visualize the obtained information and expressed by the following categories: top domain, search results, related search.

- Vitrolles and sustainable development
- Vitrolles and sustainable development and Agenda 21
- Vitrolles and Agenda 21
- Vitrolles and consultation and Agenda 21
- Vitrolles and cooperation and sustainable development.

We present in the following table (Table 9) obtained results during each request made. These results count the number of links between significant websites that is to say in relation to the focus of our research.

3.4.3 Analysis of results

For an overall consistency, we selected and displayed in the final summary table of results as websites related evidence (Web of 1st level) with interviewee in the query. We posed as an initial assumption that all of these sites had to appear in all results for each query performed (which was not the case). We also note that the following terms Vitrolles; Sustainable development; Consultation; Agenda 21; Participation; Yet evidence in relation to the subject of our research, and likely to describe the informational scope to study, do not form a structured the territorial information plan of the meta model. These particular results of insufficient cross-links between websites displayed by search engines which indicate beyond a lack of production and exchanged information, a notorious lack of interest (credit) granted to information. We now present the final summary table of decreasing results (Table 9).

3.4.3.1 Terminal Analysis and Final Comments

In the first reading, we do not find, based on the assumptions of territorial intelligence paradigm (exchange of information / mobilization of information / transfers), the expected structure of an ecosystem shaped around core values claimed by sustainable development, in general, and public consultation, in particular. We have to recall that the focus of our research is to assess how ICT, communication involved in the organization of this ecosystem and promoting participation through structure of its virtual representations (or digital).

After recalling the definition of territorial intelligence [3], we will begin to compare results to the associated assumptions with formal territorial capital, organic link planning, information, communication and organization of intelligence territorial process.

“We can consider the territorial intelligence as informational and anthropological processes, regular and continuous, initiated by local actors physically and / or remote that appropriate resources of an area by mobilizing and transforming power of the territorial system into planned capacity. The objective of this approach is to ensure, literally and figuratively, to provide the territorial level to develop what we have called the formal territorial capital.”

Table 9. For each request made, number of links between the websites

Web site displayed	Number of links			
1st query : Vitrolles & Sustainable Development	= 1	= 2	= 3	= 4
vitrolles13.fr	X			
paca.developpement-durable.gouv.fr	X			
asterra.fr	X			
andd2013.regionpaca.fr	X			
culturecommunication.gouv.fr	X			
abeillesentinelles.net	X			
arpe-paca.org	X			
2nd query : Vitrolles & Sustainable Development & Agenda 21	=1	=2	=3	=4
vitrolles13.fr		X		
asterra.fr		X		
arpe-paca.org		X		
abeillesentinelles.net		X		
andd2013.regionpaca.fr		X		
3rd query : Vitrolles & Agenda 21	=1	=2	=3	=4
vitrolles13.fr		X		
asterra.fr		X		
arpe-paca.org		X		
abeillesentinelles.net		X		
4th requête : Vitrolles & Consultation & Agenda 21	Link=1	Links=2	Links=3	Links=4
vitrolles13.fr			X	
asterra.fr			X	
arpe-paca.org			X	
cg13.fr		X		
laprovence.com		X		
agglo-paysdaix.fr		X		
5th requête: Vitrolles & Consultation & Sustainable Development	Link=1	Links=2	Links=3	Links=4
vitrolles13.fr		X		
paca.developpement-durable.gouv.fr		X		
asterra.fr		X		
andd2013.regionpaca.fr		X		
marseille.aeroport.fr		X		

Table 10. Descending final results based on number of internet links exchanged between pre selected websites

Number of links website ranking	=1	=2	=3	=4	=5	=6
1-Vitrolles.fr						X
2-asterra.fr					X	
3-andd2013.regionpaca.fr					X	
4-arpe-paca.org					X	
5-abeillesentinelles.net			X			
6-paca.developpement-durable.gouv.fr		X				
7-cg13.fr		X				
8- culturecommunication.gouv.fr						
9- arpe-paca.org	X					
10- agglo-paysdaix.fr	X					

