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Statistics and Geography**  
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Topic (i): New opportunities created by cooperation and partnership

**THE EXAMPLE OF PARTNERSHIP BETWEEN FRENCH STATISTICAL INSTITUTE,  
COMMUNES AND GEOGRAPHIC INSTITUTE**

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**Contributed paper**

**ABSTRACT**

To carry out its statistical, demographic and economic mission, INSEE has to have access to reliable geographic information. That geographic information deals mainly with roads bearing addresses, and geographically located buildings. The preferential partners who maintain and manage that information are the Civil services and the local authorities. It is essential for INSEE to cooperate with them in order to create and maintain its own geographic system of references. Such cooperation implies efficient contracts with a maximum of standardization, the aim being to begin collaboration with 900 communes.

Beyond INSEE needs, in France the principle of cooperation between managers and users of geographic information has become a reality in the form of a government project aimed at the creation of a large scale system of references before the year 2007.

**I. WHY COOPERATE?**

1. To fulfill its missions, INSEE must have access to reliable geographic information managed by the communes. INSEE needs a geographic system of references for many applications, especially:

**I.1 . . . for the continuous enumeration of the population**

2. The French National Institute of Statistics plans to change the way in which the census of the population is carried out. From 2003 on, the method of complete enumeration carried out every 7 to 9 years will be replaced by a continuous census.

3. An article by Michel Isnard of INSEE, entitled "Geography and new census in France" has been written specifically about the method used to implement a continuous census and particularly about the needs of basic geographic reference data for communes of more than 10 000 inhabitants. There are about 900 such communes in France, which represent a population of 28 million inhabitants (about half the total French population) in 4% of the area.

4. A few definitions and concepts in use:  
- the unit used in the census by INSEE is "lodgings";

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<sup>1</sup> Prepared by Nathalie Eltchaninoff.

- on the site, the lodgings are grouped into buildings. A detached house is a special type of building composed of just one flat;
- in basic geographic data, the notion of “buildings” is translated into the notion of “addressed entities”, a notion which may include a group of buildings with the same address;
- the “addressed entities” of each commune are divided into five groups, which make up a partition of the buildings;
- every year, the rotation groups are updated: withdrawal of demolished buildings and attribution of new blocks to the rotation groups, taking into account the balanced criteria required by statistical methods;
- every year, a rotation group is chosen for a 5-year cycle. The census will deal with a sample of buildings belonging to the rotation group of that year. Those buildings will be visited for a pre-census or an identification of the lodgings;
- ultimately, a census will be made of a sample of one of those lodgings. Census takers will be sent to operate on identified lodgings belonging to geolocated buildings.

5. So, what INSEE needs is access to a base of complete, updated data of buildings or addressed entities containing lodgings. Moreover, those entities addressed must be georeferenced in a GIS including localization, in order to provide census takers with reliable location plans.

## **I.2 . . . for the management of the enterprise system of references**

6. INSEE is in charge of the dynamic management of the system of references of the French companies and enterprises, the situation of which they must record (creation or end of activities) and manage their specific data (address of the company and, if necessary, of their different establishments).

7. In order to improve the quality of the system of references of enterprises and to carry out the reference of their official code, they will be integrated and georeferenced in the reference system of geographic information.

## **II. WHAT GEOGRAPHIC INFORMATION? WHAT ARE THE REQUIRED QUALITY SPECIFICATIONS?**

8. Roads with names and addresses, geolocalized addressed buildings. In the initiation phase of the geographic information system of reference, on the site of the selected communes, INSEE has created a data base including:

- roads with names and addresses at both ends, on the left and on the right
- a building register either of isolated objects, of blocks of flats or of companies
- infracommunal zoning used to organize operations of census collection and to dispatch statistical data
- locating elements.

9. In the phase of updating the geographic data base, INSEE must implement a system of continuous updating, especially for the buildings, in order to guarantee the reliability of the sampling method of continuous census. The quality targets of the geographic data base mainly refer to the completeness and updating of the addressed entities. The required geometric accuracy is decametric.

## **III. WHO TO COOPERATE WITH**

10. The preferential partners are the Civil service and the local authorities. The Civil service, especially IGN (National Geographic Institute) and the communes, are the preferential partners of INSEE as far as geographic information exchanges are concerned.

11. In France, there are 36 600 communes, 900 of which are selected for the building register. The communes are not under any legal obligation to create, maintain and even less dispatch a GIS. However,

because of their responsibility in management and development, most of them have created a GIS including a system of references of addressed roads, which they do update.

12. The decentralized structure of INSEE allows it to be closer to the communes. INSEE is organized into 24 regional departments (in France and overseas). These regional departments are the preferential partners of the local authorities.

#### **IV. WHY IS IT IMPORTANT TO COOPERATE WITH BODIES AND TERRITORIAL AUTHORITIES?**

13. Cooperation is essential to create and maintain the geographic system of references.

##### **IV.1 To create the geographic system of references**

14. To create the geographic system of references of roads and addresses, INSEE needs a data supplier. INSEE has researched geographic databases meeting its needs regarding contents and the greatest possible homogeneity of the selected sites.

15. Thanks to IGN, a civil service (public establishment) producer of reference bases, INSEE has been supplied with databases meeting its content and accuracy requirements. However, the spectrum available was not satisfactory, so INSEE resorted to cadastral documents to create its database on areas not covered by IGN.

16. To establish the reference zoning for socio-economic data, the communes must estimate the aptness of the zoning. First, INSEE applied zoning in order to organise the collection of data for the census. This refined zoning, corresponding to a block of flats, was used to create a partition of the territory into task zones to be dispatched to the census takers.

17. From this refined zoning, called block zoning, INSEE, with the help of the communes, created an even more sophisticated zoning based on narrowing down even further into blocks named "IRIS zoning", meant to incorporate statistical information into a reference zone of at least 2000 inhabitants. This choice ensures sufficient protection of personal liberty, and renders any identification impossible. Indeed, in France, the circulation of data related to people is governed by a national committee called "CNIL" (for the defense of liberty). The definition of the zoning required for the circulation of census data has been defined by INSEE in cooperation with CNIL. The implementation of the cutting-out has been achieved by INSEE in collaboration with the communes to make sure that the circulation zoning is the best possible illustration of the territory's socio-economic geography.

##### **IV.2 To authenticate the sampling database of buildings selected in the operations of continuous census**

18. In France, the census is organized under the auspices of INSEE, the actual implementation resorting to the communes. The parameters used to set up a legal population in each commune are, of course, very important. Indeed, the following are based on those parameters:

- The amount of taxes transferred by the government in relation to the decentralized abilities of the communes (more information further on regarding these abilities);
- The number of town councillors to be elected in view to the communal elections.

19. Economy and democracy are at stake. In this context, the perfecting of a continuous census method based on the sampling of blocks of flats implies a common validation of the completeness and updating of the buildings system of references. So, INSEE will organize, in collaboration with the communes, the validation of the system of references.

### IV.3 To maintain the geographic system of references: update and enrich it

20. In France, until the beginning of 2001, there were no public instructions relating to the creation and maintenance of a decametrical geographic system of references similar to the one required by INSEE. IGN provides numerous databases but these are not strictly adequate as far as territory and rhythm are concerned.

21. The updated information about the addressed entities system of references is related to:

- The demolition of buildings
- The building up of blocks
- The change of buildings numbers.

These decisions are taken by the communes, which deliver building and demolition permits and decide upon new names or numbers of roads and streets. So, the communal system of geographic information is the best source of updating for the INSEE system of references.

## V. HOW TO COOPERATE?

22. The drawing up of contracts is necessary, the aim being to standardize them to a maximum. The starting phase of the geographic information system is to formalize it in the context of a customer-supplier exchange. The phase of exchange of information with the communes in order to update the geographic system of information is more complex because it is spread over 900 potential partners.