Because as we previous said, the focus of our contribution is a complex 'object', territory, "as means of communication to the socio-cultural sense." We will extend the proposals for an exceptional trans-disciplinary passer described by Devèze [24], Abraham Moles. Indeed, Moles [25] described and demonstrated Ecology Communication in *Structural Theory of Communication & Society* which we quote some extracts p.94 and followings. "Ecology of communication will be the Science of relations and interactions between different species of communications activity within an enclosed area such as the time available for the individual or as dispersed social group a territory." and to emphasize that it will be to carry out a description of the transactional human activity, knowledge networks or systems.

We will also do in pursuit of an earlier proposal by Moles [4] in "Complexity theory and industrial civilization" and Devèze [24], again to quote him: "The connection was then necessary for us between these studies on the psychology of space and communication mechanisms. Gradually in a deepening of the structural theory of communications, which for us has spanned most of our scientific career, we studied the application of communication mechanisms and systems theory in the social sciences various aspects, always attentive to the process of perception. It was time for us to enter a new phase of generalization and systematization of these two disciplines: those of the psychology of space and time and that of the information and communication. This term, communications, emerged in effect at that time (1965-1970) as one of the crossroads concepts for a new approach to social sciences. (...) This led us to constitute what may be called a formalistic approach to the study of social communications, defining the concept of communication from the idea of vicarious experience as the transfer of a change in the immediate environment receptor from that of the transmitter using that one and the other have in common initially." (Ideas of Code, directory, culture).

We now have to introduce additional features to the positioning of our contribution and its orientations in order to introduce reading keys from the analysis that follows.

If, like Kaplan [26], we believe that the 21st century will see return of land borders, still territorial organizations will be transformed by ICT and their representations will overcome

national barriers to orchestrate development. This development, a mixed combination of real and virtual territory [27], will form hybrid organizations [7] among others face the informational silo phenomenon that oppose territorial continuity and condemn the adaptation of territorial value chain to new challenges [28].

Conditions of inappropriate territorial management, qualified as "territorial insular management" are met. This unfavorable situation for territories do not allow them to anticipate, confront, to address risks and disruptions territories will not fail to know in their life cycle. Indeed, instead of articulating virtual and physical territory, as we have summarized with a territorial intelligence definition, the "territorial insular management" causes irreparable division between parts of a whole, the territorial system, which calls for a comprehensive and communicational systemic approach after writing a territorial grammar, true logic carrier communication of core values for no less essential missions. Studies of the informational basis, included into the information plan of the Meta-model we have presented in this article, provide us information about quality of the existing territorial ecosystem, or missing [7].

We argue the 21st century will see return of industry of productions throughout traditional territories because core of space organization, energy, individually and / or collectively, will become less expensive, either transform. As our proposal articulation of information, intelligence via hybrid territories mediation devices articulating, physical planning and virtual territory, find meanings by using territorial intelligence as we are talking for 20 years in general and in this paper in particular. This articulation should be reflected preventing digital productions do not come meet physical local productions and to escape the "all digital Solutionnism" as discussed by Morozov [29]. *Digital Solutionnism* is avoiding societal reflection to associate with such developments [30]. We are at a turning point in the assessment, doubt expressed by business leaders on the usefulness of continuing to invest in ICTs. Because we have to consider organizations do not qualify positive effects as a result of these investments and are considering them helpless by a runaway technological innovation expertly maintained by the industry.

In this context, we must remember that when we were studying in the 1990s relations between two

spheres that make up the economic activity, sphere of real economy and sphere of financial economy, which is expected to provide resources to economic activities for their development, first we observed a decoupling of these two spheres. The growth of the financial sector did not correspond to the development of real economy sphere. Financial flows, from the sphere of financial economics, did not join needs of activities of sphere of real economy but returned to more 50% to sphere of financial economics. This reflects a closed system operation. It may well be that virtual territory productions permitted by ICTs, continues to develop in a closed system mode and profit nothing physical territory. And conversely, intelligence, physical territory productions could not come to meet those dematerialized ones.