### V.1 Which data exchange, which rhythm?

23. In the biggest communes, the continuous census will be the subject of a yearly collection on the localized addressed entities (blocks of flats) belonging to the rotation group of the year. The stake is the representivity of the rotation group. There should not be either deficit (new building missing) or excess (pulled-down building still there) in the yearly reference base.

24. INSEE is interested in building registers established by some communes in the frame of their SIG. For lack of building registers, an updated directory of addressed roads is useful to INSEE. The exchange rate has to be defined according to updating cycles of the communal SIG, the publishing possibilities of the communes and the needs of INSEE. The purpose of INSEE is to implement a yearly update which, in view of census requirements, must be fully up-to-date at the time of its use for the pre-census operations (planned every year at the same time for all the communes, that is in October/November) destined to locate the sampled buildings and to identify their lodgings.

### V.2 Contractualization

25. Because the communal representatives are so scattered, measures of exchange standardization are being worked out. INSEE has prepared contracts with representative communal associations in order to establish a framed agreement enforcing the aim of a contractual pattern between the communes and the regional departments of INSEE in charge of the area.

26. Nevertheless, agreements must be subject to a contract with each commune on the basis of a national agreement and with the help of standardized documents. This is a tedious long-term task for INSEE. Moreover, it requires continuous activity of animation of the communal network.

### V.3 Practical organization: contacts, terms and conditions...

27. All 24 regional departments of INSEE will contact the selected communes in order to explain the requirements:

- Refining responses by the communes: what data, what rate, in what form?
- Setting up an exchange contract

### V.3.1 Data collection

28. Exchange is easier in digital form. However, it can be difficult to collect and implement the information. INSEE will proceed step by step. First, for geographical information, INSEE will develop a process called “passive layer”, permitting the display on the screen background of the outside cartography superposed with SIG INSEE data. Then, the operator will visually interpret the screen and will update either directly or by cross-checking with other sources of information for authenticity. For alphanumeric data, a matching system will be used. At a later date, INSEE will develop with each commune an exchange format adapted to a more automated comparison of vector data.

### V.3.2 What are the legal constraints?

29. In France, INSEE works under the supervision of the CNIL, which must agree to any project of creation or circulation of files containing personal information or even indirect nominal data, as can be the case in a file of georeferenced addresses. The CNIL reacted favourably to the establishment by INSEE of the building register in view of organizing census operations.

## **VI. WHAT ARE THE OPPORTUNITIES AND OBSTACLES IN THE SHORT- AND LONG-TERM?**

30. Beyond the needs of INSEE, the principle of cooperation between the partners managing and using geographic information is now a reality in France in the form of a government project aimed at creating a large scale system of references before 2007.

31. As from the end of 2001, INSEE will begin establishing contacts with local authorities to update its system of references. The main opportunity is the common target of the population census. The difficulty arises from the fact that different partners are scattered and that the information exchanged lacks homogeneity. Nevertheless, the French context is evolving towards homogeneity and sharing of geographic information systems.

32. Indeed, at the beginning of 2001, The French government decided to create and maintain a large scale system of references of decametric precision, composed of five layers of information:

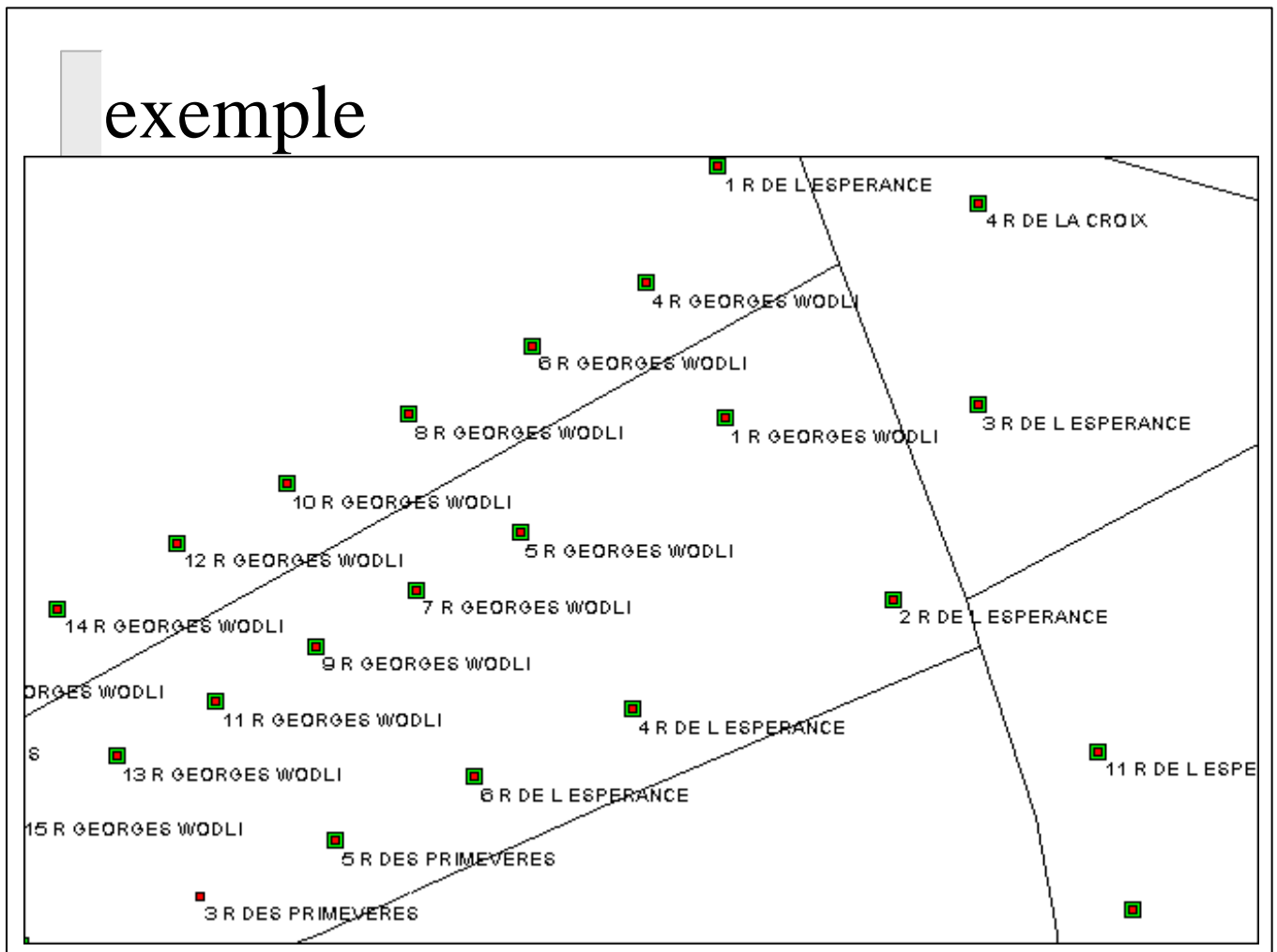
- i) Topography
- ii) Orthophotography
- iii) Cadastre
- iv) Georeferenced addresses
- v) Zoning

The concept of this system of references is animated by a state structure which organizes task-groups to coalesce the needs of private and public partners, state representatives, local authorities and companies.