In contrast to this, at junction of action on the object, territory and identity acquired by territorial actor, territorial intelligence process is thus a paradigm of meaning and identity because the data are received in a communication process [31]. In contrast to this, at the crossroads of action onto the object, territory, and identity acquired by territorial actor, territorial intelligence is thus a paradigm of meaning and identity because data is received in a communication process [32]. Thus, territorial dynamics derives its existence from the complexity of its networks (hypothesis 2) acting in social debate (hypothesis 1) and energy implementation can again scale territorial object (hypothesis 3). Endogenous territorial innovation thrives on internal and external information flow signals. This is to tap into local history, informational *réservoir*, capture data stream to be continuously treated in order to detect the threat in time, seize the opportunity, finally, to promote emergence of informational process as anthropological. Study of the territorial scope of informational ecosystem is considered a crucial step in implementation of territorial intelligence.

The responses collected in this study offer a bundle of new development paths to explore the concept of systemic knowledge sharing and interdisciplinary practices. This capitalization of signs and information put in perspective, offers to local possible future able to decrypt risk to thwart threat, uncertainty that the territories will meet in the course of their life cycle [33-35].

Creation of this anticipatory posture carries the seeds of attributes for a democratic tool shared by local actors, involving more closely to

territorial strategic vision and this, well before seeable communication short-term actionable [7]. The term actor, through shared information resource, makes a lot of sense and Researcher, in our design planning, becomes also an actor because participating in the settlement agreement of exchanges based local history and shapes the informational perimeter.

And Perrin [5] in his PhD thesis "*Coexistence of territories: the physical space to test the virtual one.*" specified "*Territorial intelligence in its appropriation of resources phenomenon called for social approaches through relational aspects. We will pay special attention to the study of links between actors, their resonance, their nature or form.*"

4. CONCLUSION

We now directly and finally compare results obtained during the collection of information to the assumptions of territorial intelligence paradigm.

Next to the first hypothesis of the territorial intelligence: the exchanged information.

We note a marked lack of results in relation to the subject of our research, and a dispersed set, heterogeneous and unstructured results obtained in response to requests by using search engines and related to the focus of our research.

The number of local actors involved and the number of information producers are inadequate, indicating an insufficient amount of exchanged information.

Comparison with the second hypothesis: credit information.

This dispersed set together with rather heterogeneous and unstructured results obtained in response to requests when querying search engines, we see an insufficient number of links exchanged between displayed websites.

These results show a lack of mobilization around the central theme of our research, sustainable development and concerted actions. This indicates a lack of local actors interfacing between areas of production and reception of information.

Compared with the third hypothesis: mobilization of information

It follows from observed deficiencies, facing the two previous assumptions constituting the study of territorial information plan; the project approach does not emerge from our observations. The formal territorial capital cannot be mobilized to support a sustainable development project structured around the core values that we expect in actions under this field. The lack of interface between generation of local actors and receiving information do not achieve equal credit given to this information throughout the transmission channel.

Hypothesis in synthesis

As it is, we do not see how meeting conditions of feasibility, sustainability, for a project developed into the field of sustainable development. It does not quite exist, in our opinion and based in light of our experience, sufficient *visible* conditions for the emergence of a sustainable project and structured development in a long term view. We define by *visible*, the actual existence of territorial formal capital, as organic link.

The features provided by collected information through using search engines, listed and then finally compared to the assumptions of territorial intelligence, indicate the level of territorial formal capital, organic link, territory has to set up for the formulation of a sustainable development project, in a long term viewing, is not, as the study showed, here enough present. The ecology system of communication is calling for actions to be really structured.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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