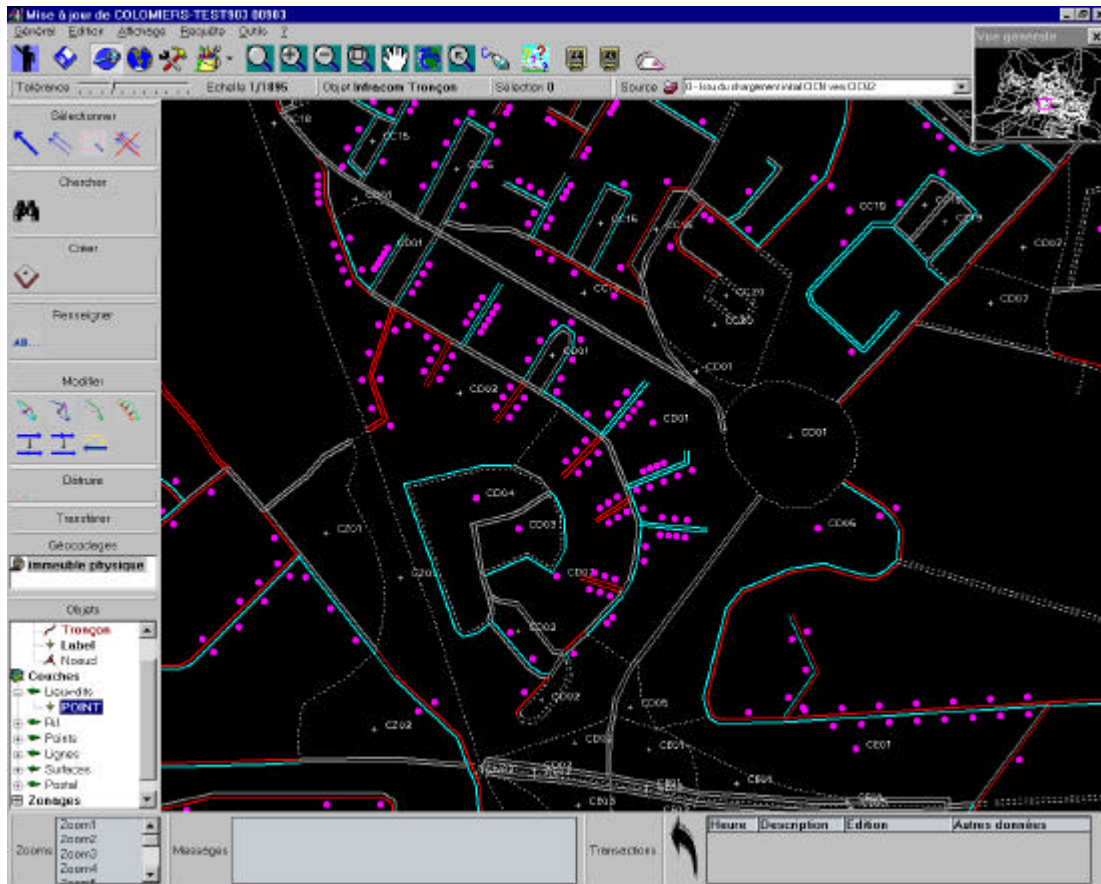
The “address” layer aims at becoming a system of references of georeferenced addresses. INSEE takes part in task-groups in collaboration with its privileged partners represented by IGN and local authorities.

INSEE’s goal is to contribute to the creation of this system of references and to benefit from it later on if its quality and update meet their needs for INSEE implementation.

## Building register/ Example



## View of INSEE communal GIS



## APPENDIX 2

### Organization and abilities of French local authorities

#### Organisation and abilities of French local authorities

The local administrative organization is characterized by a superposition of levels.

Since the decentralization law (1982), there are three main levels of local authorities: the commune, the department, the region. In addition to these three levels are the structures of inter communal cooperation.

The Commune:

The smallest administrative subdivision is also the oldest one. It is managed by a municipal council elected by universal suffrage every six year. Once elected, the town councilors elect a major from amongst themselves. He is the executive power of the commune he represents and he manages its budget. He is the employer of the town hall staff and has proximity abilities for:

- Schools
- Town planning
- Road maintenance
- School busing
- Refuse collection
- Cleaning up

The commune is also the State representative dealing with civil status, public order, voting organization and delivery of legal papers.

Today there are 36 763 communes (183 overseas) in France.